

AMERICAN CINEMATOGRAPHER

The Motion Picture CAMERA Magazine



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American Society of Cinematographers

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Volume XIV JANUARY, 1934 Number 9

What to Read

COVER photo by Shirley Martin, A.S.C.,
Photographed through a glass process screen.

PANORAMA Pictures with Your Leica
by Clarence Slifer, A.S.C.....352

PROBLEMS of Background Projection
by Hartley Harrison.....353

THE "Language of Line" in Photography
by L. Owens Huggins, A.S.C.....354

AS to Cinecolor
by W. T. Crsepinel.....355

PHOTOGRAPHY of the Month.....356

PATENTS and the Cinematographer
by Fred W. Jackman, A.S.C.....358

TREND of the Times.....360

Next Month

- Heinz Rosenberger, R.R.M.S. of the Rockefeller Institute, will have an article on "Motion Pictures as an Aid in Science." In this article Mr. Rosenberger tells of his many experiments in this line of endeavor.

- There will, of course, be another article on Miniature Photography contributed by an authority on this type of photography.

- American Society of Cinematographer members will contribute timely and illuminating articles on the various phases of photography as it is practiced in the studios.



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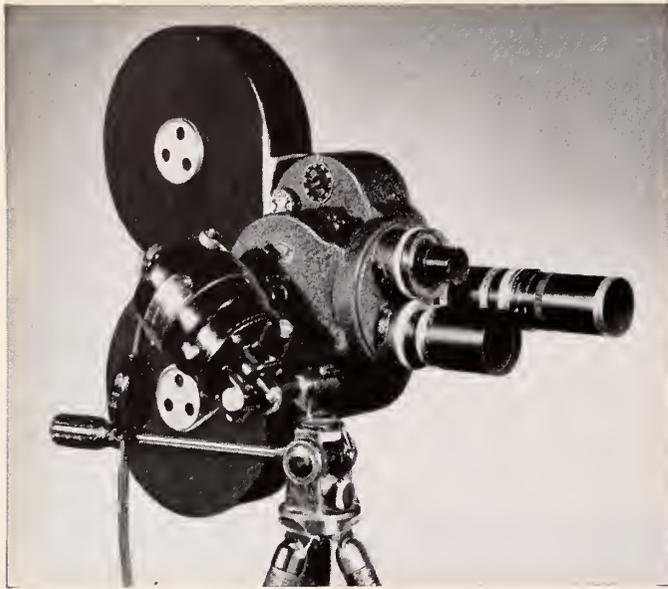
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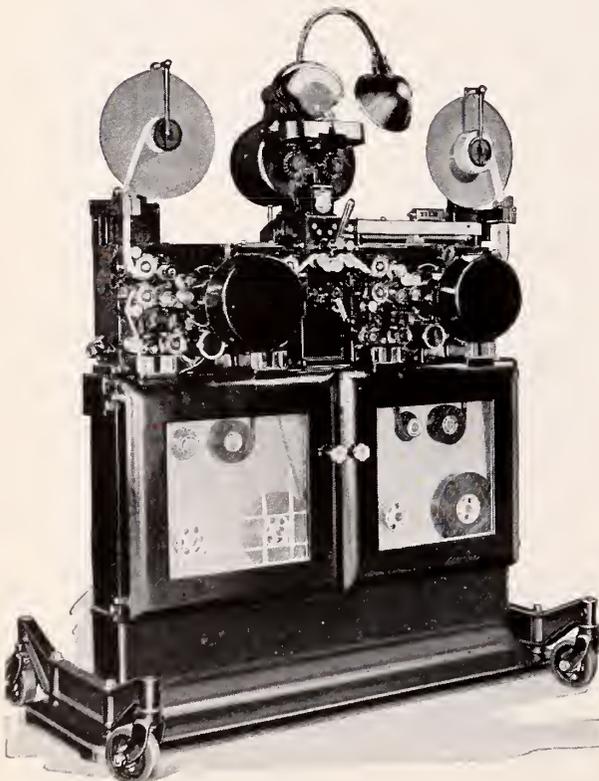
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Panorama Pictures With Your Leica

by
Clarence Slifer, A.S.C.

WHO has not longed to record as much of a distant landscape view, as the eye sees. The sweeping expanse of a cloud festooned sky, set off by a jagged mountain range or a city sky-line. Perhaps there were also times when you wished to photograph large groups of people or an interior and then gave up because the task was seemingly impossible. The angle of your lens could not include the full subject or if it did the view was not satisfactory. There was so much distracting foreground that the subject seemed relatively small and unimportant.

It has been stated that the eyes take in an angle of 170 degrees, but that they see only 2 degrees of this angle in focus at one time. Nature provided this trick arrangement for the purpose of concentration. Comparing the angle of view as seen with the eyes, with the angle of a 50mm lens on a Leica, we find that the camera on the horizontal plane photographs approximately one-quarter of what is seen with the eyes. It would be a logical assumption that wider angle lenses should be used more generally. However, the error of this is seen when we remember that the eyes see only two degrees in focus. Also that perspective and other things enter into the argument in favor of the lenses most frequently used now.

The focal length of the eye is naturally the same whether we are viewing a landscape or the detail of a barn. What is desirable then is to be able to photograph a wide angle and still retain a perspective that is comparable with that of the eyes.

There are four methods of making panorama pictures. Three of these methods fulfill the above condition. First we have the so-called Panorama camera. This camera is equipped with a lens of a very short focal length. It embraces a field of about 110 degrees. Second, we have Panorama Kodaks which use normal focal length lenses to cover fields of 112 and 142 degrees. This is accomplished by swinging the lens on its axis to describe a half circle while the film lies in the circumference of this half circle. All of the film that lies in the focal plane is not exposed at the same instant, but as the lens tube describes its arc. The third method is the Cirkut camera. This camera can use lenses of various focal lengths. The panorama is made as the camera is turned on the

(Continued on Page 376)

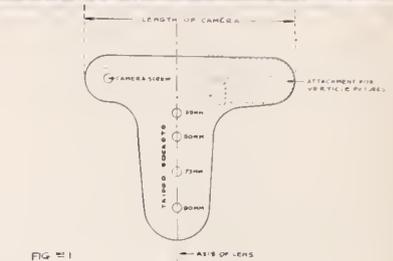


FIG 1

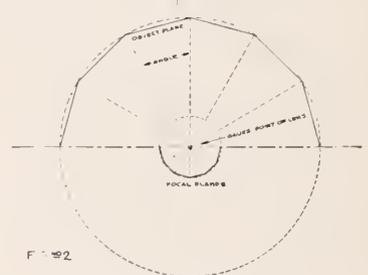


FIG 2

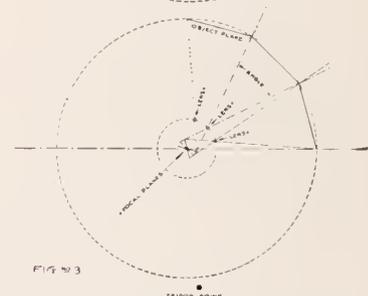


FIG 3



FIG 4

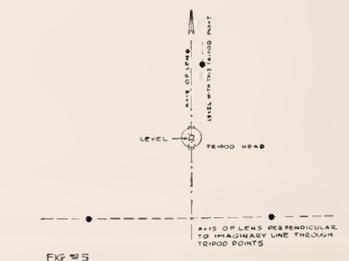
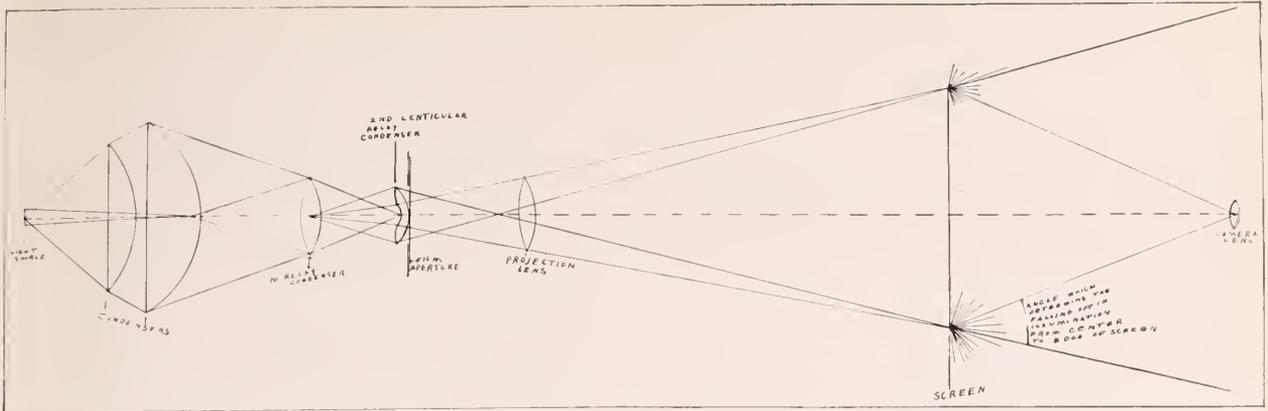


FIG 5





The above sketch shows an optical system designed to progressively increase the illumination from the center to the edge of the screen.

Problems of Background Projection

by

Hartley Harrison

Optical Engineer

SINCE practically all users of transparency projection have standardized on using a Bell & Howell camera movement in the projector and are also registering the film on the same relative perforation holes that were used in taking the picture in order to secure maximum steadiness, the problems of mechanical handling of the film have been fairly well standardized and the results are commercially practical for film speeds of 24 frames per second.

The optical problems, however, have not been carried to the same point of refinement in that the first transparency projection attempts had a decided hot-spot in the center of the screen, and after several years of using transparent projection, we still have the same hot-spot. The only thing that has been done to overcome this was to move the projector back far enough from the screen to just get by the falling off on the edges, which is not a correction of the condition, but merely a reduction of its apparentness photographically.

It might be well to review all of the causes of the hot-spot condition before attempting an explanation of a possible correction. We will therefore marshal the causes together for a review.

The first one is that the original negative will fall off on the edge due to the photographic lens; the amount of fall-

ing off varies from very slight to very pronounced, depending upon the lens. Second, an additional falling off will be had on the step printer due to the lens. Third, an additional amount on the projection which is the worst offender. This we will analyze in more detail later on. Fourth, there is additional falling off in the re-photographing on the process screen, due, as in the first instance, to the lens on the camera, and Fifth, there is another step in the falling off process when it is projected on the theatre screen. The amount of falling off on the edges each lens will give is open to a great deal of argument and we will not attempt to discuss that phase here. The only real significance the five steps have in so far as this discussion is concerned is to point out that in all of them you strive for as little loss on the edges as possible, and that no place in the process is there any attempt to build up the edges to compensate for the accumulation of losses.

In transparent projection, there are four vital factors, not including the projection lens, which we have mentioned and enumerating them in the sequences in which they come they are: The condensing system, either mirror or lenses; the angle of the projected beam; the screen and the camera angle, of these the screen, the camera angle and the angle of the projected beam probably play the most important part.

The importance of the screen lies in the fact that as a fusing medium it is intended to diffuse the projected beam equally in all meridians. However, even on a chalk wall, which will give the maximum even diffusion by reflection, this condition cannot be obtained due to the edge of the beam striking the wall at a different angle than the center of the beam and this condition is aggravated when a translucent screen is employed because any translucent screen is only a partial diffuser.

Referring to the illustration it will be seen that the only illumination which can reach the camera from the screen are the diffused rays which are of such an angle that come within the scope of the camera lens angle, and this angle progressively increases from the center of the screen, if the camera is in the center, and which therefore is the zero angle, to the edge of the screen where it is maximum. Now, in order for the transmission of the screen to be high so as to obtain sufficient exposure on the negative, the diffusion of the screen must be low, yet in order to pick up the marginal light from the screen, the screen must have a high diffusing property, and these two opposites cannot be reconciled, with the result that all translucent screens with sufficient transmission qualities to give adequate exposure allow a large percent of the projected beam to pass through

(Continued on Page 386)

The "Language of Line" in Photography

by
L. Owens Huggins, A.S.C.

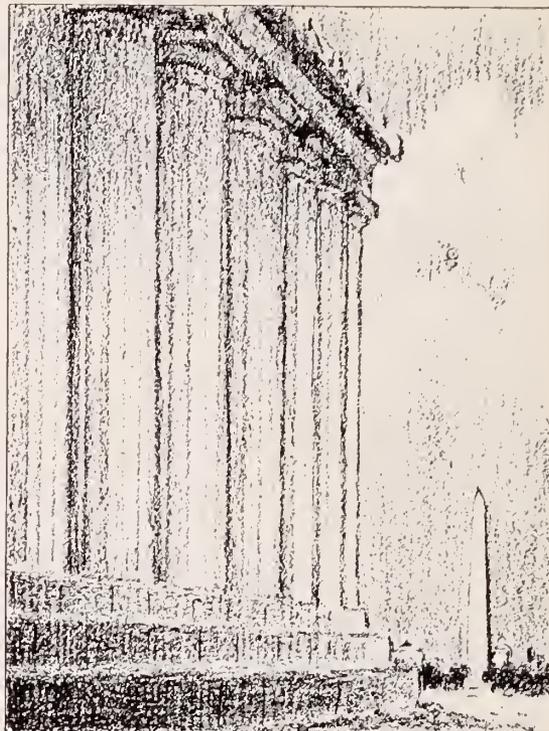
Editor's Note: This is the first of a series of articles on the fundamentals of Photographic and Cinematic Design. In later articles Mr. Huggins will discuss Harmony, Rhythm, Balance, Tone (or Key), Measure, Contour, and Emphasis.

IF Photography has gained any consideration as an Art, it is not because photography is in itself an art, but because some photographers are Artists. It is not simply that these men are masters of photomechanical technique, but that they are masters of the technique of visual Art. They know the language of Art—and make their cameras speak it. They know that certain arrangements of lines, forms and masses, of light and shade, will not only create a picture, but will speak to the emotions "with a most miraculous organ." And they are daily applying these principles to even the least-important scenes, raising Photography and Cinematography from its original status of a mechanical process to an ART.

In its beginnings, photography was devised solely as a mechanical means of making a lasting, visual record of persons, places and things; and when cinematography came into being, nearly a century later, its purpose was the same, save that it had the additional advantage of being able to record motion, as well as form. Even today, with the benefits of our most perfected equipment and materials, no picture made by photography or cinematography can in itself be considered as more than a record, unless its maker has applied the basic principles of Art to its making. A beautiful scene, photographed, is often of far less artistic worth than an ordinary scene, beautifully photographed. As Daniel B. Clark, A.S.C., so unceasingly points out, "Art is not WHAT—but HOW."

Every picture or photograph is essentially a combination of lines; and every picture is—or should be—dominated by some definite type of linear design. Upon analysis, any picture ever made can be reduced to the pattern of its dominant lines. The more carefully composed a picture is, the fewer and more expressive will be its basic lines; and the nature of these lines will determine the emotional response which the picture will create.

Long, horizontal lines, for instance, suggest calmness, serenity, peace, quiet, tranquility; sometimes (it is but a step), death and finality. An example of this would be



Upper sketch illustrates strength of vertical lines. Lower sketch illustrates action indicated by diagonal lines. Lower sketch is drawn from photo by Axel Bahuser entitled "Work."

the horizon, or a body lying prone upon the ground—and who cannot remember the unforgettable massacre scene in Eisenstein's "Potemkin," which was played against the horizontal lines of the broad terrace of the Odessa waterfront?

On the other hand, the most attractive and commanding line in art is undoubtedly the vertical one. It signifies strength, sternness, and courage; long verticals speak of majesty, grandeur, sublimity. The illustration shows this more clearly, however, than any words.

The curved line, containing as it does a constant change of direction, is more interesting, more varied, and less stern than a straight line. Curved lines give us beauty, grace, interest and variety. They are most useful, however, when used in conjunction with straight lines, for the contrast brings out the best features of each. Curved lines, too, are extremely useful for leading the eye into a picture, or focusing the attention upon the principal object of interest. They are, therefore, more properly auxiliary than primary.

(Continued on Page 378)

As to Cinecolor

by

W. T. Crespinel

Vice-Pres., Cinecolor, Inc.

DURING the past year, the field of natural-color cinematography has broadened appreciably. There has been a renewed interest in color on the part of producers, and side by side with this renewal of interest, more than a few advances in the various phases of color-cinematography. These advances have been largely in the way of improvements of photographic and laboratory technique, and they give assurance not only of better technique, and consequently better color, but of a more consistent, commercial product.

During this period, a new process of color-cinematography, known as "Cinecolor," has been placed on the market. It combines a number of well established features with several new and—to this writer, at least—advantageous methods of detailed procedure.

It is well known that present natural-color processes are divisible into two classes: the familiar "filter-method," in which, by one means or another, two or more separate images are made through suitable filters, and later recombined in the printing process, and dyed, to form a single colored image; and the "bi-pack method," using two films—an Orthochromatic emulsion incorporating a red filter analogous to the Wratten 23-A, and a standard Panchromatic film; these two are run through the camera with their emulsion sides in contact, and the "red-Ortho" nearest the lens, thereby securing two color-separation negatives in perfect registration, which can be recombined in printing. The former method is undoubtedly superior in the degree of control allowed by the many possible filter-combinations, but it is often subject to fringing, or imperfect registration. The latter usually allows of less photographic control, though a great deal may be done by balanced processing of the two negatives; but it ensures perfect registration, and often greater speed.

Cinecolor utilizes either of these methods, depending upon the nature of the subject. For the straight run of production negative, the bipack method is employed, while for special work, such as cartoons, the filter method may be used. Obviously, the filter method cannot be employed for action negatives unless a special camera, having twin lenses or suitable prisms ("beam-splitters") to allow the pair of images to be photographed simultaneously, is used. But in cartoons, there is no physical action between the pair of exposures, and therefore filters of the rotating type may be used, either before or behind the camera lens. By this

method, unusual effects can be obtained because of the great number of filters and combinations of filters available.

Essentially, Cinecolor is a two-color, subtractive process, synthesizing the colored image from two separation-negatives representing, respectively, the blue-green and orange-red components. For production work, as has been said, the bipack method is used, while for cartoon and title work, the filter method is preferable. Neither of these methods is new; the advantages of the process are to be found, instead, in certain operative improvements in photography and processing.

In photography, perhaps the outstanding feature of the process is the fact that a systematic method of exposure-determination is employed. Cinematographers who have had the greatest experience in natural-color cinematography will themselves be the first to admit that in such work, the customary method—reliance upon the individual's experience and judgment of light and reflective values—is far from perfection. Therefore, in the operation of the Cinecolor process, we have attempted to replace this somewhat inconstant factor with some more nearly scientific method. The method chosen is the one described by A. M. Gundelfinger and J. W. Stafford in the journal of the Franklin Institute (Vol. 215, No. 1, January, 1933). Essentially, this consists of the use of a gray chart, of known density and reflective value, which is held in front of the subject before making a scene. The brightness of this chart is measured by photometric means, and the factor thus obtained is translated into specific photographic terms by reference to a special nomographic chart. In this connection, the new photoelectric photometric exposure-meters should, if suitably calibrated, simplify this procedure very appreciably.

The usual method of photographing a developing-test is also eliminated. A gamma strip is made of each negative emulsion used; this is developed, and densitometric readings made. From this reading, the developing-time for the emulsion is calculated. Thus, providing the above-mentioned method of exposure-determination is used in photographing, a perfect negative will result. This system has been found to be so accurate that only one positive test is needed to determine printing density, although there may be any number of different camera set-ups. The positive test,

(Continued on Page 380)

Cinecolor Processing Department





PHOTOGRAPHY

of the MONTH

"GALLANT LADY"

20th Century Production
United Artists' Release

Photographed by **J. Peverell Marley, A.S.C.**

"Gallant Lady" is decidedly one of the year's best productions from every angle—especially the camera-angle. From the dramatic opening, in which newsreel stock-shots of de Pinedo's spectacular airplane-crash are used to great advantage (almost the first instance in memory in which such stock-shots were really up to production-photography quality), to the final fade-out, "Gallant Lady" is an outstanding example of fine cinematography. Not only is it some of Cinematographer Marley's finest work, but it is Marley in a new mood; deft, subtle, high-key cinematography of a style which this writer, at least, does not remember having seen in any of Mr. Marley's recent work. Without in the least belittling Cinematographer Marley's previous achievements—which have been more than notable—one cannot help commenting that "Gallant Lady" marks a definite advance in his career.

The diffusion continuity is perfect; moreover, there is an unusual demonstration of the dramatic utilization of the several different methods of diffusion, each building to its definite photo-dramatic effect. Incidentally, the laboratory-workers on the production deserve a palm for an excellent print.

"ESKIMO"

Metro-Goldwyn-Mayer Production

Photographed by **Clyde de Vinna, A.S.C.**, with
Josiah Roberts, A.S.C., **Leonard Smith, A.S.C.**, and
George Nogle.

It is safe to say that few, if any, major productions have ever been produced under such tremendous difficulties as attended the birth of "Eskimo." Months upon months of heartbreaking toil in the Arctic, with the thermometer registering forty and fifty degrees below zero; with storms raging, ice grinding, and everything as far as possible from being favorable to production; and yet Cinematographer De Vinna and his associates have carried on, to bring home a most remarkable film. The technical and artistic quality of the film are surprising. Of course, the frigid North does not offer such golden opportunities for pictorialism as do De Vinna's more familiar South Seas; but what there was, De Vinna brought back, as nearly idealized as the material allowed. Moreover, the film constitutes at once an important record of the lives, habits and speech of the Alaskan Eskimo (the dialog is almost entirely in the native tongue) and highly unusual entertainment.

Leonard Smith, A.S.C., deserves the highest praise for his handling of the whaling sequence. It is living, breathing ACTION, raised to higher peaks than anything seen since sound came.

As interesting side-light on "Eskimo" is the fact that the leading role of "Mala" is played by the only Eskimo

cinematographer in the world; Ray Wise (Abgnichiak), who was, as old-time readers of this journal will remember, for many years Dan Clark's Assistant Cinematographer. He gives a more than good account for himself as an actor. It may be mentioned, too, that both the author and the director "doubled in brass," playing two of the few Caucasian parts in the film.

"MY LIPS BETRAY"

Fox Production

Photographed by **Lee Garmes, A.S.C.**

This is the production which, due to its resemblance to "Adorable," was shelved for six months, and preceded by "My Weakness." It is in every way a superior production to its predecessor; far and away the best musical film thus far turned out in America. It is true cinema, in the first place, and excellently directed and played. Moreover, Lee Garmes' photography is exquisite—far and away ahead of even such highly praised films as "Zoo in Budapest." Decidedly, it is Garmes at his best.

Every scene in the production is a gem of composition and perfected lighting—pictorial in the extreme, without in any way distracting the attention from the action. The presentation of the musical numbers—especially "His Majesty's Car"—is excellent, and often quite original; the treatment allows for the legitimate use of many interesting angles. The "gossip" sequence is also interesting from the photo-directorial standpoint. In fact, the only major flaws in the production are the cutting—which could have been tightened to good advantage—and the title, which should have remained as it was originally: "His Majesty's Car."

"SITTING PRETTY"

Charles Rogers-Paramount Production

Photographed by **Milton Krasner, A.S.C.**

This film is at once the most pretentious of Charles Rogers' productions for Paramount, and the best opportunity yet given that rising young man, Cinematographer Milton Krasner, A.S.C. It is exceedingly well photographed—especially some of the musical interludes—and Cinematographer Krasner has also had the benefit of much better laboratory work than he has been privileged to have before. The net result is an interesting little film, with a great deal of interesting camerawork. One must make special mention of the "Fan Dance" sequence, which is by long odds one of the most spectacular dance sequences in any recent film. Done against a plain black background, with dancers clad largely in huge black-and-white fans, and elaborated with the innumerable visual tricks possible with the mirrors concealed in the black panelling of the set, the effects achieved by Cinematographer Krasner are amazing. At times the illusion of depth is uncanny. One might criticize the cutter, however, for having used so few of the long-shots, in which the spectacular qualities of the scene are best exemplified.

"HOOPLA"

Fox Production

Photographed by **Ernest Palmer, A.S.C.**

Another of Cinematographer Palmer's cinematographic idylls. Beautifully photographed throughout; Clara Bow has rarely been photographed more advantageously than in this tale of the carnival business. The production, however, gives rise to a question of cinematic psychology in the manner in which Cinematographer Palmer idealizes the tawdry glammers of the sideshows; has he not idealized too much—done his work too well? It would appear, to this writer, at least, that he could have built to a stronger dramatic effect had he restrained his pictorial tendencies until the love-theme began to develop, thereby creating a visual contrast better in keeping with the emotional contrasts and development of the plot.

"THE PRIZEFIGHTER AND THE LADY"

Metro-Goldwyn-Mayer Production

Photographed by **Ted Tetzlaff, A.S.C.**, and **Lester White, A.S.C.**

This is far from the "special" or "epic" type of film—but it's grand entertainment. Made and re-made under difficulties, it hardly represents the acme of photographic perfection, yet comprises much that is praiseworthy. The handling—photographic and directorial—of the climactic prizefight sequence—a real "Battle of the Century," between Max Baer and Primo Carnera, with Jack Dempsey as referee—is undoubtedly the outstanding bit of technique; it is treated as a silent picture, with practically no dialog, and aided by excellent sound-effects. The photography and cutting of this sequence deserve the most careful study by all cinematographers, especially the amateurs. Amateur directors, too, should study Max Baer's performance in the leading role, which offers evidence of what a capable director like W. S. Van Dyke can do with inexperienced actors.

"FLYING DOWN TO RIO"

RKO Production

Photographed by **J. Roy Hunt, A.S.C.**Special Effects by **Vernon Walker, A.S.C.**, and **Lynn Dunn, A.S.C.**

Inevitably, "Flying Down to Rio" will be compared with its predecessor, "Melody Cruise"—but aside from the fact that both are examples of Producer Lou Brock's distinctive conception of filmusicals, the two productions hardly warrant comparison, for the newer film is, in every department, far and away superior to the earlier one. It is embellished with dramatic and technical novelties, as was its progenitor; but it has a better foundation of plot and personalities, and the technical treatment is immeasurably smoother and more finished.

We happen to know that Cinematographer Hunt made the picture under extremely difficult circumstances; but notwithstanding this, he comes through with flying colors. His treatment of the players is more than up to his best standards; Dolores del Rio has seldom appeared to such good advantage, while Gene Raymond seems far more virile than usual, under Hunt's ministrations. Every scene is a more than ordinarily interesting composition—effective, without being studiedly so. Art Directors Van Nest Polglase and Carroll Clark have furnished strikingly unusual sets, which allowed Hunt unusual opportunities for pictorial camerawork—and he didn't miss a single opportunity. Director Thornton Freeland, too, deserves an orchid for his highly photogenic direction, especially of the dance-sequences. In them he applies the moving-camera technique generously, but in so rhythmic a manner as to be really desirable. Directors and cinematographers everywhere could benefit from study of this phase of the film alone.

Vernon Walker, A.S.C., and Lynn Dunn, A.S.C., in their special-effects work, have added immeasurably to the production; in fact, many of the pivotal sequences depend wholly upon special-effects work of one kind or another for their "punch." Aside from the "Flying Don to Rio" sequence—which literally could not have been made without Walker's special-effects work—there are a number of other sequences which are directly dependent upon trick camerawork. A love-scene, for instance, between the two leads, is made particularly striking by the use of projected backgrounds in which the background is dissolved or "wiped" from one view to another every few feet. The Optical Printer work of Cinematographer Dunn, which so distinguished "Melody Cruise," is vastly matured in this film. He has devised an amazing new array of "wipes," "blends" and other optical transitions for the picture; and these fit beautifully into the production. Unlike those in the earlier production, they do not impress one as deliberate, studied attempts at the outre, but as thoroughly natural transitions.

"DESIGN FOR LIVING"

Paramount Production

Photographed by **Victor Milner, A.S.C.**

When that inseparable team of Cinematographer Milner and Director Lubitsch collaborate on a production, what can one say, other than that it is surpassingly delightful? Each of their films seems a bit better than its predecessor—and "Design for Living" is no exception to the rule. I had thought that "The Love Parade" and "Monte Carlo" marked the highest peaks possible of attainment in the way of polished comedy and coordinated direction and camerawork—and then "Trouble in Paradise" came along and upset all of my previous ideas; now "Design for Living" has surpassed them all. Lubitsch's direction of this sort of subtle comedy rarely leaves one a moment to consider the technique; and Milner's photography is so perfect, yet withal so effortless, that it corresponds perfectly with the rest of the production. The only proper description is "flawless." Whether you are seeking entertainment, or a demonstration of perfected technique, don't miss "Design for Living!"

(Continued on Page 375)



A tense moment in the shooting of "Smoky" with Daniel Clark, A.S.C., at the camera in the pit.



Fred
Jackman,
A. S. C.

Patents and the Cinema- tographer

by
Fred W. Jackman, A. S. C.

THE average cinematographer's attitude toward patents (in so far as they relate to his work) is a peculiar one. On almost every production he makes, he spends a great deal of time and effort in working out new ideas and methods, often new equipment, to enable him to do better work; but once he has perfected and used them, he accepts them as part of the day's work. The idea of patent-protection rarely, if ever, occurs to him; he isn't out to monopolize anything, but simply to turn out the best work possible.

I thought the same way myself. It took me eighteen years, and cost me and my producer many thousands of dollars to learn that patents aren't a sign of monopolistic intent, but simple insurance that you'll be able to use your own ideas, without interference.

Let's take what has recently happened to me as an example. A number of years ago, I worked out a certain method of process photography, using the well-known "Blue Transparency" process. Personally, I believe that I was the first in the field with it; maybe I'm wrong, for, after I had been using it successfully for a number of years, the same idea occurred to somebody else—and he patented his idea.

That left me in a mighty uncomfortable position, for even though I had been using the process for many years in my regular work, the other fellow had been the first to record the idea with the patent office in Washington. Such

being the case, he had every legal right to enforce his rights under that patent. In plain English, he could prevent me from using the process. Naturally, since he felt that I was infringing on his rights, he tried to stop me. The net result has been four years of litigation, and the expenditure of thousands of dollars. And the most amusing part of the situation is that since then I have been allowed a patent on my own technique with the process—a technique which experience has shown to be the only method of getting quality results with the process—and as near as I can learn, the other fellow finds himself compelled to use this technique himself, even though he forgot to include it in his own basic patent!

Now, just how would a patent have helped me in this mixup?

In the first place, had I known what I know today, I would have gotten a basic patent when I first conceived the idea of color-separation process cinematography. I wouldn't have secured it with any idea of getting a corner on process work, but simply as a sort of insurance, so that I could be certain that I couldn't be prevented from using my own ideas. Then, as I developed the technique of using this basic idea, I could have added supplementary patents covering the improvements, all for the same purpose. I would know I was free to develop and use my idea.

It's an absolute certainty that, no matter how original an idea may be, someone else, engaged in the same line of work and trying to get a similar result, will sooner or later parallel the original line of thought, and achieve a similar, if not identical, result. And any way you look at it, when two independent researchers have arrived separately at the same result, and each finds that the other has duplicated his methods and results, a great deal of unnecessary unpleasantness is bound to ensue before the question is satisfactorily untangled.

Then there is the appalling waste of time, effort and money involved. I have a pretty good idea of the cost of developing such a process; it took me a long time to do it, and cost a great deal in work, equipment and mistakes—and since the other fellow didn't know what I had done, or was doing, he undoubtedly duplicated most of my experience. He had to, to get the same results! And it was all so needless! Just think how much progress the industry would have made in that direction alone if whichever of us as came second in the matter had known of the other man's previous work, and instead of laboriously going over the same ground, had used the same ability, energy and money in either taking the problem up where No. 1 had left it, or in attacking the problem of process cinematography from an entirely new angle!

There, to my mind, is where we find the greatest value of patents. Suppose, for instance, that I get today what seems to me to be an entirely new idea in process cinematography. As soon as I have gotten far enough along to have a clear idea of how it ought to work out, I can ask the patent office whether or not they have a record of anyone else's having had the same thought. If their records show that I am in the clear, I can go ahead without fear or wasted effort. If they tell me that Joe Doakes has worked out the same process and been allowed a patent, I can save myself the cost of duplicating his work; then I have my choice of getting his permission to use his process, or taking up the problem from a new angle. Either way, I am benefitted, and so is he.

It would be a serious mistake to imagine that these remarks refer only to special-process cinematography. True

(Continued on Page 380)

A Question ANSWERED

WHAT big picture today does *not* include backgrounds that call for composite photography? The answer is obvious. . . . The really vital point is: what medium to use in photographing these important backgrounds? . . . Eastman has answered that question. Eastman Background Negative, with its remarkably fine grain, its surprising speed, and its excellent processing characteristics, completely solves the film problem of the composite shot. Eastman Kodak Company. (J. E. Brulatour, Inc., Distributors, New York, Chicago, Hollywood.)

EASTMAN
Background Negative



TREND of

THE TIMES

Rubber Lens

• What is termed a "Rubber Lens" is described in *Filmtechnik*, a technical German publication. This is along the lines of the Bell & Howell Varo-lens, designed for obtaining the various focal lengths with one lens. The starting point of this lens is 25mm. However, there are different attachments to make the focal length more elastic. It is being manufactured by Astro.

Police Cameras

• The English police are going in for photography, according to *The British Journal of Photography*. This publication reports that the chief of police of Gravesend has equipped every policeman of his station with a Leica to secure photographic records of accidents and other incidents that may require photographs for accurate data for the courts.

Multiple Exposure

• An interesting item appearing in the *British Journal of Photography* relates of the manufacture of a camera which is of Danish origin and which by the simple turn of a crank gives 48 different poses of the subject on one plate.

Home Made Screen

• The French magazine "*Revue Française De Cinematographie*" gives a formula for the ambitious amateur to make his own screen. The base can be either canvas or the solution can be applied directly to the wall. The formula is as follows:

Water 1 litre
 Gum arabique..... 50 grams
 White magnesite.... 200 grams
 Glycerine..... 10 c.c.

This is applied with a large flat brush and it is claimed to reflect 90% of the light. It is also the claim that it is superior to the metallized screen.

For those who prefer a metallized screen the author gives the following formula:

Burnt chalk 30 grams
 Caseine 35 grams
 Waterglass 10 grams

This must be mixed in a double boiler.

After being warmed add 20 grams of whiting and 20 grams of aluminum powder. This is also supplied to the surface with a flat brush.

Old Man Photography

• The year 1933 marked the hundredth anniversary of the invention of photography. Just a century ago Niepce, a former French cavalry officer, discovered that it was possible to obtain a solar image. Niepce was really looking for an acid engraving process when he stumbled upon this new phenomena.

No Hot Spot

• In Holland it is claimed there is a development of a new type of flood light that does not give a "hot spot" due to its construction. This has a three-lamp arrangement with an adjustable reflector. It is by the moving of the reflector as well as by reason of the three lamps that the "hot spot" is eliminated.

Water Lights

• In the Vita Studio of Vienna Austria a tank has been built for water pictures that is 30 feet deep containing a system of under water lighting built as a part of this tank.

Adjustable Walls

• The new Fox Studios just outside of Paris at St-Puien are claimed to have installed a new type sound stage which through a new system of adjustable walls and top ceiling they have been able to obtain a new perfection in acoustics. They also claim a mixing table that cares for seven sound tracks at one time for dubbing. This consists of four phonograph discs and four discs.

Window Shot

• A practical suggestion for Interior Photography: It is always hard to guess the correct exposure for an interior shot which has windows in it. They usually come out a blurred white and all details of the exterior are lost, usually marring an otherwise perfect shot.

This can be corrected by a very simple method of double exposure. Set up your

camera and make your shot of the interior desired but leave all the blinds of the windows shown in the shot drawn. Then close your shutter but leave your slide of your filmholder out and do not touch the camera. Open up the blinds in your set up and then open up your shutter for a short flash of exposure on the same plate. The result will be a perfect match and plenty details in your windows. This avoids all doctoring on your plate and . . . well, you have learned something—From *La Photo pour Tous*, Paris.

Hocus-Pocus

• Do you know that you can make a complete photographic image disappear by simply painting it with iodine and then dipping it in hypo? Do you want to make a white background or make somebody in the picture disappear? With a little skill and a little fine brush apply your iodine and then let it dry for a minute, throw it into your hypo bath and wherever you applied the iodine a pure white space will appear. If necessary repeat the operation. —From *La Photo pour Tous*, Paris.

Universal Filter

• "Camera", a Swiss magazine, in its July edition, 1933, published an interesting article written by Mr. Kellner who discusses the advisability of using a green filter on both panchromatic and orthochromatic emulsions for proper color rendition in black and white. He further discusses the different methods of manufacturing light filters, concluding that filters dyed while the glass is in a melted state are preferable to either gelatine filters or glass filters coated with dyed gelatine. No reference is made as to the influence or reaction of green filters relative to the original shape of the gradation, especially the gamma.

Fast Lens

• According to a report from Berlin a new lens is being marketed with a speed of F.1. in focal lengths including 20, 28, 42, 50, 75, 100 mm. This is being made by the Jackenroll company. It is being put out under the name of the "Paritar."

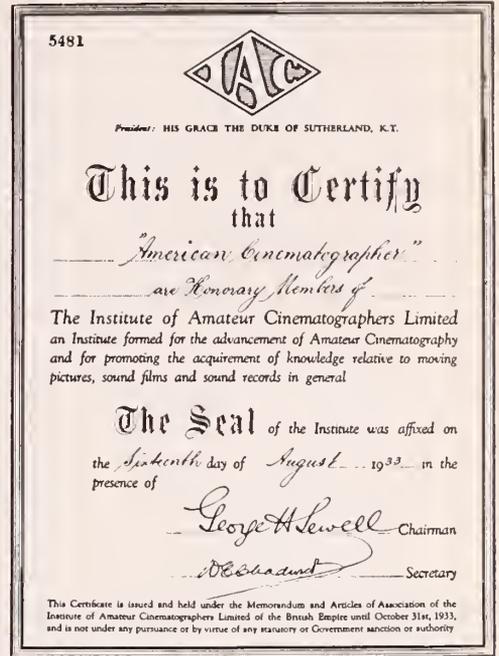
AMATEUR SECTION

Contents . . .

WINNING with an 8mm Camera by Randolph B. Clardy.....	362
EFFECTS in Your Titles by George Lancaster, A.S.C.....	363
INTRODUCING Baby by William Stull, A.S.C.....	364
A B C of Set Lighting by Arthur Campbell.....	365
SHOOTING Close-ups Indian Style by Karl Hale.....	366
LET'S Make a Locomotion Picture by Henry Sharp, A.S.C.....	367
EXPERIMENTNGI with Kodacolor Cinemicrography by Allan C. Woolley.....	368
WINNERS of Honorary Mention.....	370
HERE'S How by A.S.C. Members.....	374
WHEELS of Industry.....	385

Next Month . . .

- We will have a very fine outline for a Home Movie that will intrigue you and tempt you to load your camera for immediate action.
- There will be another installment on the series of Lighting Articles. We have already given you the basis of personal and set lighting. We will carry you further in this interesting study.
- There will be an article on the developing of your own titles when you shoot direct positive. Review of the prize entry pictures indicated many are lacking in this knowledge.
- Of course, those are only a few of the articles that will appear in the amateur section. There will be many more illuminating and entertaining features.



Honorary Membership

Above is a reproduction of the Certificate of Honorary Membership tendered the AMERICAN CINEMATOGRAPHER by the Institute of Amateur Cinematographers of England.

This Institute has made phenomenal progress since its inception a little over a year ago and now numbers in its membership close to 500 enthusiastic cinematographers.

The American Cinematographer proudly acknowledges the honor conferred upon it by the Institute in the tendering of this Honorary Membership. It is also proud of the fact that it was given in recognition of the services so freely given to the Amateur throughout the world.

A perusal of the by-laws, aims and activities of the Institute of Amateur Cinematographers convinces one that it has been organized not only along ideal lines, but is substantially founded in its thought and its purpose and its activities. Its membership gives innumerable benefits to those allied with this organization. It numbers among its associates the biggest of the dealers, manufacturers and distributors on the British Isles.

Its active membership reads like the blue book of England. At its head as president it has His Grace the Duke of Sutherland, K.T. It lists among its patrons about twenty of England's leading personalities. In the capacity of Honorable Secretary it has William E. Chadwick, F.A.C.I., an aggressive, intelligent and personable man who has builded well and firmly.

The American Cinematographer proudly acknowledges acceptance of the signal honor conferred upon it by the Institute of Amateur Cinematographers of England.



Randolph B. Clardy, winner of gold medal for Scenario and Photography, with his 8mm camera.

Editor's Note: Randolph B. Clardy, author of this article, was the winner of the gold medal for Scenario pictures and also winner of gold medal for photography in the American Cinematographer 1933 Amateur Motion Picture Contest. In this article he tells you something of the conditions surrounding the making of the picture which won him these honors.

Winning With An 8mm. Camera

by

Randolph B. Clardy

Winner of Gold Medals for Scenario and Photography

THAT peculiar sensation known to amateurs as the desire to film a story, had me sitting in obscure corners trying to squeeze a story out of my brain cells—one that could be produced without impossible complications and yet approach as nearly as possible the real McCoy.

Driving out toward Newhall one sunny Sunday, I discovered an informal rodeo in progress, just off the highway.

A perfect set-up for more camera fodder. I quickly made the acquaintance of Hosea Steelman, who was conducting the rodeo, and discovered that the rough-riding young boy capturing the center of attraction was not a boy at all, but his daughter. Dolores Steelman can ride and rope with the best of the men, and I was surprised to learn that she could neither hear nor speak.

Later, in showing the results of the pictures taken that afternoon, I became better acquainted with Hosea and his daughter and their thorough enjoyment and interest in the informal reproduction of their rodeo secured by my small camera, served to stimulate my already growing desire to film a western story, with Dolores as the principal. I put it up to them and they were more than willing to co-operate in every way, having the ranch and the horses as well as a truck to transport them on location.

I at once set to work on my story. Almost every scene was mentally photographed, rather than written, by the time we started the work on the film.

I found that visualizing my scenes in advance made it possible to shoot them quickly without wearing out the actors as well as the cameraman.

Hearing of the picture planned, a neighbor loaned a trained Palomero for a lead horse; another neighbor loaned calves for roping; another a wild horse from the Arizona Desert and a double offered his service for the dangerous bucking horse scene. Other neighbors generously loaned their ranches and cattle as the scenes required them.

The picture was made in two days, only to discover at the end of the second day that all of the film had been spoiled through my experimental tinkering with the camera, so that the diaphragm was only half open on all my shots. This was almost too much! And would the characters go through with it all again? They would, believe it or not! However, it was necessary to find a new leading man as the cowboy used previously had gone to a desert ranch. The scenes were retaken with some improvement, which gave all concerned consolation for the added work. And so to a completed picture.

With the aid of reflectors made of beaver board braced at the back and covered with metallic paper obtained at a sign painter's supply house, I was able to use back-lighting in practically all of the scenes. The reflectors built up exposure so that with good sunshine, I was able to stop down to "f-8" on the shadow side and "f-11" on the sun-side. This, in both instances, is a stop below those recommended for the camera without the use of reflectors. These smaller stops allow the 8mm. picture to be projected sharply up to about a four-foot screen size, with a brilliant projector and screen. Ordinarily, a reflector was used on the faces at a three-quarter angle for accent lighting, and additional ones used wherever the surrounding set needed more light. Where the principals moved around, reflectors were set to catch them as they moved into a different area. Five reflectors, 30" x 40", were found ample for the scenes, used at a distance of from twenty to thirty feet. A substantial tripod was used throughout the entire picture.

To smooth out the technique in changing scenes, I used a wipe, which was obtained by moving a black blade across about an inch in front of the lens. The blade was hinged to the front of a box on a screw and the sides of the box extended back to clamp the sides of the camera. The box was painted black inside to prevent light flashes into the camera. One lap-wipe was obtained by checking the footage at the end of a wipe and then running the film on through, reversing and running through again and then again up to the beginning of the wipe. The lapped exposure was then wiped in from this point.

(Continued on Page 373)

Effects in Your Titles

by
George J. Lancaster, A.S.C.

TRIPLE exposures, wipe offs, dissolving and lap dissolving titles bring forth a new era in photographing titles, truly an art in itself. Title departments in major studios have slowly grown into a considerable institution with all sorts of new fangled gadgets and dodads that would fill a small volume if one were to write about them.

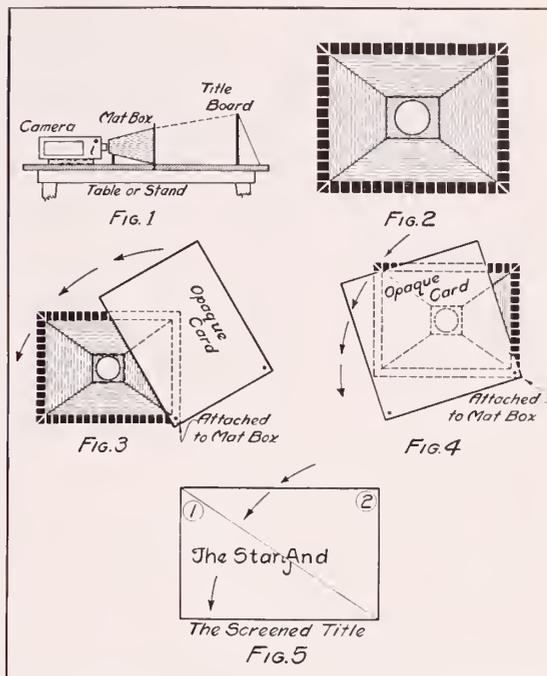
There are mechanical reasons why it is almost impossible to go into lengthy details concerning the operation of them and the resultant effects obtained from them. That leaves me face to face with a problem of explanations which I shall try to write in my humble way. The simpler operations in producing various effects which the 16mm producer might be inclined to try, may make truly novel titles for his or her films providing, of course, he or she owns a camera which has incorporated the variable shutter control, 8 to 64 speed control, hand crank, allowing for winding back the exposed film and the stop motion appliance.

The October issue, the article of Trick Photography, had much written about dissolves and lap exposures. The same principle is applied to the titles, so let us start with captions photographed over backgrounds, by double exposing.

Let us suppose you are covering a football game. Of course you will have some sort of continuity to your story. The campus would be an appropriate background for your main title. Secure a still picture of the campus having at hand the captions on title cards describing the incidents and so forth.

First photograph the picture in sufficient length corresponding to the required length of your title card reading matter. This done, fade out, close shutter, wind back the footage, place the title card on the board, open shutter and start exposing and fade out as you have done on the picture. You have made a unique title with an animation. Now let us suppose it is desired to add a sub-title and you desire to have the main title letterings dissolve out as the lettering of the sub-title dissolves on. Example (1) "Stanford vs. California," the sub-title (2) "Leaving for the U. C. Bowl."

Operation: Photograph the picture background, ample footage exposed fade out, close shutter, wind back footage exposed. Place card No. 1 on board, open shutter and photograph half of exposed film of background fading out on title card. Be sure to note exact footage you started to fade out on and the exact length of fade out, as you have to repeat this operation. Shutter closed wind back to starting point, place card No. 2 on board. With shutter closed start camera in action just at the point where you started the fade out on card No. 1, start fading in on card No. 2, continuing on with the second half of exposed film of the background, fading out at the end as you have done on the background, leaving the title and background fade out together.

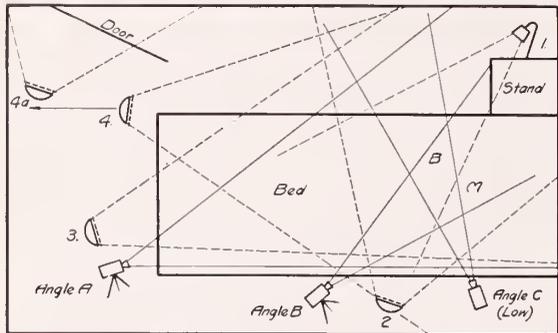


In Fig. 1 you have side view of camera, mat box and title board. Fig. 2 is front view of mat box, note white lines half inch apart. The size of the aperture opening should be twice the size of the title card. Inside of mat box should be painted dull black. Fig. 3 shows the action of the wipe off card in downward motion cutting off title card at each exposure. This gives you the wipe-off. Fig. 4 also shows card in downward motion, but this time instead of closing aperture it is opening the aperture and giving you a wipe-on. Fig. 5 is a diagram of film in wipe-off action, the half marked No. 1 leaving the screen as the other half marked No. 2 comes on.

Now we come to an operation that is somewhat complicated, requiring the building of a large mat box to be placed before the camera lens for producing photographed wipe offs. No doubt the readers have often viewed titles in the theatre, where one caption leaves the screen, the other proceeds either across, right or left, or from up or down simultaneously. Note in the accompanying cut around the outer edges of the mat box are painted white lines half an inch apart. These white lines are used to guide each movement of the black mask card for masking off the entire mat box aperture step by step, in accordance with the white lines. Operation: Set up first title card, generally the main title, focus camera through mat box. Photograph the required footage of main title; stop camera. The next procedure, photograph the title in stop motion. Carefully note footage at this point, for winding back. Now bring the black card into play. Start the card at first top white line and proceed down, stop exposure, move card to next white line, stop exposure, and so on until you have completely blanked off the opening of the mat box. Close shutter or cap lens, wind back the film to the point where you started stop motion, place credit title card on board, open shutter, now start exposing as you had done in the beginning. Instead of closing in on open aperture, start with mat box closed and open downwards from white mask to white mask; stop motion at each movement as you have done when you first started when the mat box is completely opened; proceed filming at regular speed 8 frames per second. Sufficient footage for reading exposed. You have obtained a wipe off effect worthy of praise and so I hope my readers will enjoy this pastime of producing titles of this kind.



Above—on the screen. Below—how it was done. "M" indicates position of Mother, and "B" that of Baby. 1 is a reading-lamp, fitted with a Photoflood bulb; the lampshade keeps the rays from striking the lens in any position. 2, 3, and 4 are 500-watt photographic lamps, fitted with diffusers. 4-a indicates position of lamp 4 for Scenes 6, 7, and 22. Angle A indicates camera position for most scenes; angle B is optional for closer scenes, especially 11-20; angle C is for Scene 21. With Super-sensitive film, this lighting permits work at f:3.5.



Introducing Baby

by
William Stull, A.S.C.

WHEN a cinefilmer (amateur or professional) suddenly finds himself a proud papa, one of his first thoughts is "Where's my camera—I want a picture of the Baby!" But when it comes to actually making the pictures, he's likely to find inspiration an inconstant wench—looking steadfastly away from him. So here's a suggestion for Baby's filmic bow.

TITLE: (5 feet)

MR. and MRS. JOHN SMITH
Present
JOHN SMITH, JUNIOR
A SMITH PRODUCTION

INSERT: (5-10 feet)

Your card announcing Baby's arrival.

SCENE 1: (5 feet)

Fade or Iris in on long-shot of the Hospital where the baby was born.

CUT TO

SCENE 2: (8 feet)

Close-up of Hospital name-plate or cornerstone.

TITLE: (5 feet)

DR. JONES—MASTER OF CEREMONIES.

SCENE 3: (5 feet)

Close-up of the attending Physician — preferably talking.

SPOKEN TITLE: (5 feet)

"Mother and baby are doing splendidly."

SCENE 4: (4 feet)

Long-shot of Mother in bed, smiling happily.

SCENE 5: (5 feet)

Close-up of Mother.

SCENE 6: (3 feet)

Close-shot of door opening.

SCENE 7: (10 feet)

Long-shot. Door opens; Nurse enters, carrying Baby. She crosses over to Mother's bed, the camera following her. She starts to put Baby in Mother's arms.

SCENE 8: (4 feet)

Medium close-shot of Nurse giving Baby to Mother.

TITLE: (3 feet)

INTRODUCING BABY.

SCENE 9: (8-10 feet)

Close-up of Baby, nestled in Mother's arms

SCENE 10: (6 feet)

Close-up of Mother, speaking.

Into this cut:

SPOKEN TITLE: (5 feet)

"He looks just like his daddy, doesn't he?"

SCENES 11-20: (5 feet each)

Ad lib scenes (preferably close-ups and medium-shots) of the Baby—cute expressions, etc. If desired, a shot of Baby taking his lunch, etc.

SCENE 21: (6 feet)

Close-up of Nurse, speaking. (Make this from low angle, shooting diagonally up, as though from viewpoint of someone in bed.)

Cut into this:

SPOKEN TITLE: (3 feet)

"Time's up!"

SCENE 22: (8 feet)

Long-shot. Nurse picks up Baby, and walks out of door, closing it behind her. Camera follows her from bed to door.

SCENE 23: (4 feet)

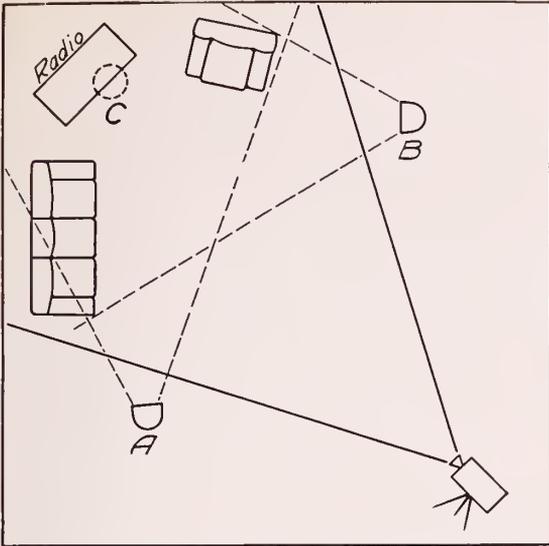
Close-up of Mother, smiling happily. May be shot with slight diffusion.

FADE OUT.

TITLE:

WATCH FOR THE NEXT INSTALLMENT—
COMING SOON!

Allowing for the inevitable "added scenes," bits of action which cannot be planned for, but are too good to miss, and also for the few inevitable "NG'd Takes," this should make a neat little picture of about 150 feet, though it can easily be trimmed to 100, or padded to a full 200. It requires specialized technique, of course, if it is to be filmed in the hospital; there are certain rules and regulations to be observed in most hospitals, which cannot be ignored. For instance, in most hospitals, fathers are never allowed to touch the baby—and seldom to even be in the same room with their infants; therefore, you will notice, "Father" does not appear in any scene in the film. After all, fathers are pretty inconsequential creatures at such a time! In



A and B represent stand lamps while C represents a lamp suspended from the ceiling or otherwise set so as to throw its light directly down for back lighting.

ABC of Set Lighting

by

Arthur Campbell,
Cinematographer

JUST as there is a fundamental light in portraiture, there is also a basic method of lighting a set, and they are not dissimilar.

We know that one source of light, no matter where used, whether to light a person or set will create a shadow. If this light is placed directly in front of the set, facing it in the same way as the camera faces the set we will get a flat light. However, that is the most we can expect from one light.

There are times when shadows are desirable, but we will not go into that phase of lighting here. We will try to establish what might be a basic light for a set regardless of its artistic merits.

In view of the fact that it will be agreed that one light is not sufficient to light a set we will disregard the front lighting and place this first unit to one side as reasonably close to the objects as possible so as to throw the beam across these objects from one side. This will create a shadow which of course is undesirable as one side of the picture will be entirely in shadow.

But let's take an imaginary set such as is sketched on this page and assume that the first unit we have placed is light A. You can readily visualize how this would be insufficient to photograph this set. We now place light B on the opposite side of the set. This will not only kill the shadows from light A but will act as the highlight for all objects on the right side of the set and our first light, A, will kill the

shadows of light B and act as a highlight for all objects on the left side of the set. With limited lighting facilities of this kind it might not be well to diffuse either of these lights as you undoubtedly will need all the light they give to secure a proper exposure. Also this is not a set up that would permit the camera to take in a full picture. By this we mean you would have to confine your shot to a three-quarter picture.

Reduced to its simplest terms, that is the A and B of lighting. The C of lighting will consist of the backlighting of the scene. Obviously on a set like this it will be impossible to place a light back of the furniture or people who might occupy the scene without having it glare right into the lens, or if placed low it will not include the entire picture. So this third light will have to be placed high out of the lens angle approximately at a point that will hit the front edge of the radio. You will note this is outlined with dotted lines on the radio; this is to indicate that it is above the radio. This light must face directly down. While it will flood the entire set and light the back wall, throwing light behind the chairs and radio to mould those pieces, still its greatest light is being poured to rear of the set and will act as a back light, lighting the hair of the people who might be occupying the chair and the couch.

The placing of this light might be a bit of a problem. Obviously there is nothing to hang it on. You cannot use a stand lamp, as the stand would show in the picture. This might be overcome by stretching a wire across from the picture moulding, or if there are windows on each side, a wire from one window to the other and hang this light from that wire, making sure, of course, that it is not in the camera angle.

If you will recall last month's article on the lighting of the human face you will remember that this lighting of the set is not dissimilar. In that set-up a light was placed to the right of the person, another to the left a bit farther away and one for back lighting. The second light placed at a little greater distance was set so as not to kill the shadow entirely, but to give a nice balance over the first and predominating light. It was also suggested that it be diffused.

However, in the lighting of this set, in view of the fact, that a greater area is covered and more people will be involved, it will readily be understood that the lights as placed will act as highlights on those things nearest to them and tend to kill the shadows on those at the greatest distance from them.

The third unit is very important for back-lighting. This, however, will be influenced by the color of the walls. If they are light they may tend to act as reflectors and furnish sufficient backlight of themselves. However, for the one doing his first job of lighting it would be well for him to experiment both ways.

As we said, we have not attempted to bring out any artistic effects. We have not attempted to do any moulding of objects or furnishings, but have merely set down here the simple basis of lighting for a set presumably in a home.

The studio naturally is built and equipped to handle these situations in the very minutest details. Special lamps and special equipment for lamps are available. These would be prohibitive in most cases to the amateur, however, there are a few items that he might build economically which we will endeavor to explain to him in succeeding articles on lighting the set. The first and most important thing in your first step of lighting is to get sufficient light; next to work away from flat lighting and to cross your lights so

(Continued on Page 373)



Shooting Close - Ups Indian Style

by
Karl Hale

A MIGHTY interesting story is told us by Stanley Foster, cinephotographer, who uses a 16mm camera instead of a rifle when hunting.

For years Foster had been an enthusiastic huntsman, traveling into the forests of Canada from his home in Adrian, Michigan, to bag big game. He is still an enthusiast of the hunt, but the 16mm camera has brought a new type of hunting to him and he now brings his prey home on the motion picture film to enjoy his jaunts into the wilds any time he wishes. However, we believe the most interesting part of the yarn he tells is the tip the Chippewa Indians gave him in how to secure scenes of the wily moose.

It was only by exercising a great deal of patience that he secured the information from the Indians, and when he had the information he wanted it was also only by exercising the greatest patience that he secured the pictures he wanted.

Seemingly, the Indian is not a talkative sort of chap, but once he feels friendly toward you he will give you some very valuable information in hunting lore.

Foster wanted a good picture of a moose; in fact, he wanted a good continuity of one of those big fellows. By observation he found that they fed mostly near the shore in the shallow water, but this didn't do him a great deal of good, as he found on several experiments that they swished away even though he was perfectly concealed on shore behind shrubbery.

Frequently the moose wade out into the water until just their heads protrude above the surface, and then reach down in the water feeding on weeds at the bottom. They seem to be able to keep their heads under water much longer than any other of the upland animals. The Indian plan of approaching the moose is first to see that the wind is blowing from the moose to the photographer and then, as the moose in the distance places his head underneath the water to feed, the canoeist paddles as rapidly as he can toward the unsuspecting moose. As soon as it is apparent the moose is coming to the surface, the hunter becomes rigid in the canoe, leaving the paddles in just whatever position they may be at that instant. Even though the canoe continues forward in the water the moose does not seem to mind or possess the ability to distinguish a man in the canoe unless he makes some motion. So as soon as the moose again puts his head underneath the water you again paddle as rapidly as possible and then remain motionless as the head of the moose is seen above the surface of the water.

This operation is repeated again and again until you are only a few rods away from the moose. Then as he puts his head beneath the water for the last time, you either paddle very rapidly or else pull the rope on the motor, if one is attached to the canoe, and run the canoe between the shore and the moose. The moose is very much alarmed on finding a canoe so near and takes to the deeper water. If you are handy with the paddle or have an outboard motor you will have no difficulty in securing all the moves you may desire. Time and again by this method Foster was successful in approaching moose and securing many good close-ups.

The camera method of hunting is more difficult than with the rifle, according to Foster. One must not only keep up wind from his prey, but he must be in photographic distance, and then above all there is the light to take into consideration, an important point in photography, but of no value in hunting with the rifle. The direction of the sun is, of course, doubly important when you are photographing on the water, so Foster seemingly has added more hazard to his method of hunting than the type he has forsaken.

But his moose pictures are said to be worth while. Fine close-ups of his head, a medium shot of him sailing through the water and a long shot of him, all combining to make a fine piece of hunting continuity that will never go out of style.

Foster didn't bring any trophies home with him on his running board, but he did secure several rolls of the finest hunting pictures that he has had the pleasure of taking. He has a permanent record of a hunting trip that he can live over any time he desires.

Let's Make A Locomotion Picture

by

Henry Sharp, A.S.C.

SUPPOSE you are a traveler: why not a reel on Railroads of the World? It can easily be a by-product of your regular travel films—merely an extra shot or two on each roll; but it can be edited into one of the most unusual (and interesting) films in your library.

It doesn't matter in the least where you go—whether you take a round-the-world Cook's Tour, or confine yourself to a short jaunt in your own country; wherever you go, you are sure to find interesting material; even in the railroad-yards of your home town, you can find a dozen little details worth filming. Let's suppose, for the moment, though, that you are one of the lucky folks who is going abroad. What can you plan to add to your railway reel?

The first—and most obvious—idea is to make a reel comparing foreign and domestic railway methods and equipment. On the one hand, you have the massive engines of American roads, designed for long, hard runs, and heavy loads; on the other hand, you have the neat, light, and beautifully-finished European engines, designed for short runs at high speeds, pulling light trains. There is an interesting contrast in itself—a contrast which can be brought out all the more forcefully by careful camerawork. Imagine, for instance, a sequence built around "The Overland Limited," "The Chief," or the "Twentieth Century"; starting with some shots of the train leaving one of the terminal-stations, you could carry it through its run with a series of pictorial shots of it rocketing along the level stretches, or climbing ponderously over the Rockies. Then you could bring it to its destination, and end with shots of the engine, with the engineer carefully oiling up after the run. The keynote of all of this should be massiveness—the majestic proportions of the mountain-locos—low camera-angles for the close-shots; low viewpoints for the long-shots; everything planned to accentuate the thoughts of mass and ruggedness.

To contrast with this, imagine a companion-sequence of such a train as "The Royal Scot" (or its daytime companion, "The Flying Scotsman") on its run from London to Edinburgh. This train is much smaller and lighter than any American trains, so your keynote should be lightness and agility. Higher camera positions, of course; lightings and filterings that depict the train in a lighter tone; and pictorial shots of the famous train scampering along through the pretty valleys of the Midland Counties.

Or, suppose that you would like to show the differences in construction between foreign and American lines: what a wealth of subject material you have here! Even though the basic principles are the same, the application is different:



the very track is laid differently; the coupling devices connecting the cars are different; many European freight (or "goods") trains, even, do not have air-brakes. No European engine boasts a bell—and the whistles are usually a joke. The headlights are different: in England, for instance, by the number and arrangement of the headlamps (or, by day, flags, and similar indicators) you can tell whether the train is a passenger, "goods," or mail-train; whether it is a regular or a special; or even when it is merely a string of empty "waggon's." Here in America, the engineer usually sits on the right-hand side of the cab; in England, he is on the left. And, too, many of the European trains offer unusually interesting opportunities for Kodacolor workers; trains and engines are often painted in bright colors, such as blue, green, and maroon.

Then, for him who has the time and the interest, there is yet another interesting phase: collecting films of transportation novelties. Some of our smaller lines here offer much in this respect; in Europe there are, of course, such unusual subjects as the bifurcated monorail at Ballybunion, Ireland, in which the train runs on an A-shaped track, with a complete assembly of boiler, cab, cars, etc., on either side; and the Barmen-Elberfeld suspended monorail, in Germany, which straddles streets, river, etc. Then, too, there are the many rack or cogwheel mountain railroads in Switzerland (such as the Rigi and Pilatus roads) and, of course, their equivalents in America, climbing Pike's Peak and Mt. Washington. Then, there is the train-ferry, "Drotting Viktoria," which carries the whole train, engines and all, on the Malmo-Hamburg run across the Baltic, from Tralleborg to Sassnitz.

(Continued on Page 372)

HERETOFORE 16mm cinemicrographers have been limited to reproducing their microscopic subjects in monotone, with the result that many subjects so filmed lose much of their real value.

The amateur has at his disposal one of the best color methods available, requiring but little technical knowledge to reproduce colors in a truly accurate and lifelike manner. The application of this process to cinemicrography opens to him not only the beauty of form and rhythm, but of color as well. Apparently the amateur experiences difficulty in combining the optical principles concerned.

It is not the purpose of this article to go into all of the technical phases of photomicrography, or to describe the optical principles involved in the Kodacolor process. This information is available from other sources, if not already known by the amateur.

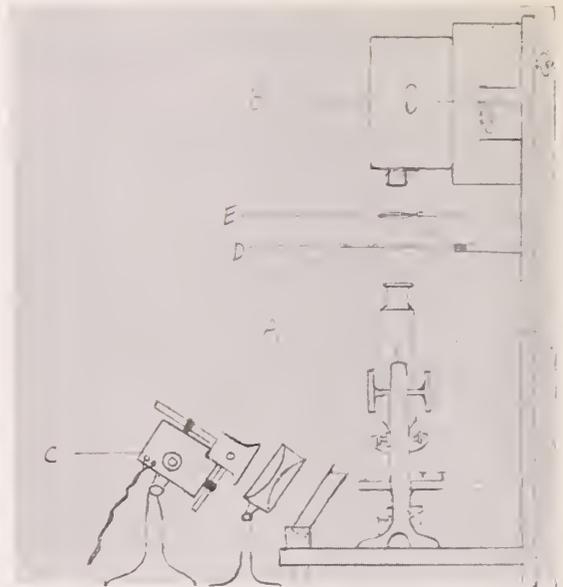
There are two methods by which the Kodacolor process might be applied to cinemicrography. One method requires special optical equipment for projecting the image directly on the film. This optical equipment is not available to the average amateur. The other method herein described, is quite simple and inexpensive requiring little knowledge of optics or photography.

The entire set-up consists of seven units, i.e. (a) a laboratory microscope, (b) a Kodacolor equipped cine camera, (c) carbon arc and water cell, (d) photographic ground glass, (e) an auxiliary lens of approximately 3 inch focal length, (f) a suitable support for these units.

The microscope is placed upon a solid platform and above it is mounted the cine camera. The optical systems of the two instruments are centered as near as possible by inspection. Above the microscope eyepiece and approximately seven inches below the camera lens, is mounted the ground glass screen (d).

The illuminating system consists of a carbon arc so adjusted as to throw a beam of light through a water cell to the microscope sub-stage mirror, which in turn directs this beam up through the lens system of the scope and produces an image of the object on the ground glass. The water cell is filled with distilled water which removes most of the heat from the light and prevents damage to lenses and preparations. Due to the fact that an optical bench, in the usual sense of the word, is not used in this set-up, it is necessary to place a thin ground glass disk, usually supplied with the microscope, in the holder provided below the sub-stage condenser. This disk diffuses the light sufficiently to assure even illumination throughout the entire microscopic field.

The ground glass screen (d) is an ordinary 5x7 ground glass which can be obtained from any photographic dealer. To a large extent the quality of the image to be photographed depends upon this screen, as its function is to pick up the image projected by the objective and eyepiece lenses of the microscope. In order to pick up this aerial image it must diffuse the light to a high degree. This diffusion is necessarily accomplished by the individual grains of the



Symbols in this sketch are explained in text

Experimenting

screen surface. Naturally this diffusion destroys much of the fine detail within the projected image and it is certain that this detail, the essential component of all photomicrography, once destroyed cannot be restored by the camera lens and film emulsion. To be more precise, the problem of detail is one of resolving power. The criteria of such work is to resolve as fine detail as possible, being limited only by the resolving ability of the microscope's optical system and the film emulsion itself. In addition to this problem is the one of illumination. This is more apparent when one realizes that the Kodacolor filter has an exposure factor of approximately 35X and this factor is extremely evident in any attempt to make Kodacolor movies by artificial light.

These problems, ground glass grain size and the light absorbed by it, can be met in two ways; first, by a reduction in grain size or second, by doing away with the ground glass entirely. As previously stated, the latter method can be done, but requires optical equipment not within the range of the average amateur. The author has met this problem by the simple expedient of treating the ground glass screen with ordinary mineral oil and wiping the surface almost dry. This treatment tends to fill up the spaces between the individual grains and effects a reduction in diffusing ability, as well as increasing to a great extent the amount of light transmitted by the screen. However, there seems to be a limit as to the amount of oil that should remain after wiping. Too much tends to destroy the image completely by making the grains non-existent, too little tends to destroy detail and increases light absorption. The exact amount

that should remain can be determined only by experiment. To further overcome the effect of grain the author has devised a mechanism that utilizes a principle not previously applied in cinemicrography. By electrically vibrating this screen at 60 cycles per second the image of an individual grain is blurred to such an extent that it becomes non-existent so far as the film emulsion is concerned. Excellent Kodacolor cinemicrographs can be made however without this expedient where high resolving power is not of paramount importance.

It is important that this screen be mounted upon a parallel plane with the microscope stage, otherwise the projected image will be distorted and it will be impossible to properly focus the entire image. It is also important that this screen be mounted independently of the camera or microscope assembly, particularly when using the vibrating screen principle or stop-motion equipment.

Focusing of the image on the screen is accomplished by the course and fine adjustment of the microscope. The screen should be placed close enough to the eyepiece of the

scope that the projected image be not more than three inches in diameter. If the amateur finds that the ocular absorbs too much light it may be removed with the subsequent loss of its corrective properties which will not seriously impair the results in low power work. This, however, is not recommended.

At this point in the procedure it is necessary to focus this image upon the film. This step is facilitated by having the back of the camera film gate sawed out to full frame size and placing in the gate a piece of matte film. (Matte surface away from camera lens). A dental mouth mirror aids in viewing this image. (See Fig. 2). In order to have this small image sharply in focus and completely fill the motion picture frame, it will be necessary to set the camera lens midway between two feet and infinity and adjust the auxiliary lens (e) up or down for a course adjustment. A fine adjustment is made by manipulating the camera's focusing lens mount. When these adjustments have been made the image as it appears on the matte film must be sharply defined and evenly illuminated. The matte film is then carefully removed and the camera loaded with Kodacolor 1fmi.

Correction of the color filter for the light source used, to give a correct color rendition, is accomplished by rebalancing portions of the Kodacolor ratio diaphragm. It is best to use the old type K diaphragm and reverse it on the filter mount so that the original red portion now covers the blue segment of the filter. Most carbon arcs are too rich in red and if the ratio diaphragm as now placed still passes too much red it can be further blocked with lantern slide binding tape. The amount of this correction can only be determined by experiment, as each type of carbon inherently possesses different relative values of excitation of the three primary colors. The average carbon arc of from 15 to 20 amps. will make excellent color movies when using the new supersensitive Kodacolor film. In photographing deeply stained preparations or those which are quite dense and present a predominance of red, it may be necessary to operate the camera at half speed or increase the light intensity.

Visual focusing of the image during exposure is controlled simply by observing the image on the ground glass. This focusing is done with the course and fine adjustments of the microscope.

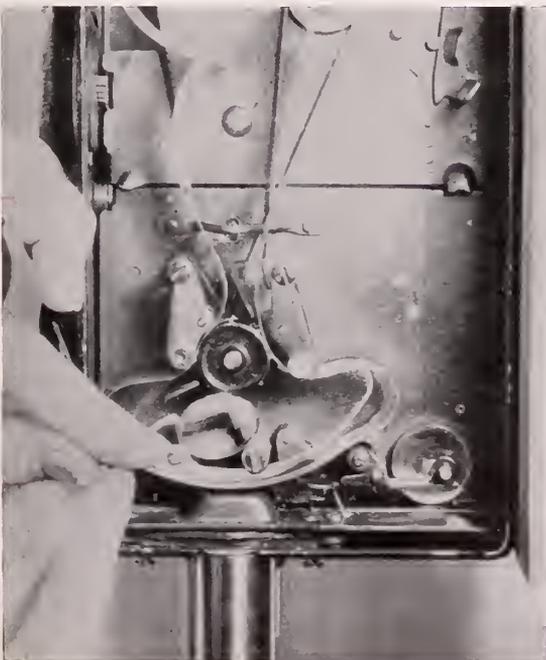
Beautiful cinemicrographs have been made with this setup of pathological tissue sections. When used in conjunction with the stop-motion device previously reported,^{*} beautiful studies of crystal growth have been recorded.

Those amateurs fortunate enough to possess special photomicrographic equipment such as an optical bench, automatic arcs, apochromatic objectives and compensating eyepieces, polarizers, etc., will find a new medium to use in their studies. Those amateurs having but an ordinary microscope and meager accessories, will have found a new combination to appeal to his scientific and esthetic sense.

With Kodacolor Cinemicrography

by
Alan C. Woolley
Cinephotographer

Showing use of dental mirror for focusing



^{*}The American Cinematographer, Vol. 13, No. 10, Feb. 1933.

Many Among Honorable Mention Almost In Medal Class

News of Contests Conducted in Other Parts of World and Results of Los Angeles Cine Club Competition

In some instances it was by the proverbial "hairbreadth" that those who were given medals were not outpointed by some of those included in the Honorable Mention class of the American Cinematographer 1933 Amateur Competition.

"Ciliary Action" by Arthur Proetz, M.D. of St. Louis, Mo.; "Bermuda the Land of Sunshine and Flowers" by Konstantin J. Kostich of Long Island City, N.Y. and "Mr. Motor Boat's Last Stand" by John A. Flory of New York City were among those which worried the judges in their decision.

Others selected for Honorable Mention by the committee appointed by the American Society of Cinematographers include: A. C. Baxter, M.D., Springfield, Ill., for his two-reel picture "Milk, Its Production and Pasteurization"; R. P. Ewing, Caracas, Venezuela, South America, for his one-reel picture "Red Sand"; Edward J. Hayes, Orange, N.J., for his one-reel production "Hansel and Gretel"; Lieut. A. J. Holton, San Francisco, Calif., for "The Quest of The Phantom", one reel; Vincente Mills, Manila, Philippines, for "Filipino Flagellants", one reel; E. C. Rosenberg, Oakland, Calif., for "Yosemite Nature Notes", one reel; M. F. Sissel, Austin, Minn., for "Vacation Reflections", one reel; K. G. Stephens, San Francisco, Calif., for "Beauty Spots", one reel; E. Yeaple, Baltimore, Md., for "Spinal Anaesthesia", two reels; E. G. Thompson, Oakland, Calif. for "Ry-Lock", one reel; Charles A. Gramet, Brooklyn, N. Y., for "Microscopes", one reel, and Elton Fox, Oakland, Calif., for "Waterways", one reel.

Each of the pictures entered in the contest were given a review and criticism by one of the members of the judging committee, which was sent to the entrant. This reviewing service, of course, is not confined to the contest pictures, but is given to those who send their pictures to The American Cinematographer throughout the year.

British Contest

Great Britain also had a very successful competition conducted by the Institute of Amateur Cinematographers. This is the representative organization of amateurs in that country and includes in its membership many of the royalty of England.

At a banquet given at the Mayfair Hotel which was attended by motion picture stars and presided over by His Grace the Duke of Sutherland, K.T., president of the Institute, the prizes for their 1933 competition were awarded.

In Class A the prize was offered for the best Film of Holiday, Trip, Cruise or Aeroplane Flight and was won by M. L. Nathan for his picture "An Austrian Village."

Class C covered the Best General Interest Film and was won by Miss Ruth Stuart Rodgers with her film entitled "Egypt and Back with Imperial Airways." This film was also given the gold medal in the American Cinematographer competition this year in the Travel Film class. In this class a second prize was offered by the Institute and went to M. L. Nathan for his film "Westminster In Winter."

Class D governed the Best Abstract Film. The prize under this classification went to James A. Sherlock for his picture "I Bequeath."

Class E covered the Best Family Interest Film and was awarded to J. B. S. Thubron for his film entitled "Her Second Birthday."

Class G was given over to Color Film. The prize under this classification was awarded to Dr. Maksimilian Paspas of Yugoslavia for his film entitled "Nature In Colours."

Class I included the Best of the Prize Winning Entries. This prize consisted of the International Challenge Trophy, open to the world. It was won jointly by Miss Ruth Stuart Rodger with her film "Egypt and Back With Imperial Airways" and M. L. Nathan with his film "An Austrian Village."

Holland Contest

In Holland the Cine Amateur Club idea has grown rapidly. According to the latest figures from that country the Nederlandsche Smalfilmiga now numbers approximately 400.

D. Knegt, former secretary of that organization, reports that the 1933 contest was a big success. The work in the 16mm. documentary class was exceptionally fine. In this class Mr. A. Carre of Rotterdam won the first prize with his picture "Kleuterschool."

In the Scenario class the league experimented with the entrants making a picture from a scenario recommended by the league. This experiment did not prove highly successful.

In the 9.5 mm. class the outstanding film was submitted by Mr. Clement. This was titled "Phantasy," built around soap bubbles and smoke.

The information coming from this club was very meager, but seemingly they were concentrating their efforts toward

the contest which was held in Paris this year.

Paris Contest

A special cable dispatch from Paris on the outcome of their 1933 contest brought only the skeleton facts on the awards given. These merely designated the country in which the winner lived and did not give details as to name of entrant or name of winning picture. The first prize was won by Japan, second by France and the third by a United States competitor.

Spain Has Spring Contest

The contest to be held by the Amateurs of Spain with headquarters in Barcelona will close on March 5th, 1934. This contest will be wide in its scope and broad in its recognition and will have among its classifications cultural, scientific, pedagogic, excursions and travels, folklore, news, sports, industry technique and general documents as well as scenario pictures.

L.A. Cine Club Growing

Selecting three pictures each from three consecutive meetings, making a total of 9 pictures to be placed in competition for prizes ranging from first to ninth, the Los Angeles Cine Club turned their final selection over to the American Cinematographer to judge according to the methods and standards set down in the annual contest.

The final decision of the judges gave First Prize to R. B. Clardy for "Cattle Country," the 8 mm. picture which ranked so high in the American Cinematographer contest; Second Prize to E. W. Walker for his scenic "High Sierra"; Third Prize to W. J. Seeman for "Prairie Schooner" which took the silver medal in the American Cinematographer contest for "Home Movie"; Fourth Prize to Harrison Chandler for "Ensenada"; Fifth Prize to Wayne Fisher for "Echo Lake"; Sixth Prize to F. B. Skeele for "Pine Cones"; Seventh Prize to Fred Champion for "National Air Races"; Eighth Prize to C. E. Memory for "One Day" and Ninth Prize to R. F. Oden for his 8 mm. picture "Sea of Silence."

Coles Win In New York

• Charles and Robert Coles with their Cinecoles Revue were the winners of the prize offered by the Metropolitan Motion Picture Club. This picture is of the news reel type. "Mexico" by Sidney Moritz was given honorary mention.

John Arnold, A.S.C., Busy

• In addition to his duties as President of the A.S.C. and head of Metro-Goldwyn-Mayer's photographic department, John Arnold found that Christmas nearly doubled his work. It seems that most of MGM's many stars found 16mm cameras in their Christmas stockings—and John is now hard at it showing the noted novices how to make movies.

Studio Effects at Home Movie Cost



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CINÉ-KODAK Special has a spring motor drive with variable speeds from 8 to 64 frames per second, one- and eight-frame hand cranks—the latter being used, as well, for winding back the film when making dissolves or double exposures. Reflex finder for ground-glass focusing with any of six lenses interchangeable on the double lens turret, variable shutter for fades and dissolves, mask slot between lens and film, interchangeable film chambers of 100-foot and 200-foot capacities. Single

frame button for animation effects, and two footage indicators—one on the film chamber showing the amount of unexposed film, the other geared to the mechanism recording accurately the amount of film run or rewind.

The basic model of the Special is equipped with a Kodak Anastigmat $f.1.9$ lens, double lens turret, one 100-foot film chamber, set of six masks. Price and estimates on adaptations to fit specific needs given on request. Write for the Ciné-Kodak Special Book.



DOUBLE EXPOSURE

The first exposure, of the man, is filmed with concentrated lighting against a dark background. Then the film is wound back and a second exposure made, of the girl.



HALF MASKING

The race is "shot" with a horizontal half mask blocking off the upper half of the image. The film is wound back, the other half mask used, and the stop watch filmed.



ANIMATION

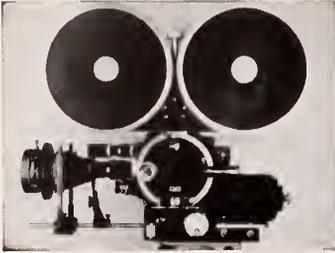
The one-frame hand crank or single frame button can be used for making animation. Half masking or double exposures make animation especially interesting.

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Let's Make a Locomotion-Picture

(Continued from Page 367)

The essential thing, of course, in making such a reel, is to decide what aspect of the subject you want your picture to tell about: then concentrate on it. You can tell a great deal simply by your photographic treatment. For putting over the idea of massiveness, for instance, low camera-angles are the best—often angle shots, with the lower part of the picture well filled by the dark mass of the engine. For portraying the lighter, faster European trains, more straightforward treatment is more satisfactory—usually with either a front-light or a cross-light, to eliminate heavy shadows from the foreground.

If you want to film the trains in motion, a three-quarters front angle is the most satisfactory. In the mountains, a viewpoint where you can show the train crawling around curves is always good—and curves (especially S-curves) are extremely pictorial. When you show a train in motion, it is always better to show some smoke coming from the funnel; this is most frequently found when the train is ascending a grade, when the exhaust steam rushes through the stack in great puffs, and billows out in huge, white clouds. For these shots, use a filter! A fairly heavy one, of course; with regular Pan, a "G" will give about the right effect, or, with Supersensitive, an "F." If you can, choose a day when the sky is really blue, so your filter will darken it, and give the smoke an effective background. And, if you want to, you can "cheat" to surprisingly good effect, getting night scenes by daylight: use a very heavy filter (for Pan, either an "F" or a "23-AG56" combination; for Super-Pan, a 72), and keep your exposure pretty well down. Choose a scene where you can get the train coming along in late afternoon, with a front light, so that the sunlight winks back from the windows and headlights. Then, with your heavy filter, and relatively low exposure, you will get the effect of the train, with lighted windows, roaring through the night. If there is white smoke, this will show up against the black sky very effectively. But, try a transportation film! Whether you deliberately plan it, or make it as a by-product, you'll find it will—properly made and titled—be one of the most popular films in your library; and it's mighty interesting to make!

MGM After Milner

• With Ernst Lubitsch signed to direct "The Merry Widow" for MGM, Victor Milner, A.S.C., Lubitsch's inevitable teammate, is being sought to preside at the cameras. Under contract to Paramount, Milner is trying to find time between Paramount assignments to make the "Widow."

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Winning With An 8mm

(Continued from Page 362)

All of the titles used were large and were photographed from a distance of six feet. The introductory title and cast of characters I was able to letter in poster paint, white and gray, on a black background. The sub-titles were set up with cast letters, three-quarters inch high, in white, upper and lower case; also obtained at a sign painter's supply house. There were placed on a cloth covered background, slanted at an angle by propping one end on a box on the ground, outside in direct sunlight. The camera was used on a high tripod, made solid by a suspended weight. A slanting light struck the letters, throwing a slight shadow on a medium dark background. The titles were few and brief. A western hat and coiled rope were placed half-way into the picture at lower left and a pair of spurs at upper right, also only partly showing. These were kept in a low key to prevent distracting attention. With good sunlight, stop "f-11" was very successful and rendered the titles sharp.

To have my first attempt at a film story prove so successful in competition has a tendency to spur me to attempt bigger and better things (in 8mm), and it goes without saying that my A.S.C. Gold Medals and my "first" in the Los Angeles Cine Club are the big things in life for this particular amateur cameraman.

A B C of Set Lighting

(Continued from Page 365)

as to have one side more brilliantly lit than the other and then to have back lighting.

Study the set you are to light, experiment with your lights before shooting and endeavor to study the effect of these lights so that your eye will become accustomed to balances. We have not touched upon this, as we believe you must first learn how to lay the foundation, but as you go on you will realize how the placing of the lamp in different positions and different distances will give you pleasing effects. You will work out a lighting value that will possibly be something a part of yourself. Attempting to imitate the lighting of another photographer is not always successful, as you do not have the same "feel."

Dr. Dieterich, A.S.C., Returns

Dr. L. M. Dieterich, A.S.C., who has been in the east for some time, has returned to Hollywood. He will continue as a consulting optical engineer for the film industry here.

Coincidence?

• With Mae West playing a lion-tamer in her latest film, Hollywood is wondering if it's only a coincidence that the picture was photographed by LEO Tover, A.S.C.

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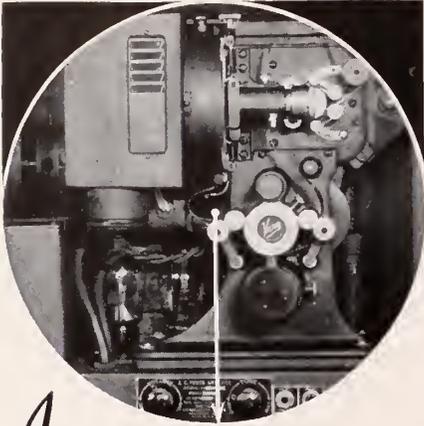
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HOW

FILTERING SNOW-SCENES: "I am greatly indebted to you for your splendid interest in my problems. Your advice has helped me 100 per cent in getting the results I desired. Now, will you please be so kind as to tell me what filter you would suggest for winter landscapes and snow-scenes, with Supersensitive film?"—A.W.K., Yonkers, N. Y.

The question of which filter to use for snow-scenes depends a great deal upon what effects you want to get. If, for instance, you want a definite separation between the snow and the sky, you'll do well to use an Aero 2 or a "G" (or even a deeper filter, such as the 23-A or an "F", if you want an overcorrected, dark sky). If, on the other hand, you don't care so much for the color separation, but want merely to kill the glare and halation from the snow, a Neutral Density filter would be the thing—preferably the 25 N.D. And if you want some color correction, combined with a reduction of the glare, use a 5-N-5, which is a combination of an Aero 2 and a Neutral Density Filter.

—Milton R. Krasner, A.S.C.

THE "LATHAM LOOPS." "What is the "Latham Loop," and what is its purpose?"

—B.V.A., Los Angeles, Cal.

The "Latham Loops" can be found in any motion picture camera: they are one of the very foundations of the process. Open any cinema camera or projector and you will see that the film comes in from the magazine or reel, passes over a sprocket, then makes a loop before going through the intermittent, and past the photographing aperture. It then makes another loop before passing under the sprocket, and out. These two loops are the "Latham Loops"; their actual form varies according to the design of the camera, and ranges from the complete circle of the DeBrie and Askania cameras to the loose U-curve commonly seen in American apparatus. The purpose of these loops is to allow the film to pass the aperture with an intermittent movement, unaffected by the continuous movement of the feed and take-up, and, recently, of the sound-on-film recording and reproducing apertures. Until a truly successful non-intermittent camera is perfected, it can be accepted as axiomatic that no motion picture camera or projector can operate successfully without these loops. This is so basic that it was

one of the cornerstones of the power of the old Motion Picture Patents Co.—the "Film Trust" of twenty years ago. The principle of the loop was patented about 1894 by Otway and Gray Latham and assigned to the Patents Co.; and the mere fact that a camera or projector used them proved (unless the machine was one of the few types made under the "Trust's" license) that the machine, its maker and its operator were infringing the "Trust's" patents. A large corps of detectives harried all independent producers and cameramen, often smashing the offending cameras, and always trying to ruin the exposed film. For years, no independent cameramen would let anyone—even his closest friends—see the inside of his camera; and frequently, the camera would often be loaded in the studio's hidden darkroom, smuggled out for the day's work, and back again at night. The power of the trust was broken, after many years of litigation, by a Supreme Court verdict rendered in 1916, but motion picture cameras and projectors still use the "Latham Loops."

—Gaetano Gaudio, A.S.C.

FILM PRESERVATIVE. "What should I use in my humidortins to keep my 16mm. films in the best condition?"—A.G.L., Chicago.

An excellent formula is:

Water	100 ccm.
Glycerine	2 grams
Oil Eucalyptus	2 grams
Spirit Camphor	2 grams

All of the chemicals should be 2 percent solutions. When mixed, this preservative may be used to moisten the pads in humidortins, and will keep the film in excellent condition.

—Jackson J. Rose, A.S.C.

REFLECTORS. Why are reflectors with gold paper used instead of the silver kind? Is this because panchromatic stock is being used?
 A.R.I., New York City.

● Gold leaf reflectors are very effectively used in connection with panchromatic film. These reflectors absorb a great deal of the blue and violet radiation of the sunlight and thus the reflected light is more appropriate for good chromatic conditions. Charles Clarke, A.S.C., in a recent article in this publication, explained reflectors and touched very clearly on this type of reflector.

CLYDE DEVINNA, A.S.C.

CEMENT FOR ACETATE FILM.

"Is it possible to make your own cement for splicing 16mm. "safety" film? If so, how is it made?"

—R.H.E., Philadelphia.

In view of the fact that excellent cement for splicing acetate (Safety) film is commercially available at very small cost, it is hardly practical to make your own; but if you want to experiment, here is a very satisfactory formula:

- Gelatine 5 grams
- Acetic Acid (Glacial).... 50 ccm.
- Water 10 ccm.
- Methyl Alcohol.....500 ccm.
- Acetone500 ccm.

—Andre Barlatier, A.S.C.

MORE ABOUT FILTERS. "You will recall that some few months ago wrote an article in the *American Cinematographer* re the use of filters . . . covering the K-3, G, 21, 23-A, 25-A, 29-F, and 56-B. I have obtained these filters, and have used them as suggested in your article, but I must confess that I have not been able to get the correct factors, though I used those you gave. The film has been *Petutz Fine Grain Ortho (negative)*, *Agfa Ortho Negative*, and *Agfa Novopan*. In the former, all the results have been underexposure; in the latter film, which is about 1200 H. & D., the result has been over-correction. Will you please help me with the proper factors for these filters for use with *Negative Ortho*, and also for *Pan* and *Super-Pan*?"

—W.C., England.

Your difficulty is simply that you have been using the filters on the wrong emulsions—emulsions to which they are not adopted. Orthochromatic emulsions are sensitized quite strongly to the blue, slightly to yellow, and are almost entirely blind to green and red. Now, the filters from the "G" on, cut out more and more of the blues and yellows; and when these are gone (or even reduced), you've nothing left to make an exposure on Ortho. On Pan and Super-Pan, on the other hand, you have an emulsion which is sensitive to red and green; therefore, you cannot only get an exposure, but secure the color-correction you want.

The answer, therefore, is this: If you want to use these filters, use either Pan-chromatic or Super-Pan emulsions; if you want to use Ortho film, don't use any filters except the K-1, K-2, and K-3, which were originally intended for use with Ortho. Personally, I am inclined to restrict even this list somewhat, as the K-2 and K-3 are rather too heavy, and produce an overcorrected effect; when I used Ortho, I found the K-1 sufficient for most normal work; with Ortho film this has a factor of 3 or 4, while with Super-Pan, the same filter has a factor of 1/4. The following table gives the

factors for your filters with Pan and Super-Pan films:

Filter	with Pan	with Super-Pan
K-3	4	2 1/2
G	5	3
21	4 1/2	2 1/2
23-A	6	3
25-A	10	4
29-F	16	8
56-B	8	4 1/2

As to your experience with Agfa's "Novopan," we can give you little help, since that film is not available in this country. I would suggest that you take the matter up with Agfa's head office, in Berlin.—Wm. Stull, A.S.C.

Photography of the Month

"LITTLE WOMEN"

R-K-O Production

photographed by **Henry Gerrard, A.S.C.**

When a famous and well-loved book is brought to the screen, everyone connected with the production is faced with the difficult task of preserving the idealized visualizations of millions of readers. In the production of "Little Women," this has been done with outstanding success, by no means the least of which is that which crowns the efforts of Cinematographer Gerrard. His was the task of capturing the mood of the story in light and shade—of retaining the mood while bringing to life the atmosphere of the Civil War period. To say the least, this was a difficult assignment; the more so since the action ranged over a wide diversity of dramatic moods, while the sets and costumes (historically correct) held innumerable pitfalls and difficulties for the unwary cinematographer. In all this, Gerrard has succeeded most brilliantly, and made "Little Women" one of the most perfectly-photographed productions of this—or any—year. It is technically and artistically of the very highest order: a combination of excellent personal lighting and a sensitive understanding of visual mood; of realism and idealism, which has seldom been approached. Whether you are interested in the science or the art of cinematography, or merely in search of the best in entertainment, see "Little Women."

Real Home Movies for George Barnes, A.S.C.

• Many cinematographers have made home movies for pleasure—but Cinematographer George Barnes, A.S.C., had to do it for business. Mrs. Barnes (Joan Blondell to you) was needed for some retakes—but, as she was convalescing from an appendectomy, her family physician wouldn't let her go to the studio. So Husband George brought the studio to her! Camera, lights and recording equipment were brought to the Barnes home, and the needed scenes were "in the box" within an hour.

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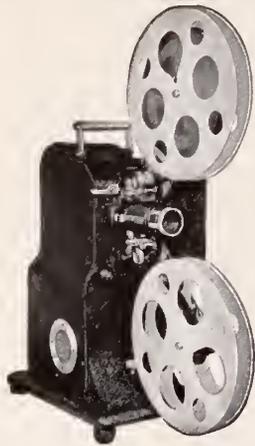
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Panorama Pictures With Your Leica

(Continued from Page 352)

tripod head by cockwork. The film is pulled past a narrow slot and exposed as the camera turns. Panorama pictures for the full 360 degrees can be made with this camera. The fourth method is to use a standard camera and to make several exposures of adjacent angles in sequence, thus making a composite panorama. With this method it is also possible to use lenses of different focal lengths and to cover the full 360 degrees. This is the method used to make panorama pictures with a Leica.

It is easy, interesting, and inexpensive. Moreover, it is quicker than might be imagined. I recall some hurriedly made trips to Death Valley, Yosemite, and Mexico when time was at a premium. Yet on all of these trips, I was able to make a number of panorama pictures along with hundreds of other Leica pictures.

For equipment you will need a tripod with a revolving head, a level, and a simple base-plate for the camera. The tripod that I use is of the ordinary Kodak variety. The level I purchased at the dime store. The simple base-plate I had made. It is illustrated in Figure 1. It is a piece of aluminum, drilled with several holes which are threaded to take a tripod screw. This plate, when placed between the camera and the tripod, enables us to mount the camera so that it can rotate on the axis of the lens. The lens diaphragm (approximate gauss point) is directly over the center of the tripod head. The advantage of this will be seen by comparing Figures 2 and 3. A detachable bracket is provided for mounting the camera in a vertical position, if that is preferable, as is sometimes the case when photographing tall subjects.

Figure 2 represents a panorama of six pictures with angles of 30 degrees each. The camera is revolved at the Gauss point of the lens, i.e., where the rays cross. The six pictures match perfectly in all planes, as the angles are adjacent.

Figure 3 shows a panorama composed of three pictures. Each embraces an angle of 30 degrees. The camera was rotated at its focal plane. From the diagram it will be seen that the pictures match only at one point. Also that some planes are not included in any of the three pictures, while other planes overlap. It is obvious that panoramas made in this manner are not wholly satisfactory, unless the panorama includes objects in only one plane.

The procedure followed in making a panorama is simple. With a 50mm lens, it requires nine pictures to make a 360 degree panorama. However, I make ten pictures, as this gives a slight overlap in

the pictures which is trimmed away when the prints are mounted. This overlap allows me to place my line of juncture at the least conspicuous place, i.e., between two people in a group picture, etc.

Mark off on the revolving tripod head ten equally spaced marks (this will, of course, vary with the focal length of the lens used). Set up the tripod and level it so that the horizontal plane of the camera is level throughout the full swing of 360 degrees. This is imperative. Figures 4 and 5 illustrate how this is accomplished. First level the camera as shown in Figure 4 and then swing the camera and level it as shown in Figure 5. The camera will then be level for the full 360 degree swing.

The camera is now attached to the tripod with the aid of the base plate, so that the diaphragm or iris of whatever lens used is directly over the center of the tripod.

To make the panorama, expose the pictures step by step, in sequence and with the camera advanced each step in a clockwise direction. It is advisable to do this as quickly as possible, so as to prevent any light change or cloud movement. Should the panorama be exposed in a counter clockwise manner, the prints will need transposing. Also you will not be able to tell the effect of your panorama upon viewing the negative, as it will resemble a jig-saw puzzle.

In conclusion, let me add the few following notes. In making your prints for the panorama, contact or enlargements, be sure that each print in the panorama has the same exposure and development.

In lining up for a panorama picture, it is sometimes advantageous to slightly tilt up or down. This can be done if you use a tilt head similar to those used for 16mm cameras. A Meyer universal tripod head can also be used. One word of caution. The horizontal plane of the camera must remain level at all times.

The most satisfactory panoramas are those containing from three to five exposures. More than this becomes cumbersome. The pictures may be mounted as a whole or made so that they will fold up like a set of postcards.

Panorama pictures may also be made with miniature cameras other than the Leica, by adhering to the above directions closely as possible.

Again the miniature camera has demonstrated its wide flexibility. I know that you will be as enthusiastic as I, over the results of this most versatile camera.

A WINTER PASTIME

There is no closed season for the miniature camera. So if you really want a winter pastime for those long Sunday

afternoons, why not start making a collection of snowflake photographs. You might add some of Jack Frost's tracteries to the collection also.

Did you ever examine closely some of these fairy snowflakes as they catch on your clothing on their way to the ground? Did you ever find two alike? There are enough beautiful formations to make a crystallographer's heart pound with joy.

It is easy to photograph snowflakes, using a Leica and one of the copying attachments. The whole outfit is so small that it can be protected from the elements by a large umbrella. So the next time that mother nature starts her arctic display, set up the old umbrella over a bridge table out in the back-yard and call that your studio.

I would suggest the following equipment: A Leica camera equipped with an Auxiliary Reproduction Device (ratio 1:1); this is very small and convenient; a piece of glass about 8 x 10 to serve as the stage for the snowflake, and a couple of concave makeup mirrors, that you can get at the drugstore. These mirrors are for collecting and concentrating the weak light on the snowflake. The piece of glass will permit the snowflake to be partially illuminated from beneath. Use the black velvet several inches below the glass as a background.

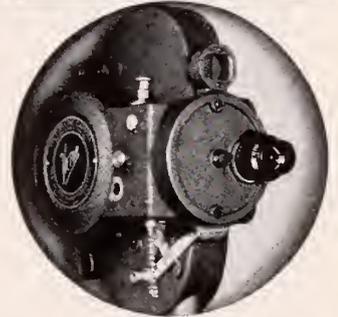
These snowflake pictures can be enlarged and toned blue. If you have a room that you are trying to decorate, try putting a border of snowflake designs around it. If you are a batik enthusiast, here is the start of a wonderful collection of patterns. Try it, and see if you don't enjoy this winter sport.

Motion and Time Study

• While intended primarily as a manual for factory managers and efficiency analysts, "Motion and Time Study" none the less has considerable interest to individuals and firms applying cinematography to practical business uses.

Several chapters, contributed by methods engineers connected with such firms as General Motors, General Electric, Lehn and Fink, etc., give an indication of the business value of cinematographic motion-study records, and their practical application. More important, however, is Morgensen's closing chapter, in which he gives an excellent resume of the practical methods of applying the 16mm. camera to these business studies. Though brief, his outline of the principles and practice of Industrial Cinematography is well-rounded and authoritative. His description of the more outstanding equipment available is excellent and impartial. The book is well worth the while of anyone interested in the uses of motion pictures in industrial work. This book was edited by Allen H. Morgensen and published by McGraw-Hill Book Co.

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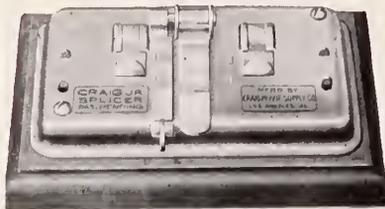
Upper left—The 10FH Premier Hi-Power Victor Projector (shown with #1600' reel attachment). Victor MASTER PROJECTORS list at from \$123.00 up.

Upper right—The all-feature Model 5 Camera with Reverse Action, Visual Focusing, 5 Speeds, Revolving Turret, etc. . . . \$175.00 with 1", F 2.9 lens.

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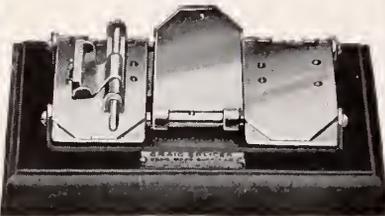


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The "Language of Line" In Photography

(Continued from Page 354)

A picture composed entirely of curved lines is generally inclined to be weak and flabby.

The "S" curve, perhaps the most beautiful of the curved lines, incorporates grace, elegance, and perfect balance. It is sometimes called "Hogarth's line of beauty," and is particularly useful in leading the eye easily into the distance.

The "O" circle shows completeness. It is almost too perfect, too mechanical, and is rarely useful in good composition.

Oblique lines furnish us with a powerful tool with which to express energy, action, motion, joy. In the other illustration, note how the oblique lines of the ground, wheelbarrow, arms, legs and body speak so vigorously of action and power.

The zig-zag line is the line of violence, threat, treachery, weirdness, and horror. A vivid example in nature is the jagged line of chain-lightning.

Where we have lines, we must have angles; acute angles convey ideas of energy and action; right angles are harsh and cold, and because of their mechanical nature should be used sparingly. Obtuse angles suggest restful ease and harmony.

The triangle gives firmness and physical stability to the picture. It has been frequently used, from the Old Masters down to the present time, but it should always be employed in conjunction with interesting curved lines and masses.

It must be borne in mind, however, that when one refers to lines, angles, and geometrical figures such as circles and triangles, the reference need not, by any means, be to the actual lines shown in the picture, but to the basic lines and forms suggested by the actual lines, and the arrangement of the elementary masses of light and shade in the picture. Furthermore, a picture is more often a deft combination of a number of these basic forms than it is a single one of them. However, there will almost inevitably be some such line or lines which will predominate; from this, largely, we get the emotional key of the picture.

But all of this, you object, seems terribly far from the realities of present-day cinematography; the art-directors design our sets, and nature designs our locations; we must photograph them "as is," regardless of whether or not the predominant lines are in accord with the emotional effect we wish to convey. True enough, in some cases the cinematographer is helpless; but rarely so. In the first place, most art-directors have been trained themselves in this language of lines—and nature herself speaks it. Moreover, even when this is not the case,

we have at hand a powerful tool capable of making alterations in any set ever built. That tool is **light**. It is part of our business to know that light, properly utilized, will alter faces, and give depth and roundness to sets and furnishings. And, in a picture, what are these but combinations of lines and masses? If we can remake these with our lightings, so, too, can we remake the lines and masses of the rest of the picture. A little study will always show us the lines which, properly accented, will give us the composition we wish; then we can light our set accordingly, subduing the residue with shadows. If, for instance, we are photographing in front of a church: we can arrange our lights so that the vertical lines of the walls and columns are emphasized—or so that, instead, the horizontal lines of the steps, verandah, and cornice will be predominant. In other words, we can compose with light: highlighting all the lines we wish to emphasize, and allowing what we do not, to remain in shadowed obscurity.

Italy Taxes 'Dubbing'

• An Italian decree, effective November 11, 1933, which requires all foreign motion picture films to be "dubbed" (sound-synchronized) in Italy before being permitted to be exhibited in that country places a tax of 25,000 lire (at present exchange, about \$2000) on each foreign film so dubbed, according to a cablegram received in the Department of Commerce from Commercial Attache Charles A. Livengood, Rome. It is understood that proceeds of the tax are to be used for the development of the Italian motion picture industry.

Italian film producers are granted exemption from dubbing tax on three foreign films for each new national film they may produce.

Theatres in the principal cities are required to show one national film for each three foreign films shown.

Sixty days are allowed for the presentation of applications to exhibit films already dubbed or in process, but all such films are also subject to the tax.

Folsey Gets the Breaks

• George Folsey, A.S.C., is discouraged. His last picture, "Going Hollywood," is drawing "raves" from the critics—and the other day he made a "hole in one" at golf. Still he's blue. Why? On the next round, he duplicated the shot at the same hole—but the ball bounced off the peg!



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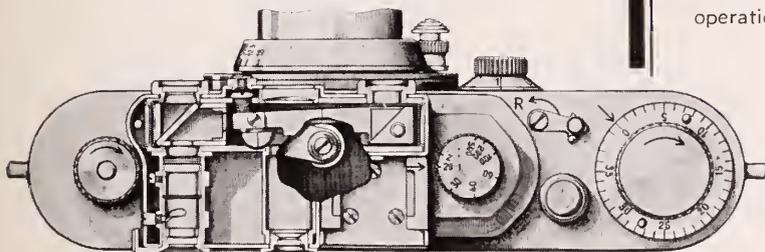
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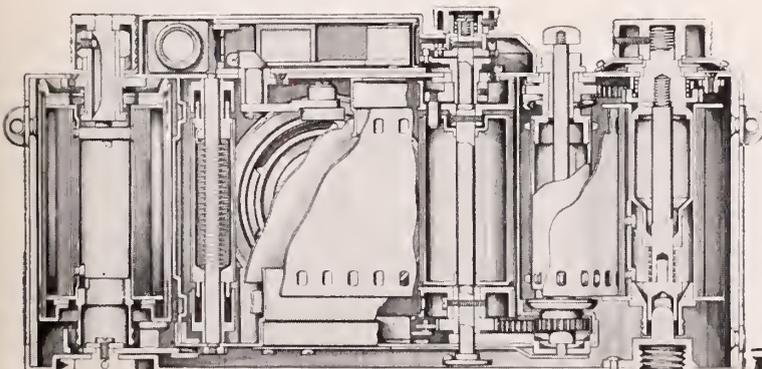
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(Above) Top cross section showing interior of the extremely accurate range finder. (Below) Diagram showing interior cross section of the LEICA.



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Patents and the Cinematographer

(Continued from Page 358)

enough, I happen to be one of those who specialize in this branch; also, we hear more about patents and patent-litigation in this connection than in most other branches of our work; but there are countless other phases in which we work out improvements, often simply as by-products of our regular duties—methods of getting some effect we are striving for, or equipment for making our work better or easier; and a great majority of them are patentable.

I realize, too, that many cinematographers object to patenting their ideas because they wish, so to speak, to make the idea a gift to their fellow-workers. That is a laudable intention; but it is just as likely to put some one of those fellow-workers in an unpleasant spot as it is to benefit him. Suppose, for instance, that I devise some such idea, and make it known to the other members of our profession here in Hollywood. In a few years, let us say, some independent worker, somewhere else, not knowing of the idea, "discovers" it quite legitimately, and proceeds to patent it. Immediately, the fellows here who have been using the idea in their daily work are placed at a disadvantage—simply because I neglected to take the elementary step of protecting my idea, which would, in turn, protect anyone I permitted to use it.

And—don't for a minute imagine that such a thing can't happen. Our entire industry is based on scores of ideas which occurred to different individuals independently. The very film which we use was discovered that way: the official records (not to mention the records of years of litigation) show that the basic idea of coating a photographic emulsion upon a celluloid base occurred simultaneously to two individuals, neither of whom knew the other existed: George Eastman and the Rev. Hannibal Goodwin, whose applications reached the patent office only minutes apart! There is still a great deal of argument as to whether Edison or Lumiere is the Father of the Motion

Picture—their basic ideas were practically identical, their films and equipment interchangeable, and both were presented (though on opposite sides of the Atlantic) at approximately the same time. And the story is the same right down to many of the very latest innovations. DeForest in America and Tri-Ergon in Germany both showed Sound-on-Film talkies ten years ago—and even then, Fritts, Lauste, and others had previously paralleled their work, as Western Electric and RCA were to later.

So, whether you wish merely to be sure of being able to use your own ideas, or to give the industry the benefit of them, the only safeguard is to patent your ideas as soon as they come to you. After all, a patent costs very little (especially when compared to even a successful lawsuit) and no matter what a patent attorney may charge, the security of a patent is worth it. In a word, the cheapest form of insurance, if your ideas are worth anything at all, is a patent. It is not, as some people have stated, an invitation to a lawsuit, nor is it a matter of useless red-tape and attorney's fees: it is insurance, pure and simple—a guarantee, backed by the Government, that your invention is truly yours, and that for seventeen years no one but you, or those you may name, may use that idea.

Miniature Camera Book

● George W. Hesse, who has contributed several articles to this magazine and other publications in the photographic field, has authored a 62-page book which is given the title "The Book of the Miniature Camera." It is published by the Fomo Publishing Company and is another of their series of 50c publications on the popular miniature cameras.

The booklet touches upon many phases of miniature photography in Hesse's usual thorough manner giving details of many small cameras, the use of enlargers, exposure meters, formulas and the many other details which the miniature enthusiast will use in the pursuit of his hobby.

As To Cinecolor

(Continued from Page 355)

incidentally, can well be made of a test-strip of the exposure chart, for even though this chart is monochromatic (gray), one may be sure that when it reproduces properly, as to tone and density, the colored portions of a correctly-exposed and developed negative will likewise be satisfactory. This method, while a marked contribution to black-and-white photography, is of especial importance to color—especially bipack, for the reason that when using eye-judgment in

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developing the two negatives, it is a simple matter to ruin the possibilities of obtaining balanced color positives by incorrect developing of either the back or front negatives, or both.

In using the filter method, the balance between the complementary pairs of negatives is obtained by balancing the filters, and by varying the camera shutter to each filter; the negative is, of course, developed as a whole, being on a single strip of film. In bipack developing, the two negatives being separate, different developing periods can be employed to obtain balanced negatives.

In making color positives, one has to consider making prints which will yield the greatest range of color values possible; with a two-color process, of course, the color-combinations are divided into two parts: in this case, those representing the orange-red end and the blue-green end of the spectrum colors. The Cinecolor laboratory employs double-coated or "duplitzed" positive film, and special dyes and printing methods whereby densities ranging from yellow to deep red, and from the palest blue through into green are obtainable. With this combination, together with correctly exposed and developed negatives, a truly remarkable range of color value is possible—in some instances being truly as close to three-color results as is conceivable with a two-color system.

In addition, the laboratory has incorporated something of an innovation in its processing machine, which not only develops, but also colors the film at a single operation, on a single machine. It is a well known fact that silver images on a positive film will vary as to density with the varying temperatures of the drying compartment. This variation is negligible as far as black-and-white films are concerned, but when the film has to be colored, it is of considerable importance, since the color-values are a function of the density of the print. Combining the processes of positive development and coloring into a single operation reduces this hazard materially, while also reducing the difficulties of handling, exposure to air and dirt, etc. This, naturally, reduces the operations of producing a color-positive to the two operations, printing and processing; the print is made in the accustomed manner, the film is placed in the processing machine, and in a remarkably short time it may be removed, developed, colored, dried, and ready for projection.

Karl Freund, A.S.C., On Vacation

• After finishing the direction of "Madame Spy" for Universal, Karl Freund, A.S.C., is taking his first vacation in fifteen years—but he reports regularly at the studio every day. Says he's been going to studios so long he doesn't know what to do at home!

Introducing Baby

(Continued from Page 364)

some institutions, father may be allowed to appear, and even to hold the baby, if he wears a surgical robe; but as this doesn't make for any great naturalness in the picture, it is advisable to leave Father completely out of the first installment.

When one plans such a film as this, he must, of course, first secure the permission of the attending physician, and of the hospital. Do not fail to ask whether or not there would be objections to your using lights; for while, generally speaking, the use of lights will probably be regarded as preferable to trying to take the baby outside, where you could work by natural light, it is well to make sure.

You will have to work quickly, so be sure to have everything arranged before you call for the baby. With a little thought, you can arrange your lights to furnish a sort of universal lighting, suitable to every shot you will have to make, with little or no modification. The accompanying diagram will indicate a very adaptable set-up of this nature.

Inasmuch as most hospital rooms or wards are fairly cramped, a 15mm. lens will prove invaluable for making such a picture. If you have a turret-camera, it is a good idea to have the 15mm., 25mm. and 50mm. (2 inch) lenses on the turret, and ready-focused, so that you can shift from one to the other quickly, rather than changing the position of the camera for each shot.

Naturally, you must work as efficiently as possible, in order to finish Baby's scenes as quickly as you can. It is, therefore, a good idea to follow professional practice, and shoot your scenes in

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Wichita: Jack Lewis Film Service, 329 Sedgwick Building.
Lawrence Photo Supply, 149 N. Lawrence Ave.

KENTUCKY

Lexington: W. W. Still, 129 W. Short St.
Louisville: A. L. Bollinger Drug Co., Stiltz & Frankfort Ave.
Sutcliffe Co., 225 S. 4th Ave.

LOUISIANA

Alexandria: The Newcomb Studios, 324 Johnston.
Monroe: Griffin Studios, P. O. Box 681.
New Orleans: Eastman Kodak Stores, Inc., 213 Baronne St.

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Auburn: Wells Sporting Goods Co., 52-54 Court St.
Portland: Bicknell Photo Service, 15 Preble St.

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Stark-Films, 219 W. Centre St.
Zepp Photo Supply Co., 3044 Greenmount Ave.
Hagerstown: R. M. Hays & Bros., 2830 W. Washington St.

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Boston Camera Exchange, 44 Bromfield St.
Cinecraft Co., of New England, 80 Boylston St.
Ralph Harris Co., 30 Bromfield St.
Iver Johnson Sporting Goods Co., 155 Washington St.
Andrew J. Lloyd Co., 300 Washington St.
Patescope Co. of the N. E., Inc., 438 Stuart St.
Pinkham & Smith Co., 15 Bromfield St.
Stillfilm Sales Co., 40 Stuart St.
Braintree: Alves Photo Shop, 349 Washington St.
Cambridge: E. M. F. Electrical Supply Co., 430 Massachusetts Ave.
Lowell: Donaldson's, 75 Merrimack St.
Lynn: Moehring's, Inc., 490 Washington St.
New Bedford: J. Arnold Wright, 7 S. Sixth St.
Newtonville: Newton Photo Shop, 92 Bower St.
Pittsfield: E. C. Kilian, 411 North St.
Salem: Pitman Movie Service, 45 Summit Ave.
Springfield: Harvey & Lewis Co., 1503 Main St.
J. E. Cheney & Co., Inc., 301 Bridge St.
Worcester: Harvey & Lewis Co., 513 Main St.

MICHIGAN

Detroit: Crowley, Milner & Co.
Clark Cine-Service, Rooms 203-204 Professional Bldg., 10 Peterboro.
Detroit Camera Shop, 424 Grand River W.
Eastman Kodak Stores, Inc., 1235 Washington Blvd.
H. C. Film Service, 12191 Ilene Ave.
J. L. Hudson Co., Dept. 290.
E. B. Meyrowitz, Inc., 1516 Washington Blvd.
Flint: Gardner Photo Service.
Grand Rapids: Camera Shop Stores, Inc., 56 Monroe Ave.
Photo Service Shop, 44 Monroe Ave.
Jackson: Royal Film Service, 125 Michigan Ave. W.

(Continued on Page 340)

groups, according to the people and set-ups required. In other words, begin by doing all of the scenes in the hospital room (which do not require the baby), together. That will take care of Scenes 4, 5, 6, 21, 23, and possibly Scene 10. Scenes 1, 2 and 3, of course, can be made at any time—even before the baby is born.

The next to tackle should be Scenes 7 and 23, showing the nurse carrying the baby in and out.

Then you can swing your 25mm. lens into place, and, without moving the camera, you can account for Scene 8, and possibly Scene 10. Next, move the camera closer—to a prearranged spot—for Scene 9. This may well be made with the 2-inch lens. The same set-up should give you several of the ad lib scenes between Numbers 11 and 20. You can usually get the baby best from this angle, and, by quickly switching from one lens to another, you can put a good deal of variety into the scenes. For most of these shots, a tripod is highly desirable, as it will not only give you a steady picture, but enable you to work faster, through pre-focusing your lenses. Some of these ad libbed shots, however, may well be made without the tripod, enabling you to snap up bits of action from other angles, without delays.

The essence of the whole thing is to have every shot as carefully planned as possible; to adhere to the script; and to have everything technical—lighting, camera-placement, lens-stops, etc.—arranged beforehand, so that you won't have to give a thought to it while you have those few precious moments of shooting-time.

Supersensitive film, of course, is desirable. Then, since your various lenses will be of different apertures, plan your lighting to suit the slowest lens (which will probably be your 2-inch, most of which lenses work at about f:3.5). Next, stop down your other lenses to the same aperture—and you won't have to think about exposure.

When the film comes back from the processing-plant, all you will need to do is to splice the scenes in their proper order, slip the previously-made titles and inserts into place—and your picture is finished, with the minimum of wear and tear on all concerned!

Results Liked

• Cinematographers Hal Rosson, A.S.C., and Gilbert Warrenton, A.S.C., like "The American Cinematographer." Why? Recently Rosson needed a "Leica" Enlarger, and Warrenton wanted a DeVry camera. They advertised in the "Cinematographer"—and, says Rosson, "I got so many replies I didn't know what to do. I could have stocked a store with the outfits offered!" Says Warrenton, "I wanted a particularly rare model—and I couldn't have found so many in the biggest camera-shop."



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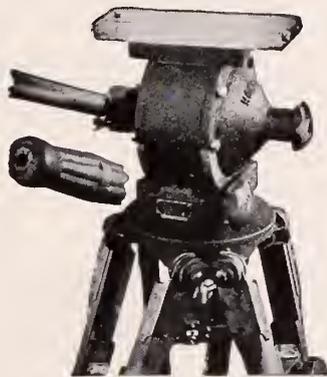
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(Continued from Page 338)

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Saginaw: Heavenrich Bros. & Co., 301 Genesee.

MINNESOTA

Duluth: Eastman Kodak Stores, Inc., 3 W. Superior St.
LeRoy: Ivan E. Meyers, Home Movie Service, 215 W. Main St.
Minneapolis: Eastman Kodak Stores, 112-116 So. Fifth St.
Cospeter's Blue Front, 1006 Nicollet Ave.
National Camera Exchange, 5 South Fifth St.
Owatonna: B. W. Johnson Gift Shop, 130 W. Bridge St.
St. Paul: Eastman Kodak Stores, Inc., Kodak Bldg., 91 E. Sixth St.
H. W. Fisher Photographic Supplies, 381 Minnesota St.

MISSOURI

Kansas City: Eastman Kodak Stores, Inc., 916 Grand Ave.
F. O. Calvin Co., B. M. A. Building, Union Station Plaza.
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Geo. D. Fisher & Co., 915 Locust St.

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Eastman Kodak Stores, Inc., 419 S. 16th St.
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New Rochelle: Artist's Photo Service, 219 Huguenot St.

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The Camera Shop, 531 Market Ave. N.
Cincinnati: Eastman Kodak Stores, Inc., 27 West Fourth St.
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John L. Huber Camera Shop, 416½ Main St.
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Harrisburg: James Left Co., 225 N. 2nd St.
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Langhorne: National Entertainment Service 360 Bellevue Ave.
Lebanon: Harpel's, 757-9 Cumberland St.
Philadelphia: Klein & Goodman, 18 South 10th St.
Camera Shop, 51 N. 52nd St.
G. P. Darrow Co., Inc., 5623-5 Germantown Ave.
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VERMONT

Burlington: G. W. La Pierre's, 71 Church St.

WASHINGTON

Bellingham: Clyde Banks, 119 W. Holly St.

(Continued on Page 342)

Wheels of Industry

Haselton Release

• Among the latest 16mm picture to be marketed by Guy D. Haselton, well known cinematographer of travel pictures, is his justly famous "On the Waves of Waikiki." This is the picture which features Nighthawk, the surfboard-riding dog. The agility and ability of this dog to cling to a bouncing surfboard is claimed to give not only an amusing touch to the picture, but also a few unusual thrills.

Goerz Meter

• Based on a new principle, according to an announcement from the C. P. Goerz American Optical Co., that organization is marketing their new Trix Objecto Meter. Based on a luminous disc of standard intensity it is claimed that natural as well as artificial light can be read with this meter.

Correction

• In a recent issue we reported that 36 installations of Bell & Howell projectors were in use at the Century of Progress. According to information received from the Bell & Howell Company these installations numbered more than 100.

"Hot Spot" Filter

• To reduce and eliminate the hot spot in background projection for process photography, George H. Scheibe, the well known Hollywood manufacturer of filters, has designed a special filter for this purpose for the Hollywood studios. This filter is said to be in wide use with the professional cameraman. It is claimed to be scientifically designed with its deepest density in the center and a gradual bleeding to a lighter tone toward the ends. This filter is used on the Process Projector. Scheibe markets this under the name of "Hot Spot Iris."

Craig Handling Ampro

• Craig Movie Supply Company of Los Angeles announces that they have taken over the Southern California representation of the Ampro 16mm projector. This organization also represents the Stewart-Warner line of equipment in the west and is the well known distributor of the Thalheimer tripod and the Craig Splicer.

An added feature has been made on the new splicer, according to this company, which permits the splicing of both 16 and 8mm film with the same apparatus. PAGE 385

George Kelley, A.S.C., Promoted

• Assistant Cinematographer George F. Kelley, A.S.C., has been promoted for the studio equivalent of "gallantry under fire." During the making of a scene at the Columbia Studio recently, the heavy door of the "blimp" came open, knocking Operative Cinematographer Henry Freulich, A.S.C., unconscious. Kelley held the door shut, and finished the scene. Now it's "Operative Cinematographer Kelley!"

Charles G. Clarke, A.S.C. To China

• Charles G. Clarke, Vice President of the American Society of Cinematographers, has been sent to China by Metro-Goldwyn-Mayer, to film special scenes and backgrounds for Irving Thalberg's production "The Good Earth," which will be directed by George Hill, a former A.S.C. member. Clarke will be in China for some time, and there is a possibility that the entire production may be made there. Mrs. Clarke is accompanying her husband on this trip.

What A Life!

• Some folks might think it good luck—but not Second Cinematographer Cliff Blackstone, A.S.C. "As soon as I finished 'Eight Girls In a Boat,' he complains, 'the studio assigned me to help Milton Krasner, A.S.C., finish 'Sitting Pretty'—a musical with over a hundred chorines. Won't I ever get away from these women?'"

Planes Safer For Dyer

• Aerial Cinematographer Elmer G. Dyer, A.S.C., is fed up with automobiles—they're too dangerous. After flying hundreds of thousands of miles making air-films, Dyer had an accident that laid him up for weeks—in an auto. "Me for the sky," says Dyer; "I want to play safe!"

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(Continued from Page 340)

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 Lowman & Hanford Co., 1514 - 3rd Ave.
 Spokane: John W. Graham & Co., Dept. C, 707
 Sprague Ave.
 Joyner Drug Co., Howard & Riverside Ave.
 Tacoma: Eastman Kodak Stores, Inc., 910
 Broadway.
 Walla Walla: Book Nook Drug & Stationery
 Store.

WEST VIRGINIA

Wheeling: Twelfth St. Garage, 81 - 12th St.

WISCONSIN

Fond du Lac: Huber Bros., 36 S. Main St.
 La Crosse: Moen Photo Service, 313 Main St.
 Madison: Photoart House, 212 State St.
 Milwaukee: Eastman Kodak Stores, Inc., 737
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 Boston Store, Wisconsin Ave. & 4th St.
 W. E. Brown, 327 W. National Ave.
 Gimbel Bros., E. Wisconsin & N. Plankington.
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 Phillips: Jakoubek's, 132 N. Lake Ave.
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SOUTH AMERICA

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Problems of Background Projection

(Continued from Page 353)

the screen and the hot-spot condition is apparent to the observer or camera from any position which is directly in line with the projector, or which is the zero angle. The illumination decreases from this point as the angle increases to the edge of the screen so that regardless of what distance the beam is thrown there is always a zero angle and a maximum angle.

With the above in mind it is apparent that there is very little hope for a correction of the condition in any type of translucent screen which leaves the only other alternative, to change the character of the projected beam itself in order to progressively increase the illumination from the center of the projection screen to the edge in order to compensate for angle loss.

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 one dollar per insertion.

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 head, Mitchell matte box. J. R. Lockwood,
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 glas 3361-W.

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The function of this optical system is to increase the efficiency of the condensing system to a certain extent by lowering the angle of the illumination which passes through the projection lens and using a first relay condenser in combination with a second relay condenser. The second relay condenser is an aspheric lenticular shape and progressively diverges the central rays toward the edge of the

screen, so that a maximum illumination is on the edge of the screen and the minimum in the center. The amount of divergence necessary from this lens is, of course, dependent upon the loss occasioned by the various steps in the process which have been mentioned, and it has been the experience of this writer that on comparatively short throw projection and using a celluloid screen of normal diffusion there must be from 2 to 4 times as much illumination on the edge of the screen as in the center in order to give the screen the appearance of uniform illumination from the camera side.

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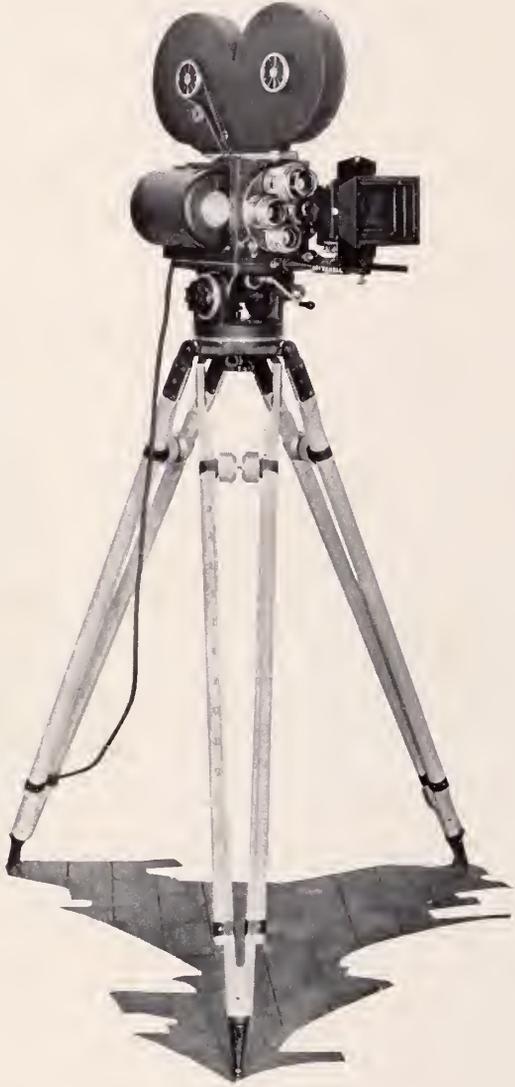
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The Motion Picture CAMERA Magazine

February 1934

PRICE 25c

Published in Hollywood by
American Society of Cinematographers

this issue

Measuring Color Intensities
Cinematographers Short-Cuts
System For Foreign Translations
. . . and Other Features

f for the amateur

How I Made "Life"
Table-Top Sequences
Filming the Music Lesson
Reason For Every Light
. . . and Other Features

Good Pictures
Good Photography
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of motion picture photography.

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Volume XIV FEBRUARY, 1934 Number 10



What to Read

MEASURING Color Intensities by Henri Coulon, B.A.....	396
CINEMATOGRAPHERS Short-Cuts by Walter Blanchard.....	397
THE "Language" of Tone by L. Owens Huggins, A.S.C.....	398
CANDID Photography on the Streets by Clarence Slifer, A.S.C.....	399
NEW System for Foreign Translations by William Stull, A.S.C.....	400
MOTION Pictures as an Aid in Science by Heinz Rosenberger, F.R.M.S.....	403
PHOTOGRAPHY of the Month.....	404
FIREPROOF Process Screen by Arthur Campbell.....	406
TREND of the Times.....	408

Next Month

- Optical Printing has assumed important proportion in the motion picture industry. A comprehensive article will appear next month on this subject by one of the members of A.S.C.
- Another of Huggins' articles on composition touching on another important point of this phase of photography continuing the series.
- Riddle Me This will make its reappearance with an important subject discussed by various members of the American Society of Cinematographers.
- Of course there will be other articles touching on photography and the tools of the photographer in the studios.

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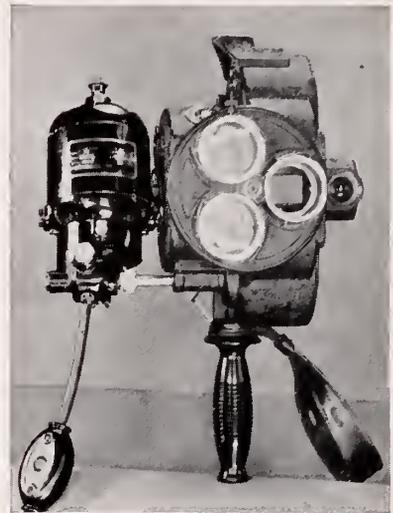
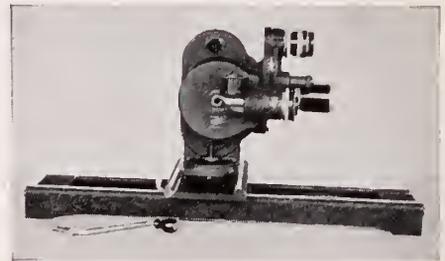


Here's what an EYEMO can do!

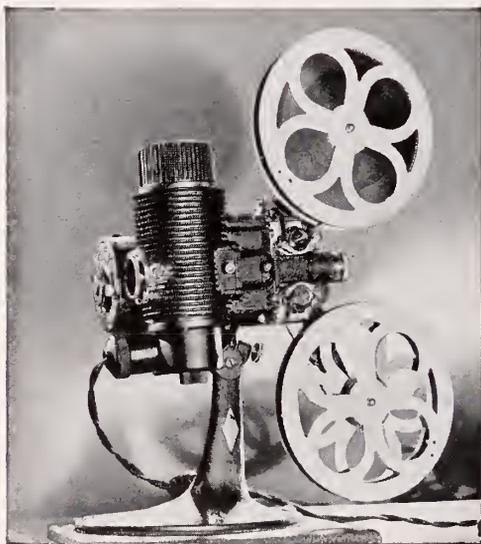
The Bell & Howell Eyemo 35 mm. hand camera doesn't know the word "impossible". Here are some of its many "tricks"—with many more in the bag.

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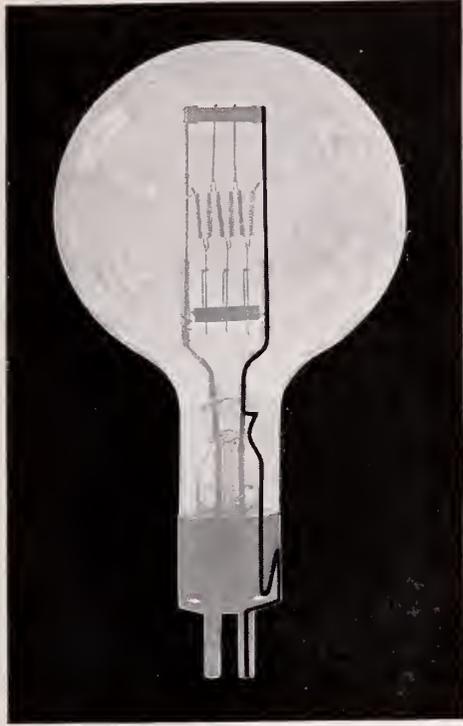
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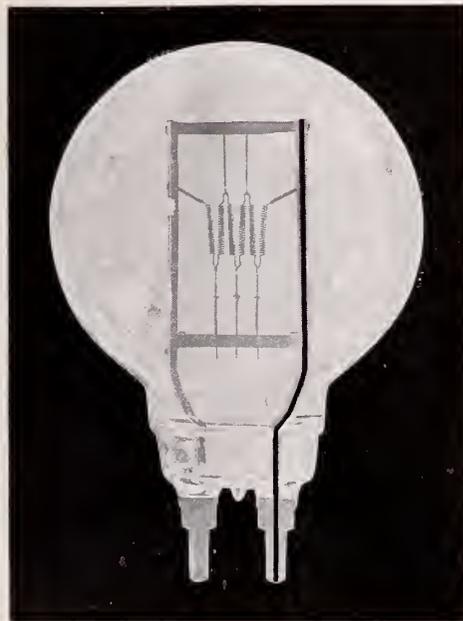
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OLD TYPE 5 KW LAMP



NEW TYPE 5 KW LAMP

WHEN the electricians shift lighting equipment from place to place on the set, the lamp in each reflector is inevitably shaken and jarred. This snaps the filament about as if it had been struck with a mallet . . . or were the end man in crack-the-whip.

What takes the shock of these blows? Suppose we follow on the diagram, the complex path they travel through the supports of one of the old type 5 KW lamps. Down multi-metal supports into a brittle glass stem, up through basing cement and then down to the prongs . . . with leverage and weakness increasing all the way. At any one of eight points, a break may occur, bringing premature lamp failure.

The movies brought a tough life to this lamp—tougher than any previously known. But G-E scientists, alert to motion picture requirements, began work on a lamp that could live it. They tried stems of different kinds of glass. They tried other experiments. The lamps *were* improved, but not enough. Gradually these experimenters reached one conclusion: great improvement would result only from the elimination of the glass stem . . . a part of lamp making since the days of Edison.

To accomplish this they turned to the method of fusing copper and glass developed in making a 50 KW lamp for Light's Golden Jubilee. But a year and a half of intensive experiment and test, without a single let-up, went by before G-E made this new 5 KW lamp available to you. In this new type construction, as the diagram shows, the channeled nickel filament support takes almost a straight line from filament to prongs. Stronger, more rugged, more accurate and better adapted to studio needs, this new lamp has been rapidly adopted by studio after studio.

Improving existing types of lamps constitutes only part of G-E research. Other groups of scientists and engineers are steadily developing new lamps for new requirements. Still other groups constantly test and check a definite proportion of factory production on all types of lamps. Such work breeds confidence. Little wonder that studios from coast to coast use G-E MAZDA lamps for all their lighting needs. General Electric Company, Nela Park, Cleveland, Ohio.

GENERAL  ELECTRIC
MAZDA LAMPS

Measuring Color Intensities

by

Henri Coulon, B.A.

WHILE much importance is attached to the production of films in color, and increasingly so each day, considerable room for improved rendition of blacks and grays in present day pictures is evident. The key to such improvement, in the writer's opinion, lies in a better understanding of the proper use of color intensities, and the necessity of transferring balanced intensities to the screen in related blacks and grays.

In moving pictures, as in any other artistic endeavor, the final result is beautiful and pleasing in direct ratio to the degree of harmony and balance achieved. Spanning the gulf between the technical and artistic units of production has oftentimes proved a difficult accomplishment.

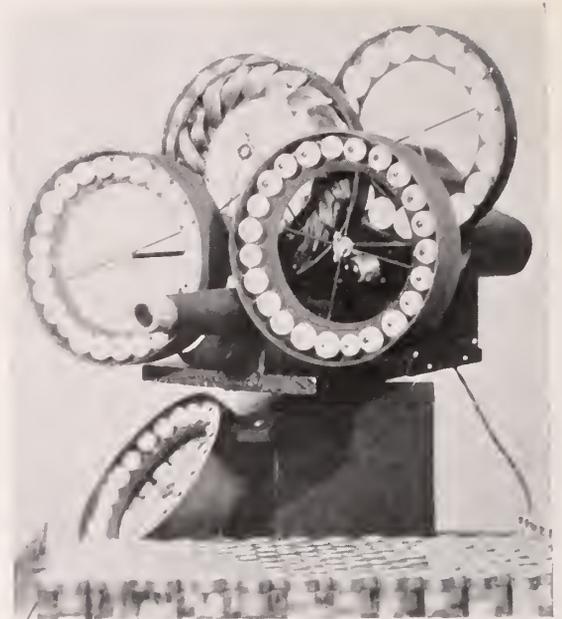
One of the major problems, in looking toward correct and harmonious tonal composition, is in correctly transferring into the gray scale, all the variations in brightness and color of the objects and persons photographed. Not alone to achieve truthful rendition, but to coordinate all the visual and photographic factors involved to form a satisfying and artistic whole.

We have, it is true, traveled far from the day when the camera registered the actors and settings indiscriminately, without regard for the tonal composition. Today, the values and areas of black, gray, and white are carefully planned to increase or diminish the importance of the different parts.

Despite this progress, however, and with due regard for the improvement thus far attained, it is still apparent that there is plenty of room, and much need, for still further advancement along these lines.

Appreciating that a precise knowledge of the photic reflectivity of various objects, such as colored wall draperies, floor covering, make-up, costumes, etc., should be of great value to those individuals responsible for the proper tonal composition of the final picture, there still remains lacking the consideration of one of the most important factors—bringing the individual into relation with the rest of the picture.

With all the laborious effort expended in ascertaining the relation between the visual and photographic values of settings, costumes and objects to be photographed, we find the significance of the proper relating of all these defined photic reflectivities to the judicious enhancement of the players themselves omitted. This is true, especially, as regards the correlating of tonal values of their eyes, hair and skin tones, aside from make-up, to form an artistic whole.



Machine designed to harmonize colors. Front discs contain glass eyes of various colors; center disc locks of hair of various colors and rear disc colors to match complexion.

It has naturally been extremely difficult, heretofore, to bring the actor into the proper evaluation, as far as measurement of reflection factors was concerned. Up to this time, there has been scant opportunity for technicians to make a precise measurement of these factors in producing tonal balance—to say nothing of endeavoring to use such information in a manner so that the players' personalities and effectiveness of characterization could be further emphasized.

Diligent efforts have been made in this direction, with resulting "color charts" established with relation to the individual and for application using certain colors with known reflecting powers, and various trial and error methods. To the writer's knowledge, none of these have been of much apparent success, mainly because they were based to a large extent on personal theories and judgment.

These methods not only failed to add greatly to the proper tonal balance, but in many cases presented additional hindrance to artistic production, because they necessitated in many cases, the use of colors in sets, costumes and make-up which tended strongly to distract the players, and react unfavorably from a psychological standpoint upon those taking part. It is doubtful whether the full significance of the correct use of color psychologically, as it affects the actor, is realized, and to what extent this determines the ability for a fine interpretation.

By bringing into use newly designed, scientific equipment, which has been especially developed to measure personal color radiation, the writer plans to aid materially in mitigating, to some extent, the loss of tonal harmony at present encountered. By means of the data gained from such calibrations, it will be possible to determine the color values best suited to promote more truthful rendition.

The procedure will be to establish visual color radiation factors for the individual, and using this information conjointly with a new scientific system for achieving exact visual color balance, determine the colors best suited psychologically to the individual and blending them to the correct intensities for co-relation with the personal coloring.

This will result in the use of colors best suited to emphasize the coloring and personality of the individual—these colors will be in visual balance with the individuals own

(Continued on Page 427)

Cinema- tographers' Short-Cuts

by

Walter Blanchard

THE unexpected always happens! No matter how carefully one may plan things when preparing for a picture or a location, sooner or later something unexpected is sure to turn up—a need for an effect not originally planned; unforeseen circumstances demanding equipment that isn't available—and then it is up to the Cinematographer to improvise something that will fill the bill. He alone cannot fail, no matter what is encountered! He may have to duplicate regular studio equipment with the crudest of makeshifts; he may have to bend the elements to his will; but—no matter how—he must bring back the picture! The experiences of the various members of the American Society of Cinematographers on such occasions are a glowing tribute to the ingenuity of these men.

Some of the most interesting examples of such improvisation have occurred in the course of the many location-trips taken by Clyde de Vinna, A.S.C., who is probably Hollywood's champion long-distance filmster. When Clyde was in Africa a few years ago, making "Trader Horn," for instance, the company was trekking across the veldt when suddenly they encountered a lion at lunch. "Just the shot we need," cried Director Van Dyke. "Can we get it, Clyde?" De Vinna had his camera and film, but no reflectors—and reflectors are an absolute necessity in Africa. Clyde and his crew hastily rummaged through the truck, to see if there was anything that could be used as a stop-gap. There was! One of them erged with some gasoline cans, another with the leading lady's sleeping-kit. The cans were hastily hammered into flat, "hard" reflectors, the bed-sheets tacked onto poles, to make "soft" reflectors—and before the actors had their make-up on, the camera staff reported themselves ready!

Another time, Director Van Dyke called for a crane shot—and the nearest camera-crane was in Hollywood, 7,000 miles away! Nothing daunted, Clyde proceeded to produce a crane. Using a parallel for a foundation, he anchored some forked branches to it, running a relatively straight limb between them, as a bearing for the crane-arm. The boom itself was simply a long branch, slightly curved at the bearing-point, which was laid across this horizontal limb. At one end perched Clyde and the camera; the other end was moved up and down by a block-and-tackle, operated by man-power.

Cinematographer Daniel B. Clark, A.S.C., in the course of over nine years as Chief Cinematographer for such West-



At top, improvised crane created by Clyde DeVinna in Africa while making "Trader Horn." Lower photo, ingenious mounting for camera on vertical fin of plane—steering of ship panoramed the camera.

ern stars as Tom Mix and George O'Brien (Clark recently finished his 85th production with Mix) became one of the profession's most fruitful improvisators. The years of experience in such work taught Clark never to start a location-trip unless prepared as fully as painstaking forethought could make him; yet nevertheless, the unexpected often showed up. Once, for instance, when on location in Washington, making some snow-sequences, the Director suddenly decided that he must have a night-scene of a certain picturesque cabin. Clark had no reflectors (they would not have been needed in the ordinary course of the work); no lights; not even any flares. Ordinarily, one would have said that under such handicaps, the best thing to do would be to tell the director to forget his night-scene. But not Dan Clark! He literally made the elements give him his night-effect. Have you ever noticed how, when the sun reaches a certain angle, late in the afternoon, its rays are reflected back from windows, for all the world as if the rooms behind them were illuminated? Dan Clark had noticed it—so he waited until the sun was at the proper angle, set up his camera to catch the reflections, slipped in a heavy filter to correct for his night-effect—and the scene was made.

Another time, on location at a remote whaling-station in Alaska, he was suddenly informed that nothing would suit the director but a "dolly" shot—and there wasn't a "dolly" within thousands of miles. So he built one. One of the whaling steamers was going to Kodiak the next day, for supplies; and Dan remembered seeing the remains of an antique Ford in the Kodiak junkyard. The axles and wheels of this flivver, plus a few two-by-fours and some planking, gave him his "dolly"—the director got his "dolly" shot—and everyone was happy. On the same trip, the director decided that a shot of the harpoon-gun, shooting straight

(Continued on Page 425)



An example of high key lighting . . . note absence of blacks with whites and light half-tones predominating.

The "Language" of Tone

by

L. Owens Huggins, A.S.C.

LAST month we considered the "Language of Line," with the idea of bringing out the importance of lines in expressing certain moods or emotions through photographic and cinematographic means. In this article we will try to show that "Tone" speaks an equally expressive language.

When used in connection with Graphic Art, the word "Tone" refers to the variation of light and dark in a picture. The Italians term it "Chiaroscuro"—literally "light and shade"; the Japanese call it "No-Tan"; and in English we often speak of it as "Key." To the eye, this visual "key" can speak as expressively as can the "key" of music; in fact, there is a considerable similarity between the two applications of the word. In music we have a definite range of tones; consider the keyboard of a piano, which gives the artist a range of nearly a hundred tones with which

to paint his sound-picture. Ordinary music will be played on a fairly limited range of keys around the middle of the keyboard; but lighter, more sparkling selections carry him farther and farther up into the lighter, treble register, while heavier harmonies call for greater dependence upon the sombre, bass register. Visual "key" is much the same; it can be imagined as a sort of keyboard, ranging from the heaviest of blacks up through an almost infinite series of gradations to the lightest of greys—and finally pure white. And, just as a musician can choose his musical tones to suit the desired mood, so, too, can the painter or photographer vary his visual tones—in other words, his "key"—to suit the mood he wishes to convey.

Thus, a normal key means that we find the relations of light shade in our picture approximating that of nature—utilizing, so to speak, pretty nearly the whole of the keyboard. A high key means that we have a predominance of the lighter tones in our compositions, with very few shadows (and those usually light)—quite as though we had utilized only the treble on our piano. A medium key means that our tones have been compressed into a series of greys: the high-lights being light greys and the shadows dark greys, with only a rather limited scale of intermediate tones in between—quite as though we were playing on only the middle octaves of our piano. A low key shows a majority of dark tones, with very few light ones—just as though we utilized only the heavy, bass notes on our piano. In painting, Rembrandt's work is a typical example of perfect low-key effects. By examination of his paintings, it will be found that as a rule less than 10 per cent of the area of his canvas is shown in light, the remainder being in deep shadow.

Now, just as the key of music plays a vital part in producing the desired emotional response from the hearers, so, too, does the visual key play a predominant part in creating emotional response in a beholder. By far the greater portion of our impressions are gained visually; and in the years we have been making motion pictures, we have found that by the understanding use of this tool known as "visual key," we can subtly convey dramatic impressions to the subconscious mind of the beholder, making his mind and emotions more receptive to whatever dramatic effects the scene's action and dialog may convey.

Just as every scene has some definite dramatic mood—some definite, emotional response which it seeks to arouse within the beholder—so, too, has each scene—each type of action—its definitely indicated visual key, which harmonizes with that emotional key.

With a high key, we can express happiness—gaiety—joy—delicacy, and freshness. In the accompanying illustration we see that the high-key effect helps to bring out the characteristics of the young girl. Here is suggested the youth and grace of the sitter, joy and freshness. To attempt to portray this sketch in a low key would spoil the effect we wish to achieve.

An extremely low key will suggest restraint—severity—sombreness; and sometimes grief and sordidness.

A medium key, with a predominance of greys, but lacking any bright highlights or extreme shadows, obviously suggests fogginess; hence, mystery and vagueness.

Its opposite, an equally limited tonal scale in which the intermediate tones are suppressed, leaving only the extremes of highlight and shadow, suggests the bizarre—often the supernatural or horrible—always the unusual.

Here, therefore, we find another valuable tool by which we can bend photography to the artistic purpose of expressing definite emotions, in harmony with our story values.

(Continued on Page 429)

Candid Photography on the Streets

by

Clarence Slifer, A.S.C.

IN THE vast field of photographic matter, one of the most interesting subjects is the man on the streets. The streets are the cross-sections of humanity, for on them are found the rich, the poor, and those so often referred to as the common people. On this great stage is found comedy, drama, pathos, and many things of human interest.

The streets are subjects with many moods. They change with the weather, the locale, and the time. People, clothes, architecture, modes of transportation, shop-windows, and many other things, all change. To perceive the vast change that time alone makes, look at some photographs made only a few years ago. Glance through your college or high school year-book. Clothes that appeared stylish and normal to us in those days look the least bit "corny" today. Styles that women called "simply stunning" in 1929 are just that in 1934! Mothers and daughters looked alike, with knee-lengthed skirts, loose frocks, and cloche hats. How odd the styles of today will seem tomorrow, with women now wearing puffed sleeves and creations that make them resemble football players. These rapid changes are what makes street photography so valuable, if only for sentimental reasons.

Both photography and painting were born, by the desire of man to impart to others, his mental creations or visual impressions. Photography has certain limitations and handicaps. It is not as quick and as flexible as the eye. The painter with a little imagination can portray these fleeting, visual impressions. The quality of the light, the speed of the action, the depth of focus of the lens, the flexibility of the camera, and the ability to sense interesting situations before they actually happen are problems that the cameraman must deal with. However, photography has an advantage over painting, in its ability to record in minute detail the scene and to make many scenes in a short space of time.

As an artist carefully chooses the most satisfactory medium with which to portray his subject, so must the cameraman exercise the same degree of care in selecting his equipment. The most satisfactory solution of the camera problem in street photography is the selection of a miniature type of camera. It is readily seen that this camera will better meet the conditions found in this field than any other camera.

Today, there are many types of miniature cameras. All have their specific advantages and all can be used for this



Top photo might be captioned "To Spend Two Bits or Go Without," however, it was shot in fair light; 1/40th sec.: f.5:6; 50mm lens. Center picture made on dull day, drizzling rain; 1/40th sec.: f.4:5; 90mm lens. Bottom picture: Dull light; 1/60th sec.: f.4:5; 35mm lens. All made with a Leica on Dupont Superpan film.

type of photography. My own choice is the Leica. I have successfully used one for candid pictures for several years. It is very compact and inconspicuous. With a small amount of movement of one hand it is possible to make an exposure and to prepare for another without looking at the camera. The advantage also of being able to use lenses of different focal lengths and various types of view finders is obvious.

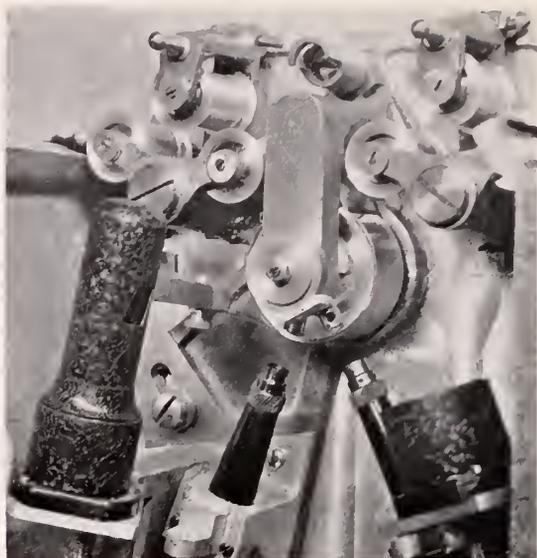
Recently, we have heard and seen much of a type of photography described as "candid photography." It is nothing more than the making of unposed pictures without the subject's knowledge. They are extremely frank pictures and are natural with one exception. Pictures made of people, while they are talking or moving about, sometimes portray them in ridiculous positions. These pictures are not natural. They are photographs of only one step

(Continued on Page 424)

New System For Foreign Translations

by

William Stull, A.S.C.



Close view of Reagan-Day Synchronizing Machine, showing sprocketless drum, vacuum-perforations, vacuum intake, and double photocell system (the photocell of the right-hand unit removed to better show the drum). Left-hand photocell, actuated by exciter-beam reflected by mirror, operates relay circuits; right-hand assembly operates reproducer.

THE problem of foreign distribution needs no introduction to anyone connected with the motion picture industry. Where a silent picture commanded a world-wide audience, a talking picture finds its audience reduced to the comparative handful who understand the language of the recorded dialog. Economically speaking, as well as artistically, this has become one of the gravest problems of the day; for where, only a few years ago, half or more of the gross income received by a film might accrue from its foreign showings, today this percentage has declined almost to the vanishing point—and diminishing domestic returns can certainly not replace it.

The leaders of the American film industry have not been blind to this situation: for nearly five years producers and technicians alike have exercised their ingenuity to overcome the apparently unsurmountable obstacle of speech. To date, three basic methods have been used in attempts to cope with the situation.

The first, and most obvious, was the making of "Foreign Versions" of domestic films, with players actually speaking the foreign language. For a time, practically every major studio maintained—either here or abroad—a staff for the making of these "Versions"—stock companies of French, German and Spanish speaking players, with writers and directors equally familiar with the idiom in question. One firm even went so far as to establish a large studio in France, in which foreign versions of its American productions were re-created in sixteen different languages. But this method has not proven satisfactory, not alone because of the added cost, but because the world audience had been "sold" on American players, and did not take kindly to imitations.

The second method—still largely practiced—was that known as "Voice-doubling," or "Dubbing." In this, the picture of the domestic version was used, synchronized (after a fashion) with a sound-track recorded by foreign actors, speaking an approximation of the original dialog. This

has the merit of being less expensive, and of giving the foreign customers their American favorites: but it is difficult—if not utterly impossible—to maintain an acceptable approximation of synchronism, and yet retain the spirit of the original dialog and action. For every successful example of such "dubbing," one can count a dozen rank failures. In some countries, these versions have been literally laughed and boo-ed off the screens, while there are many instances of hitherto immensely popular stars being stripped of their popularity by crudely dubbed films.

The third—and least satisfactory—method is that of superimposed foreign-language titles. In such an instance, the film in its original version is shown with titles in the foreign tongue superimposed upon the picture, wherever explanation seems needed. This method obviously minimizes the entertainment value of a production, often grossly distorting the story, or eliding important, but untranslatable, points, and the superimposition of the titles naturally sacrifices photographic quality to a marked extent.

A new method, more perfect than any of these, is urgently needed: and such a method has recently been presented to the inspection of the Research and Testing Committees of the American Society of Cinematographers. Known as the Reagan-Day Screen Translation Process, it embodies much that is new, either in principle or application, and, as a whole, it shows considerable promise. Associated in the development of the process are G. P. Reagan, its inventor; C. S. Franklin, Sound Engineering counsel; Jean Goudneau, Language Consultant, and James S. Brown, Jr., A.S.C., General Technical Advisor.

The new system, while essentially a development of the dubbing method, is based on a more exact study of linguis-

tics and upon some very interesting mechanical developments. Taking as the starting-point of their development the unquestionable fact that foreign-language audiences want American players, speaking (directly or otherwise) whatever idiom may be comprehensible to that audience, and that this must be done in such a way as to preserve the illusion of reality (i.e., in perfect synchronism, and in a perfect translation), the inventors have naturally decided that an improved system of voice-doubage would clearly be the required answer to the problem. The next step was a study of the results of existing voice-doubling systems; and it was found that the chief shortcomings of these lay in the closer shots. In these shots, if the synchronization were approximately correct, the meaning was almost invariably distorted; and if the meaning of the original story were maintained, synchronization was almost invariably impossible. In the majority of the longer shots, the existing methods could be retained acceptably, as synchronization—or lack of it—is rarely apparent.

The solution of the problem, then, lay in some method of securing the desired effects of naturalness, expressiveness and simplicity in translating the closer, more intimate scenes, where both expression and synchronization play so vital a part. Obviously, the actors' lip-movements must correspond with the inflection of the sound; equally, the dialog must express, as nearly as possible, the thought and spirit of the original scene. Such an effect might be achieved by the expedient of having the original actor make special close-ups actually speaking the foreign dialog, the sound-track of which could then be replaced by the more perfect speech of the voice-double. This was not considered satisfactory, however, because it was found that very few actors can give a convincing performance (even in a short scene) while speaking a language to which they are not thoroughly accustomed. Moreover, they would speak it at a tempo different from that of the rest of their performance, making it necessary, naturally, to record the foreign dialog for these shots differently—often more haltingly—than that of the rest of the picture. And the natural effect is dispelled.

However, reasoned the inventors, why could we not devise a code, by which our actors could speak phrases or sentences which are reasonably intelligent in their own language, and which will synchronize perfectly with the required lip-movements for the foreign dialog? With the assistance of M. Goudneau, this was done, and a code-book of English, Spanish, French and German is now being completed. By this means the coding of any scene is simplicity itself.

The procedure followed in translating a film by this method is as follows: First, the dialog is translated; the translation may be as free or as literal as desired to suit the foreign audience for which the film is intended. When this is studied, it will be found that the majority of the scenes—all of the longer shots, in which lip-movement is not greatly noticeable—may be doubled by existing methods. The scenes in which such existing methods cannot be followed—the more intimate scenes and close-ups—are then coded. Thereafter (either during actual production, or for a short period of retakes), the original actors remake these "key scenes," acting their original parts, but speaking the coded dialog, using English words which give the required lip-

movement. These scenes may be photographed silent, but it is preferable to record the coded dialog, which simplifies the synchronization afterward. Since the sound-track made at these takes is not actually used, the director or a language consultant may cue the players in their reading of the coded speeches.

In the completed, foreign-language film, these coded "key shots" are used, with carefully recorded, foreign-language sound-track perfectly synchronized. The synchronization is rendered easier by the use of an ingenious reproducer, which may be used either as an auxiliary to the cutting process, or as part of the recording equipment. The device consists essentially of a special sound-reproducing head heavily filtered against vibration, and fitted with an extremely quick-acting, magnetic clutch. The film is led from the feed reel, over a series of idling-rollers, past the sound-sprocket, which is, in reality, not a sprocket but a drum, and similarly back to the take-up. This sound-drum, which carries the film past two scanning-heads, is hollow, and pierced with several rows of small, spirally-arranged holes; by means of these, the film is held on the drum more tightly than on a sprocket, by a suction or vacuum system. This eliminates any of the "flutter" so inescapably connected with any sprocket system. The two sound pick-ups, though identical, serve different purposes; one (seen at the right in the illustration) reproduces the sound in the normal manner; the other serves to operate a series of automatic relays which disengage the magnetic clutch, immediately stopping the progress of the film, whenever a modulation strikes this pick-up. The machine is said to be able to start or stop in less than 1/200 second, accordingly, for practical use, it is possible to run a section of sound-track through the machine with the assurance that it will stop exactly at the start of every speech—and be able to reach 90 feet per minute (standard sound speed) before the modulation reaches the second pick-up.

By the use of this system of coded dialog and this valuable mechanical adjunct to cutting and re-recording, the system's sponsors claim to be able to produce perfect foreign-language versions, which sacrifice neither the favorite players, the meaning of the dialog, nor the illusion of reality. Moreover, once the coded scenes have been photographed, the actual voice-doubling (with, of course, dialog that has been written under the supervision of the studio) can be accomplished at any time or place. This is important in meeting modern conditions, as many countries require that all voice-doubling in their idiom be done in their own country, by their own nationals.

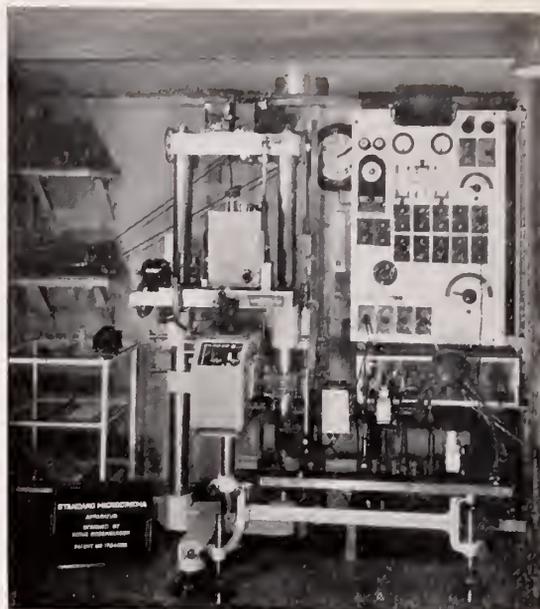
The writer has seen tests made by this system, in which actors definitely known to be totally unacquainted with any foreign language were made to speak, fluently and expressively, in Spanish and French—with such perfection of synchronism, and such absolute naturalness, that it would be impossible to identify the result as voice-doublage. The system evidences great promise, while the auxiliary machinery should, even in domestic production, prove of notable value in itself, and as the foundation of an extensive system of film-viewers, re-recording equipment, etc. The entire system, coding, machinery, and all, is said to have been completely covered by patents allowed in the U.S.A. and all foreign countries.

WHEN used as an aid to research the value of moving pictures for the analysis of motions is obvious, as through its use, we have become the master over the elements of time. Speeds which are too fast or too slow for the human eye to perceive can be easily studied after they have been photographically recorded on motion picture film by means of "slow motion" or "time lapse" respectively.

About ten years ago work was begun at the Rockefeller Institute for Medical Research (Department of Experimental Surgery) to study, with the aid of microscopic motion pictures, the structure and physical behavior of the various cells of tissue and blood, both normal and malignant. Since then a great number of film records were obtained at low and high magnification the division of cells of tissue and blood, mostly "time lapse," which show activities of cells and structural details hitherto not observed. Film records from Dr. Alexis Carrel's fragment of living tissue extirpated 22 years ago from the heart of a chick embryo, show groups and single cells growing and thriving actively. A very thin undulating membrane around white blood cells has actually been discovered with the aid of microcinematography. This membrane escapes observation under ordinary circumstances and only its folds, which look like fine threads, have been observed before, but were thought to be so called "pseudopods." Other film records made by the author show at very high magnification the division of cells of tissue and blood, extremely fine nerve cells and their growth, the circulation of blood through arteries, veins and capillaries, embryos at various stages of their development, etc.

At the Hospital of the Rockefeller Institute a special apparatus was installed for taking film records of human capillaries, especially those of patients afflicted with heart ailments, in order to study the speed of the blood flow and the motion of the capillary walls. The photography offered a number of difficulties which had to be overcome. The field of observation on the patient's finger was approximately 1/16 of an inch in diameter and had to be illuminated by an intense light traveling through the lens, the same which also projected the image onto the film. The light source consisted of a specially constructed high intensity arc lamp and a number of condensing lenses, cooling cells and light filters. Polarized light was employed, to eliminate the glare, otherwise reflected from the top layer of skin, by passing the beam of light through two Nicol prisms, inserted into the optical system. The film records obtained had magnifications ranging from 20 to 40 diameters on the film frame, the taking speed were ranging from 10 to 20 images per second.

Cinema research work extended also into the field of bacteriology. The author had the privilege of having collaborated with the late Dr. Hideyo Noguchi in securing film records of active cultures of the various micro organisms, for the study of their motility. Another series of films was made with Dr. J. Bronfenbrenner, Washington



Microcinema Apparatus at the Rockefeller Institute. It consists of four separate units: the optical bench with microscope (in constant temperature box), light source and condenser system; camera support with driving mechanism and focusing device; two driving motors; control board.

Motion

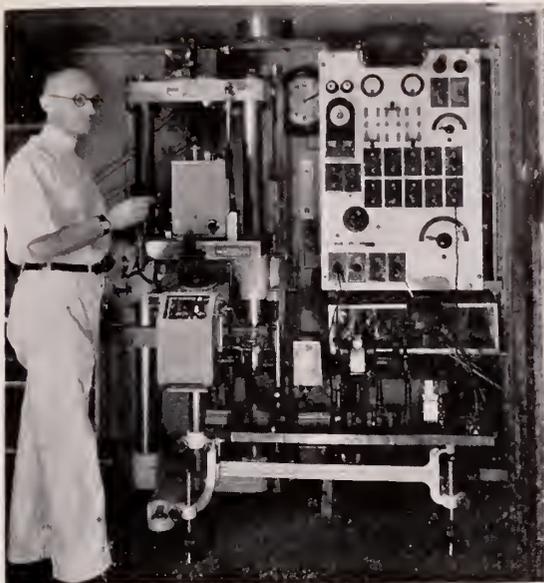
University, St. Louis, Mo., of coli bacilli and their destruction by bacteriophage.

Naturally the author's work at the Institute is mainly concerned with medical problems, while, in his capacity as a consulting cinema specialist, the work is extended into other fields of science with a great variety of subjects, each new subject almost invariably offering new cinematographic problems requiring often design and construction of new apparatus and devices.

A 2-reel film produced on "Colloids" required a great amount of microcinema work at extremely high magnifications. It was necessary, for example, to take films of the so-called "Brownian Movement" that is the rapid and erratic motion of the smallest particles visible at maximum magnification in the ultra microscope. The dancing of ultra microscopic particles is believed to be caused by molecular bombardment. For instance, some of the particles in a colloidal gold solution are only 1/100,000 of an inch in diameter, the smallest thing ever seen.

Motion pictures of surgical operations have been made in great numbers as their usefulness is generally established. Unfortunately, a great many of these films, taken by inexperienced amateurs, and projected everywhere, do not measure up to a medium standard in the way they are photographed and edited, and are, therefore, more harmful than beneficial to the motion picture art.

Mention should be made in particular of one surgical



Heinz Rosenberger, the author, standing alongside the Microcinema Apparatus which is mentioned in this article. All of this equipment was designed by Mr. Rosenberger.

Pictures as an Aid in Science

by

Heinz Rosenberger, F.R.M.S.

The Rockefeller Institute For Medical Research, New York,
President, New York Microscopical Society,

film, the making of which was quite interesting. The problem was to show in the film the complete operating technique of a prostate operation. The field of the entire operation was not more than about one-half inch in diameter, and the operation performed through a cystoscope $\frac{1}{4}$ of an inch inside diameter, through which the instruments, an electro-loop and an electro-knife, were introduced. About one-half of all scenes were to be taken in such a way as to show clearly the cutting away of obstructing tissue inside the urethra, as seen by the surgeon through the eyepiece of his cystoscope. After careful technical and anatomical studies on patients during operations and on a corpse, a plastilina model five times natural size was made in several

sections and the whole mounted on an optical bench, together with camera, light sources and operating instruments, also made five times their original size. The "operation" on the model was again "performed" taking single exposures (animation). These scenes, after being completed, were spliced alternately with outside scenes of the actual operation. The illusion was apparently perfect judging from questions asked by doctors after seeing the film as to how it was possible that so much light could be obtained and pictures taken through such a narrow opening in the cystoscope.

Making motion pictures for science means also work on the drawing board and in instrument shops, as in a great many cases special apparatus are required. This is particularly true with microscopic motion picture work. The Standard Microcinematographic Apparatus (see picture), which has been developed after many years of experience, is an answer to the many requirements, which come up in scientific research work. The work with high magnifications call for greatest possible precision and the difficulties, optical, mechanical, experimental, etc., increase, with increasing magnifications, quite out of proportion.

The production of motion pictures for science requires among other things a real love for difficulties. Patience and perseverance are other qualities that should be mentioned. The author would like to relate two instances, in which it took weeks, and even months, to make a few feet of microscopic film. One object was the growth of living nerve fibers to be recorded at high magnification, and the other was the development of a culture of yeast, starting from a single yeast cell until, through the budding of daughter cells, the entire field was covered with numerous cells. In both cases in the beginning the preparation looked healthy and developed normally until suddenly, for no apparent reason, it died and disintegrated before the picture could be finished. Experiments had to be started time and again, until finally they were crowned with success. The waste of time, material and effort was compensated for by the satisfaction that one gains from good results.

Looking back over some 15 years of experience, and visualizing the many films made, it is highly gratifying to observe a steadily increasing demand in the work from the time his first pictures were projected, showing for the first time at high magnification the activity of living tissue and blood cells and their structural details and also other microorganisms and their behavior.

These films have been projected time and again at scientific gatherings, for instance, at the Rockefeller Institute for Medical Research, National Academy of Sciences, Washington, D. C.; Academies of Medicine, here and abroad; Optical Society of America; International Congress of Photography; International Congress of Physiology; Kaiser Wilhelm Institute, Berlin; New York Microscopical Society; American Chemical Society; Societe de Chimie Industrielle; Eastman Kodak Research Laboratories, and many others.



PHOTOGRAPHY

of the MONTH

"SMOKY"

Fox Production

Photographed by **Daniel B. Clark, A.S.C.**

Photographically, the production is restrained—un-moviesque. Abounding in superbly-photographed exteriors, there is none the less none of the somewhat self-conscious striving for pictorialism which marks most Westerns. Instead, the camera very wisely steps aside, and allows the viewer to focus his attention solely on the story of a cowman and his horse, presenting the tale simply, effectively, and realistically.

Such a treatment would naturally be at fault in the average Western, where all too frequently spectacular camerawork must bolster up a weak story, weaker direction, and inept acting; but in this particular case, Clark has acted wisely. Any other treatment would have robbed the tale of its essential quality of truthfulness.

Viewed from the technical viewpoint, "Smoky" could well serve as a text in the restrained use of filters. Save for the night-scenes, I doubt if anything heavier than a 23-A was used; but what filters have been employed, have been used to perfection. Every scene has been treated in a way that brings out the best, without exaggeration, while certain sequences, obviously made under highly unfavorable light-conditions (including a rain-storm), pay high tribute to Clark's ability. The interior sequences are quite as well photographed as the exteriors; several of them are highly instructive examples of careful "source-lightings." In a word, "Smoky" is Dan Clark, A.S.C., at his best—and exhibiting a restraint and dramatic feeling rarely encountered in outdoor films.

"SHOULD LADIES BEHAVE"

Metro-Goldwyn-Mayer Production

Photographed by **Ted Tetzlaff, A.S.C.**

When a stage-play is translated to the screen, the cinematographer seldom enjoys the spectacular opportunities incident to a true motion picture. This adaptation of "The Vinegar Tree"—even though a better adaptation than is the rule—adheres to precedent in this respect. Cinematographer Tetzlaff, however, not only makes the most of all of his opportunities, but has turned out an extremely competent job of camerawork. He has treated the cast with an extremely favorable lens, and made the most of the many interesting settings. Cinematographer Tetzlaff has once more demonstrated his right to be accounted one of the rising young men of the industry.

"THE MAD GAME"

Fox Production

Photographed by **Arthur Miller, A.S.C.**

This filmization of the great American "Snatch Racket" naturally offers opportunities for spectacular effect-lightings and angles. Arthur Miller, A.S.C., has done excellently by the film, despite the director's penchant for somewhat ex-

cessive dollying in the earlier sequences. Whether or not one is still interested in gangster themes, Miller's camerawork makes "The Mad Game" worth seeing.

"ALICE IN WONDERLAND"

Paramount Production

Photographed by **Henry Sharp, A.S.C.**, and **Bert Glennon, A.S.C.**

Special Effects by **Farciot Edouart, A.S.C.**, and **Gordon Jennings.**

"Alice" will unquestionably call forth a good deal of controversy; but there can be no argument over the work done by the photographic personnel. Cinematographers Sharp and Glennon have turned out a thoroughly artistic production—photographed in a perfect spirit of phantasy, yet always avoiding the unduly fantastic. It was no easy assignment these two faced, not alone in this matter of cinematic mood, or of correctly visualizing Lewis Carroll's celebrated story, but in making believable the many players who appeared in grotesque masks. That they have succeeded so signally is a high tribute to their cinematic good taste and ability.

The Special Effects Photography contributed by Farciot Edouart, A.S.C., and Gordon Jennings is superb. Virtually every sequence embraced some difficult problem of Special-effects cinematography, and the situation was doubly hampered by the necessity of meeting an early release-date; but these two wizards of the camera met every obstacle with their accustomed ingenuity, and came through with flying colors. Without their superb work, the production could not have been made.

"GOING HOLLYWOOD"

Metro-Goldwyn-Mayer Production

Photographed by **George Folsey, A.S.C.**

It isn't the bad pictures that give a reviewer gray hair—it's the Great ones! If you do justice to the good pictures, sooner or later you'll find yourself adjectiveless in the face of a really superlative one. "Going Hollywood" is that kind of a picture. Viewed either as entertainment, or as an example of film-technique, it's a knockout. Especially in the matter of Cinematographer Folsey's contribution, which gives a new meaning to such moth-eaten phrases as "brilliant," "scintillating," and so on. From start to finish, it is very close to photographic perfection: not merely a few scenes here, or a sequence there, but consistently ringing the bell, scene after scene, sequence after sequence, throughout the entire production. And that goes double for the way Folsey has photographed the star, Marion Davies. Miss Davies has been in front of the cameras long enough so that one could reasonably expect it to show a little—even with such an artist as Folsey photographing her; instead of which Folsey makes her look younger—and vastly more devastating—than all of next year's Wampas baby stars.

"EIGHT GIRLS IN A BOAT"

Charles R. Rogers Production for Paramount
Photographed by **Gilbert Warrenton, A.S.C.**

For a long time, this department has been waiting to see Gilbert Warrenton, A.S.C., given a really worthwhile opportunity again; and here it is. Cinematographer Warrenton has, in fact, made the exteriors some of the best of their kind yet seen. Technique, composition, lighting, and filtering are all equally fine. The interiors are likewise excellent; beautifully handled, with some extremely good effect-lightings. Warrenton has maintained his dramatic moods with fine feeling, and has at all times dealt kindly with the players.

"HIS DOUBLE LIFE"

Produced by Eddie Dowling and Arthur Hopkins
Paramount Release

Photographed by **Arthur Edeson, A.S.C.**

This production is really a tribute to Cinematographer Edeson's ability: it isn't, by any means, his greatest work—but in view of the fact that it was independently produced in New York, under terrific handicaps of lack of equipment and many of the normal facilities of production, it is highly to Edeson's credit to have done so satisfactory a job. His camerawork is good—and at times very effective. The settings, etc., show excellent production values, and Edeson has made the best of his opportunities, and minimized the many handicaps which are, apparently, inseparable from Eastern production.

"I AM SUZANNE"

Jesse L. asky Production for Fox
Photographed by **Lee Garmes, A.S.C.**

Photographically, as well as dramatically, "I Am Suzanne" gathers interest as it progresses. Commencing with some of Garmes' less inspired work (heightened by a print whose opening reels were rather too light), the film moves into new and unusual surroundings, culminating in sequences of considerable pictorial novelty. As the action progresses into the highly unusual realm of the puppeteers, and is climaxed by the bizarre "inferno" revue, the material offered Cinematographer Garmes grows increasingly novel—while his treatment grows correspondingly. The use of tinted-base stock (of a variety of colors) for the entire length of the film adds immeasurably to the atmospheric value, and, as in Garmes' earlier "Zoo in Budapest," enhances his fine camerawork to a marked extent. And—even as "I Am Suzanne" offers Lilian Harvey her best American opportunities—so, too, does it accord her the best photographic treatment she has received to date.

"FOUR FRIGHTENED PEOPLE"

Cecil B. DeMille Production for Paramount
Photographed by **Karl Struss, A.S.C.**

"Four Frightened People" is a splendid tribute to the versatility of Cinematographer Karl Struss, A.S.C. In some earlier films—like "Sunrise" and "Jekyll and Hyde," for example—Struss has exhibited far more perfect results; but he has never produced a film exhibiting finer workmanship.

"Four Frightened People" was made in Hawaii, amid some of the densest jungles the islands offer. Incredible as it may seem, these jungles prove even more dense and obscure than even the wildest concept of a studio art-director—and, accordingly, they obviously offered only the most impossible photographic conditions. Even with the advantages of Super-Sensitive film, fast lenses, and the inevitable high-powered lighting installation the company must have enjoyed, it is incredible that even Karl Struss could bring



A thundering good parallel. Charles A. Marshall, A.S.C., and Second Cinematographer Reggie Lanning, A.S.C., set up on a parallel improvised from the big 8-inch guns of the U.S.S. "Saratoga."

back so successful a picture. The great majority of the sequences are enacted in the deep jungle, amid impenetrable shadows complicated by an intricate network of tangled branches. Other scenes are played in deep gulches, amid a profusion of tropical vegetation. The results are little short of marvelous, in view of these unphotogenic conditions; only the most skillful of cinematographers could have achieved such photographic quality—such uniformity, such an impression of naturalness, such well-balanced compositions and lighting. An orchid to Mr. Struss and his crew!

"THE POOR RICH"

Universal Production

Photographed by **George Robinson, A.S.C.**

Combining broad comedy and dramatic cinematography is a difficult assignment; but Cinematographer Robinson does so very successfully in "The Poor Rich." Had the film been played less obviously for comedy effects, Robinson would undoubtedly have had an extremely pleasing picture, for he had very effective sets and locations to work with: as it is, the film is a tribute to his talent, for he manages to maintain a pleasing atmosphere in spite of the over-emphasis placed on the comedy angle. His skill is particularly noticeable in the handling of the murder sequence, in which ultra-rapid camera movements are accomplished very effectively, though at a tempo which would, with less deft handling, be ruinous.

"MISS FANE'S BABY IS STOLEN"

Paramount Production

Photographed by **A. L. Gilks, A.S.C.**

Quite the best picture Cinematographer Gilks has had in a long time, "Miss Fane's Baby Is Stolen" allows him an unusually wide range of opportunities, which he has utilized expertly. The sets—like the dramatic mood of the story—run a wide gamut, from the luxurious home of the movie-star to the squalid shack of the kidnappers. Gilks has photographed them all excellently, his treatment running an equally wide range, in perfect accord with the dramatic requirements. He has been faced, incidentally, with the task of photographing much highly dramatic action—the sort that usually calls for low-key lightings—upon sets which demanded high-key treatment. He has done this without for a moment losing the required mood—a difficult feat. He also has some exceptionally well-balanced exteriors.

A Fireproof Process Screen

by
Arthur Campbell
Cinematographer

UNQUESTIONABLY the outstanding technical development of the past few years has been the universal acceptance of the "Transparency Projection Process" (under several different names), which has to a surprisingly great extent superseded most of the previous forms of composite photography. Reduced to its essentials, this process consists of the projection of any desired background—moving or static—upon a translucent screen erected behind the actors, and the rephotographing of the composite scene by means of cameras electrically synchronized with the background-projector. Granted the application of the proper technique, the results attainable by this process are truly remarkable—often so perfect as to defy detection as composite shots. There are, however, several drawbacks which have not, as yet, been entirely overcome.

The first of these is the so-called "hot spot"—an area in the center of the process screen in which the intensity of illumination is markedly higher than in the rest of the picture. Many different means of eliminating this "hot spot" have been tried, with varying degrees of success; but, with the possible exception of one intricate method which, while theoretically perfect, does not meet the commercial requirements of production, no single method yet tried has achieved complete satisfaction.

The second inherent drawback is the physical nature of the translucent projection-screens used. The earliest attempts utilized sand-blasted glass screens of relatively small size: but as the process developed, requiring larger and yet larger screens, the natural difficulties inherent to large glass sheets became increasingly evident. The factor of expense mounted out of all proportion to the increased size, for the procuring of glass sheets of the proper quality and dimensions (some of the screens were fifteen or eighteen feet wide) became exceedingly difficult. A single screen might cost many thousand dollars; and the sand-blasted surface was not always entirely satisfactory. Moreover, the matter of breakage became a serious problem, not only as an economic factor, but from the viewpoint of safety. At least one man has been maimed for life by accidentally breaking one of these huge glass sheets, which amputated an arm as cleanly as any guillotine.

The next experiments in the evolution of the process screen produced the now popular cellulose screens. These were made of matte-surfaced cellulose nitrate, lashed into

a suitable wooden frame. From the standpoints of cost and quality, these screens represented a considerable advance: a much larger screen could be had at a small fraction of the cost of a glass installation. The optical quality of the cellulose product likewise proved superior to that of glass installations, as proven by the fact that virtually all of the major studios' process departments standardized on such installations. The cellulose screens, too, were flexible, and not only were they not subject to the danger of breakage, but they were lighter, so that they could easily and safely be moved from one stage to another, if necessary; and even be rolled like a canvas for storage or shipment. On the other hand, like all forms of cellulose nitrate, they were highly inflammable. On one instance, a fifteen-foot cellulose screen, accidentally ignited, is said to have been consumed in approximately thirty seconds. This characteristic made them a grave potential menace, not only to the physical equipment on the stage, but to the safety of the people working there; especially the electrician operating the overhead lighting, who often works on a scaffolding directly above the process-screen.

A new and improved type of cellulose process screen has recently been developed, however, which promises to minimize, if not, indeed, to entirely eliminate these disadvantages. It is the invention of Benjamin M. Bodde, who has been engaged in this research for a number of years, in cooperation with such experts as Roy Pomeroy, A.S.C., and Farciot Edouart, A.S.C.; the first complete installation of one of Mr. Bodde's screens is now being made in Edouart's department at the Paramount studios.

This screen, which may be made in virtually any size, is composed, not of cellulose nitrate, but of cellulose Acetate, which is virtually non-inflammable. By virtue of the chemical components used by Mr. Bodde in his process, the screen, when heat is applied, will melt, but not burn: the tendency is, in fact, for the melted cellulose to extinguish the fire.

An even more noticeable feature of the new screen is the fact that it can not only be made more highly transmissive than previous types—and entirely without the yellowish cast heretofore an objectionable, but apparently inescapable, feature of cellulose acetates—but it may be treated in such a manner as to materially reduce the objectionable "hot spot." The material from which the screen is made is naturally perfectly transparent, and the matte surface is produced by chemical applications which produce a clear and virtually grainless surface. By varying these applications, the density of any given area may be increased, with the result that "hot spot" can be controlled to a considerable extent.

HIGHLIGHTS

Minimizes "Hot Spot" through Polarization.

Photometric Tests said to show difference in illumination which varies but 5 per cent against 65 per cent for ordinary screens.

Hot-Spot control can be balanced to any installation. Composition used eliminates fire-hazard—material will actually put out flames!

Coming: A Fourth Year of

ACHIEVEMENT

SINCE Eastman Super-sensitive Panchromatic Negative was introduced early in 1931, its revolutionary qualities have fulfilled every hope and prediction of its sponsors. It has helped cameramen and producers so tremendously... it has affected the motion picture art so profoundly... it has contributed to so many cinematic triumphs, that a further prediction can now be made: In its fourth year, as heretofore, this Eastman film will be an important factor in the most conspicuous motion picture achievements. Eastman Kodak Company. (J. E. Brulatour, Inc., Distributors, New York, Chicago, Hollywood.)

EASTMAN *Super-sensitive*
Panchromatic Negative



TREND of THE TIMES

9½mm Color Film

• In Japan one of the ingenious amateurs has developed a color system for himself with the use of 9½mm. film. His method is based on the alternate red and green frames. However, instead of coloring the film on which the exposure is taken he has made a filter for himself from a leader which he has colored red and green alternately. This filter is made up of an endless loop which permits him to use a minimum amount of filter film. This filter is used in both camera and projector.

Cellophane Flash Bulb

• According to the Amateur Cinema, a publication of Tokio, Japan, a scientist of that country has invented a Cellophane flash bulb. This new type of flashlight is called Senko-ban and is said to be very similar to other types of tinfoil flashbulbs with the exception that the glass bulb has been replaced by a double bag of cellophane which makes it non-breakable.

Page Mr. Ripley

• According to recent research France granted a patent to an American by the name of Horner in the year 1833 for his invention of the Zootrope. This seems to be the earliest ancestor of motion pictures. The patent was granted to Horner for a device that created the illusion of motion pictures by rapidly showing a series of images that varied slightly in composition.

Beach Theatre

• A small motion picture theatre in Paris has turned its auditorium into an artificial beach. This is equipped with plenty of sand from the seashore in which the kiddies can play while the mothers and nurses watch the pictures on the screen in comfortable modern beach chairs. The theatre reports unusual business on rainy days.

Midget Camera

• According to news dispatches from France a manufacturer of that country has placed a camera on the market of the size of a cigarette lighter. This takes eight exposures of 35mm film. The camera sells for about two dollars.

Mirror-Lens Tele-Optic

• A detailed report of the latest progress made in the development of tele-photo lenses is given in Kino Technik describing the "Mirror-Lens Tele-Optic" built by the Askania-Werke A. G. Berlin.

Its advantage over former tele-photo systems is mainly a considerable reduction in size and weight. This has been accomplished by applying a principle, new

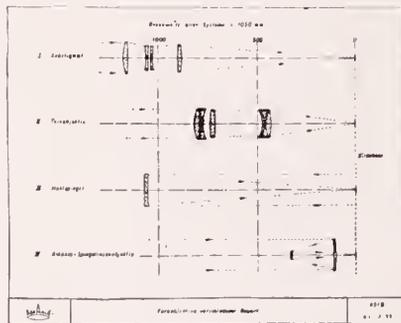


Fig. 1

to photography—that of the reflecting telescope.

The light falls first upon a mirror from where it is reflected backwards onto a second mirror which finally projects the rays in the original direction onto the light sensitive material.

The first mirror is made of glass, the back of which is silvered. The second mirror consists of two lenses either cemented or uncemented. Thus this system provides eight to ten surfaces for optical correction which of course is a significant advantage.

The length and the weight of this latest model is only one-fifth of that of those used formerly. Moreover, the

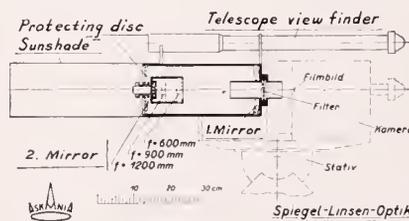


Fig. 2

weight center is falling together with the placement of the front piece of the camera. Therefore this optical system can be used successfully in connection with

motion picture cameras without any difficulty.

Figure one shows a sketch of this latest type in comparison to prior models while figure two gives an illustration of the construction of the tele-Mirror lens.

Multiple Exposures

• The Kino Amateur published an interesting article dealing with a new process invented by R. Thun which makes it possible to expose and project on twenty-one feet of 35mm film as many pictures as one could obtain in normal cinematography by using 1020 feet. An accurate description as to how this is accomplished by means of a special optical system and film moving mechanism for both the camera and the projector is aided by several illustrations.

Although this process is still far from practical perfection it should create considerable interest in its future possibilities.

Synthetic Sound Script

• In Film Technik of Berlin reference is made to the different inventors and their work in connection with the progress achieved in the technique of writing or painting sound records which later are reproduced through a regular projector. The latest step seems to have come from England, making known the name of E. A. Humphriss, who claims to be able to imitate sound recordings of spoken words by writing the sound track.

The paper points to the many future possibilities which may be seen in the practical application of this process; for foreign versions or recorded languages and also in the medical field.

Photography Without Camera

• "The Camera," a photographic publication of Switzerland, tells of an interesting process which they term "photography without a camera."

The method pursued consists of drawing designs on the sensitized paper in the dark room, employing colors of different transparency degrees from opaque to a high transparency. After the design is placed on the sensitized photographic paper it is then developed in the regular way. The artistic quality of these experiments will depend wholly upon the ability of the artist.



Photo by John Cooper, A.S.C.

AMATEUR SECTION

Contents . . .

TABLE-Top Sequences by Paul H. Allen, A.S.C.	410
THERE Must Be a Reason for Every Light by Arthur Campbell	411
HOW I Made "Life" by Harold B. Hutchings	412
FILMING The Music Lesson by Karl Hale	413
MAKING Better Titles by William Stull, A.S.C.	414
FILM Your Business by Frank B. Good, A.S.C.	415
AMATEUR News	416
WHEELS or Industry	418

• **PROFESSIONAL** Criticism of the Amateur picture is a part of the service offered by the **AMERICAN CINEMATOGRAPHER**. Many are not aware of this. Hundreds of pictures have been reviewed this past year by members of the American Society of Cinematographers for the Amateur.

Next Month . . .

- A mighty fine article telling you how to secure effects and some fine corrections of your shots on the Projector itself. This one will intrigue the mechanical minded amateur.
- Another Article on Interior Lighting by Arthur Campbell, the professional cameraman who has worked in studios the world over.
- Adding music to your projection adds interest for your audience. How, what and when to use it will be discussed.
- Other articles will touch on technical and production phases of amateur pictures.

Table-Top Sequences

by
Paul H. Allen, A.S.C.

DID you ever hear of table-top photography? It has given still photographers pleasure for years—and it's just as interesting in cine work, too. Here's the general idea behind it: unless you've got something in your picture which will serve as a definite "yardstick," a photograph doesn't necessarily give a true idea of the size of anything. Have you noticed how the best makers of scenic films always have a man—or an auto—or a train—in the picture when they want to show the size of something? Well, the reverse is true, too: if you haven't such a yardstick, you can photograph almost anything in a way that will give a most deceptive idea of its size. So, if you take a shot of a doll or a toy, against a setting that gives no means of gauging its real size, your audience will jump to the conclusion that it's life-size.

For instance, consider little Willie's Christmas train. You can make some interesting films of it if you want to. Here's how: lay out your track as you wish; put up whatever accessories you may have, such as stations, signals, bridges, etc. Grass can be simulated by the "grass cloth" used for indoor golf, or sometimes by rough-surfaced, green cardboard or wallboard. Trees and shrubbery may be made by properly shaped twigs, glued in place, while a little sand or gravel here and there—especially along the tracks—adds to the natural effect. Toy buildings of the right size will help, too (you can do a lot with the building-block and cement-making sets now on the market)—and the smaller buildings, fences, etc., can be used in the "distance." For a background, a white sheet can often be used: if you photograph the scene from the right angle, it will give a very good imitation of one of those white, "bald-headed" skies you get with Ortho film on a cloudless, hazy day.

Now for the lighting! Probably the best thing to do is to have most of your light from overhead: it looks more natural if it comes from above, and at a slight angle, for we are accustomed to seeing the sunlight behave that way. You can use regular photo lighting units, or photofloods in a reflector, depending on what you have at hand, and what happens to be best for your set-up.

Now to make the picture! The best camera-angle depends, of course, a good deal upon the skill you've used in making your miniature set. As a rule, the most effective for most purposes is what would be approximately eye-level in a real shot; that is, a few inches above the "ground level" of your scene. If you have a camera with slow-motion speeds, about 36 or 48 speed would be best, depending on the speed your train moves at: the slow-motion not only slows the motion down, but smooths it out, and makes it appear more natural. This work is best done in a series of short scenes.

If you're one of those really advanced filmers who likes to play around with trick effects, why not have some fun putting little Willie at the throttle of his toy train? If

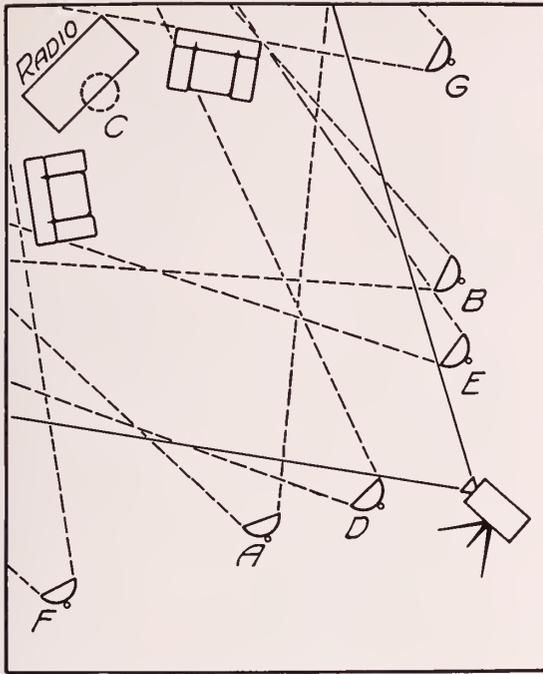


Twigs and branches to represent trees and bushes give the impression of the animals being their natural size when the eye compares the two. Note size of ostrich and the bush in front of it.

you've a camera like the Cine Kodak Special it can be done. You begin with a close shot of the engine-cab: the engine is really stationary, but behind it you revolve a panoramic still-picture on rollers, or on a large drum. This—properly done, of course—will make it seem as though the engine were moving. (A side view is best). Inside the cab window, you put a square of black velvet, arranged so that no light strikes the velvet, and so that its edges are concealed. Make your scene. Now wind the film back to the starting-point. Take Willie, and put him behind a black-velvet drop with a hole cut in it which corresponds in shape with the window in the engine-cab. Line up this shot so that the image of Willie is the right size to fit in the matted-off part of the previous shot. Then light him properly—preferably so that the black drop is not illuminated—and make your second exposure. Where the film was matted off before, by the tiny black square, Willie's image will be photographed, while the rest of the picture will be matted off by the big black drop—and the image of the engine will show. If your matting is accurate, the developed picture will show Willie driving his own toy engine! Cut into the other shots of the train, it will give you a film that will thrill Willie and his friends.

But suppose Willie is younger—or maybe a girl! Well, animated dolls are another table-top subject. Again, you arrange a setting of the proper size—if small Susie has a doll's house, you can use it for your studio (you can put a still a few inches behind any windows, and get a remarkable effect)—or you can build your own, with toy furniture, a few cardboard walls, etc. Or you can make a little exterior set, like the one in the picture. Obviously, though, you can't photograph the doll in actual motion, either at normal or slow-motion speeds! But—you can move them! But, once more, reverse your rule; instead of taking pictures fast, to slow things down, take them slowly—very slowly—to speed them up. Take them one from at a time (there are several 16mm cameras that can do this—among

(Continued on Page 421)



Lights F and G are added to the backlighting to kill shadows of chairs that the addition of D and E would create.

There Must Be A Reason For Every Light

by

Arthur Campbell,
Cinematographer

STILL adhering to basic lighting, but assuming that your characters are going to move about in the set, we find that the set will need additional light—but these lights must have a reason.

In last month's article on the A B C of Set Lighting we started with three lights indicated on the sketch this week as A B and C. It was explained that A and B were used for cross lighting the people and the furniture, with C an overhead light acting as a back light.

Four additional lamps have been added to the set; as we now assume that the characters are going to move about.

In view of the fact that we merely had our characters occupying the chairs, lights A and B were so trained on them that they lit them properly while sitting down. If these people arise the lower portion of their bodies will be well lighted, while the upper portion will be receiving only the fringe of the light from A and B. C, however, will still be

performing its function whether they stand or occupy the chairs.

The fact that they will stand compels us to add lights D and E. However, these lights we focus at a higher point, so they will light the upper portion of the body of the actors.

Also by reason of the fact that the people will walk about it may be necessary to move the camera back; this means moving the lights back. The further we move a light from the subject the less light is thrown on that subject, so more lights must be added to make up for the weakness of the light caused by moving it back. So the addition of these two lights serve two purposes: they properly light the upper portion of the body and they furnish the additional light necessary, as we have increased the range of the camera by moving it back and placing the character a further distance from the light.

In addition to these two lights we have also furnished more back lighting, represented by lights F and G. Note that these lights do not touch any of the furniture nor any of the characters. They are trained on the walls exclusively. This will not only help to light up the walls because of the wider range, but the reflection they will throw from the walls will also help to give you additional back lighting. You can readily understand that two lights will be needed in order to properly balance the light on both walls with a set such as this. Should we have added another light overhead it would have had to be trained on the walls and it would have been difficult to make it spread its beam evenly over both walls. It is for this reason this type of set-up calls for two additional lights.

If your set-up is such that it has only one wall as a background you might accomplish this same result with one light, providing of course you are not covering too great an expanse of wall; then you will have to place a light on each side so as to give even lighting throughout the entire background.

When you analyze this whole set-up you will realize that we are still adhering to the A B C of lighting. We have added a light on the left, another light on the right to intensify and complete our cross lighting and added two additional lights in the rear for back-lighting.

Now your characters can move around, you can go into action, and no matter what their location might be in the set they will be properly lighted. Not only that but your props, such as chairs and radio, will stand out from the walls because of the back-lighting.

Your highlights will not be killed; you will have a good balance, as the lights from each side will balance the shadows from the opposite side.

The beginner is inclined to overlook this important phase of lighting and his pictures invariably come out very flat, as he has placed his lights to give even distribution on both sides of the face.

A senseless set-up of lights will create shadows that will distract the attention of your audience. And it is for this reason also that the two additional back-lights had to be used. We have increased the front illumination with lights D and E, which would have a tendency to throw shadows on the walls from the two chairs. We eliminate these shadows by the use of the lights F and G.

So you see there is a reason for everyone of these lights. None of them has been added to secure any increased effect or beauty. They were added because they were needed.

The basic lighting mentioned last month and in the early part of this article may be compared with the sketch of the

(Continued on Page 422)



At top, enlarged frame from 16mm picture showing exposure of title over scene. At bottom, another enlargement of 16mm frame showing the use of mask, and the results given on screen.

How I Made "Life"

by

Harold B. Hutchings,

Winner of Gold Medal for "Home Movie"
in 1933 Amateur Contest.

FOR over seven years I have made the usual snapshots of my oldest boy "Bob"—Christmas, Birthday, Fourth of July, Hallowe'en and various other events. After viewing the 1932 prize pictures of the AMERICAN CINEMATOGRAPHER I began to want to create something which would tell a lasting story in film of a "day in his life." Naturally this would start with the break of day. I thought I would like to show the sun rising . . . the birds awakening . . . the rooster crowing . . . the milk and daily paper delivery . . . in that dull, misty early-morning tone. I succeeded fairly well with the bird shot secured at 5 a.m. with

a 3½ inch lens from our bedroom window, but the tone value did not match the sunrise shot (the laboratory could not know what I wanted anyway). I never got my rooster to crow. After wasting quite a bit of film and patience, I started all over again. I believe this was the best decision I have ever made.

In setting an outside limit of 300 feet for my finished picture including titles, I knew I must get started right out with my boy. I double-exposed the paper and milk delivery into the lead titles . . . three quick dissolves succeeded in getting my wife out of bed to light the stove. Then I faded in on Bob's foot extended from the side of his bed—as I had so often seen it—and panned up to a yawning, stretching boy—collecting his thoughts for what was ahead of him that day. At this point I decided on some double exposure which would take him quickly through some of his daily play. I figured this would snap the picture up and also save considerable footage. These shots are really very easy to make with any camera having an accurate footage indicator. Using an inexpensive sunshade and filter holder (the kind that clamps on to the lens) I cut out two masks from black photographic paper, which, when fitted over the sunshade, would cut my picture diagonally in two parts. The diagonal edge was roughly cut (like teeth in a saw) to keep away from the effect of a sharp line between the two exposures.

However, it was found that in photographing outdoor scenes the use of a neutral density filter was also necessary to completely kill this sharp line. A filter heavy enough to give a stop of 5.6 or 6.3 reading should be employed. By the way, this same filter is just right for making outdoor lap dissolves with cameras which do not have an adjustable shutter—where the iris diaphragm on the lens is used. Practically any scene where a 4.5 to 5.6 stop is used can be blacked out when turned down to F16. This filter will not change your values in the least.

In case you do not know, a dissolve is really the lapping of a fade-out with a fade-in. This, however, when developed, will show no changing in exposure on the screen as the lapping or double exposure of the two scenes will produce a normal even exposure on the finished film. If you do not completely fade out your scene, you will get a very unpleasant effect of the dissolved scene "jumping abruptly off the screen."

The mask which covered the upper left corner of my picture was then fitted to the sun shade with a little "scotch tape," and after mounting my camera on a tripod and lining "Bob" up squarely in the lower right part of the viewfinder I was ready to shoot just 18 feet as he reclined in bed with his hands folded back of his head and eyes closed. At 18 feet on the gauge I told "Bib" to smile, open his eyes and look up toward the left hand corner of the picture (where his dreams would appear). My only reason for shooting this part of the double first was that I had determined to use only 20 feet of film and I would make my dream pictures fit to this footage. Not knowing how long it would take for each scene I could cut one out or add one just so long as I saved my fishing picture for that last two feet.

Of course, the next operation was to place my hand over the lens and run the balance of the film through the camera, rewind in a dark room and then again thread the film into the camera. Right here is where I employed to good advantage a trick I had previously learned to obviate, the taking of wanted scenes on leader strips. Remove the lens and run the camera down to the end of the leader strip, or,

(Continued on Page 420)



Filming The Music Lesson

by

Karl Hale

ONE of our good friends who reads many and sundry languages popped this continuity on our desk which he translated from the *Kino Amateur*, a publication of Germany. It struck us as smart, having a fine continuity and conceived by a man who knows production value and has imagination.

While it is built around the piano and the lesson given a youngster by the piano teacher, it can be converted to practically any musical instrument and a good picture made from the idea. Notice the interesting detail the author has conceived. This detail does not necessarily have to do with the piano and the lesson, but gives the reaction of what is going on at the piano through the medium of the action of the maid, the dog, the bird. If you haven't these animals in the house, substitute them with those you have or even the milkman's horse standing at the curb. Show him jerking his head up at the discord.

This author made a fine observation at the beginning of

his article when he stated "A title is good, a good scene is better." You will perceive when you have read the continuity that only the main title will be necessary.

Scene 1. Shows a door bell with a name card above it. A man's hand comes into the picture and rings the bell.

Scene 2. Door opens from the interior and the man enters.

Scene 3. He is greeted by little girl, hand and hand they go toward arch or doorway.

Scene 4. Here you can cut down to their feet, showing them walking so as to establish professor's shoes.

Scene 5. You pan up as they walk and show them walking toward piano, holding long shot until little girl sits down.

Scene 6. Side view of piano as little girl opens piano and professor sits on bench alongside of her.

Scene 7. Place camera at back of the pair at piano and have professor open music score.

Scene 8. Set camera to side where girl sits, as she is smaller than the professor, and camera will take in both of them. Professor starts beating time with hand and at the final down stroke girl starts playing.

Scene 9. Show close-up of girl's hand playing.

Scene 10. Close-up of professor's foot beating time.

Scene 11. Close-up of his hand beating time, with time getting slower and slower.

Scene 12. Backing up for quarter shot of same action with professor's head inclining closer toward girl's hands. Beat stops. He picks hands from piano.

Scene 13. Close-up of girl's hand in professor's, showing little girl's hand dirty.

Scene 14. Back up to quarter shot again. Showing professor scolding girl and sending her off to wash hands.

Scene 15. Swing around to that side of piano which will let camera face door through which professor and girl came. Show girl shamefully leaving piano, walking out of room.

Scene 16. Next close-up of hands in a wash-basin busily scrubbing.

Scene 17. Close-up of tap running and soap bubbles in basin. Fade out.

Scene 18. Girl back at piano starting to play.

Scene 19. Show professor's foot tapping—and coming to a stop on the floor in a definite determined manner.

Scene 20. Back to side quarter shot of teacher making a grimace. Reaches over for hands of girl and places them on other keys. Hold this scene and she plays again. Professor puts hands to ears.

Scene 21. Close-up of dog howling.

Scene 22. Close-up of maid peeling potatoes, dropping knife and holding her ears.

Scene 23. Close-up of canary bird in cage fluttering around.

Scene 24. Angry face of teacher.

Scene 25. Close-up of hands again. Teacher's hands grip girl's hands and places them on right keys.

Scene 26. Close-up of little girl's face almost ready to cry—or with tears running down cheeks, if you prefer.

Scene 27. Teacher explains where her hands are to go on keys—gets interested in the piece, starts playing with gusto himself. Little girl starts sliding off bench.

Scene 28. Little girl leaving room.

Scene 29. Professor back at piano playing, body swaying, oblivious of everything around him.

Scene 30. Flash to bird in cage singing.

Scene 31. Show rear of dog with tail wagging.

Scene 32. Short flash of maid singing, smiling and holding her head in time with the music.

(Continued on Page 420)

ARTISTRY

Making Better Titles

by

William Stull, A.S.C.

PROBABLY the outstanding technical weakness seen in the majority of the films entered in the 1933 American Cinematographer Contest was the photographic quality of the amateur-made titles. Excepting, of course, the films with commercially-made titles, nine out of every ten entries seemed deficient in this respect. Although the titles might be lettered and photographed well enough, the development was usually such that the result on the screen was not wholly satisfactory. It must be remembered that the development of title-film should be planned to attain an entirely different result than that of picture-film, negative or positive. In developing for the picture, softness and delicate gradation is the goal; in developing titles, the extreme of contrast between the black background and the white letters should be sought. Therefore, while the basic methods of development are the same in both instances, the actual developing solutions are very different.

The actual photographing of the titles is a relatively easy matter. There are a number of title-boards available, made by the manufacturers of the various cameras, and designed to get the best results in the simplest manner. Therefore, the use of such a "title-maker" is strongly to be recommended, since—no matter what type of camera one uses—there is available a title-stand expressly designed for use with that particular camera. If, however, you prefer to make your own title-board, that, too, is relatively simple. The essential requirements are: a rigid support for the camera (preferably such that the distance from lens to title-board may be altered, to take in different fields); a rigid support—usually a board—for the title-cards; and a source or sources of illumination which will illuminate the entire field, strongly and evenly. Photoflood bulbs in suitable reflectors are probably the best for this, though lower-powered lamps can be used. Obviously, it is highly impor-

tant that the title-card be properly centered in the picture, and that the focus be accurate.

Mr. Edward J. Schon, whose unusually well titled picture was one of the Certificate-winning entries in the 1932 Contest, described his own title-board, which is very well adapted to all the requirements of the amateur. "I simply rigged up a board, with holes drilled every two inches along its length, and centered, so that I could screw the camera (a 'Filmo') at different distances from the copy-board, which is screwed on the end of the base-board, at right angles. I use an ordinary, universal-focus, f:3.5 lens, though, of course, the focusing models would be more convenient. Focusing is accomplished by unscrewing the lens from a half to one and a half turns according to the size of the title. The exact distances and focusing for each size of title was predetermined by inserting a ground film in the gate of the camera and focusing visually. I keep all this data tabulated, and written down on the base-board."

The simplest way to make titles is, of course, to use white paper, with black lettering: this lettering may be done by hand—if you are good at lettering—or on a typewriter. If you use the latter method, it is better to use a good, clear carbon-copy, made with a fresh carbon, rather than directly-typed cards; the lettering is clearer, and photographs much better. Some machines have unusually large type; the "Vogue" type available on many of the newer machines is also very good for titles: it resembles the type used in this magazine, and is much more distinctive than the style ordinarily used in typewriters.

The matter of exposure must, of course, depend upon the light used, and the area of the title-card. As in anything else, the smaller the stop that can be used, the better; as positive film is used for title-work, it is naturally considerably slower than Pan or Super-Pan—especially in the yellowish light of incandescent lamps. However, with two Photofloods, and a card approximately three inches wide, f:3.5 or lower may usually be used. The best method, of course, is to use an accurate exposure-meter, or else to determine the proper exposure by actual tests. A full exposure is desirable.

Once photographed, titles may be developed in almost any method one would use for a normal film. If one wants to make long rolls of titles—fifty or a hundred feet—the regular Stinemann and Correx tank systems are of course ideal. For shorter lengths, pin-racks can be made to fit into small trays, or the Leica glass developing drums may be used. The principal thing, of course, is to get a clean, uniform development, and to carry it as far as possible. With some solutions, the whites tend to grey over on prolonged development; so the maximum development which will give clear whites and solid, opaque blacks must be determined.

Although there are quite a number of suitable developers available, probably the two best are the Eastman "D-11" positive developer formula, and the formula used by Mr. Schon, which this writer regards as one of the best—if not the best—so far tried for this purpose. It is adapted from a formula used for developing an engraver's plates, and gives some of the most lustrous blacks I have ever seen. The developer is compounded from two stock solutions:

SOLUTION 1

Sodium Bisulphite	¾ oz.
Hydroquinone	¾ oz.
Potassium Bromide	¾ oz.
Water to	32 oz.

(Continued on Page 422)

Film Your Business!

by

Frank B. Good, A.S.C.

YOUR business is none of my business, I'll admit—but the chances are ten to one that there's a good amateur movie hidden away in it. Maybe it's become just another six-days-a-week grind to you—as dull as ditch-water; but, well, I've seen interesting pictures made about even ditchwater! Remember that the principal thing to hold in mind when you're making a picture is to choose an interesting subject; and what seems insufferably dull to you—who are so close to it—may be new and tremendously interesting to the other fellow.

Some of the most interesting films entered in the American Cinematographer's Amateur Movie Contests, both in 1932 and 1933, were films in which the maker picturized his own daily work. I had the privilege of being a member of the judging committees on both of these competitions; and it was, let me say, a privilege in every sense of the word, despite the hard work it entailed.

In the 1932 Contest, a First Class "Certificate of Award" was deservedly won by Mr. Edward J. Schon, of Portland, Oregon, for his film "The Art of Photoengraving." Mr. Schon is a photoengraver by profession—and there are few professions which make greater demands on the time and patience of their practitioners. You might think that Schon would have been glad to forget his business when he went a-filming—but instead he realized that the processes by which halftone "cuts" are made from drawings and photographs are a deep mystery to most people. And what is more intriguing to either an audience or an individual, than peeping under the shrouding curtains of such a mystery?

So Mr. Schon took his 16mm camera to the office, and kept it there. Whenever his regular work permitted, he would photograph a scene or a sequence, which would fit into a carefully-planned pattern, so that, eventually, his film would be complete. Wisely, Mr. Schon began with a clear mental concept of the story his film must tell: How a Cut Is Made. There is an old Chinese proverb which says, "One Seeing is worth a thousand Sayings"; accordingly, the obvious thing to do was to make the film trace the course of an illustration from the time the picture entered the shop, through all of the various processes of photographing, developing, etching, routing, mounting, etc., until the finished cut is delivered to the customer. Necessarily, the film was long (4 reels, 16mm), for there was a great deal of detail to be shown; but it was interesting—I am sure none of the Contest judges begrudged a minute of the time spent in viewing it. And it must have been equally interesting to other people, for Mr. Schon writes that the film has been shown to service clubs, trade organizations and schools from San Diego to Boston.

In the 1933 Contest there were more films of this type: two of them received Honorable Mention—and came within



the proverbial hair's breadth of being Medal Winners. The first of these was "Ry-Lock," a most unusual subject produced by E. G. Thompson, of Oakland, California. Apparently, Mr. Thompson is either connected with a lock manufactory, or in a position to know a great deal about this work through friends or relatives in the business. At any rate, he combined cinephotography and lockmaking to produce an usually interesting film of considerable pictorial merit. He took the making of a lock as his subject, and followed its evolution from the raw materials and blueprint through all of the processes of manufacture and assembly, up to the finished product, inserted in a door and ready for use. His technique differed from that normally employed in that he told his story almost exclusively in close-ups. There were close shots of the different turning, grinding, shaping and painting operations, followed by even closer shots of assembly, and of the operation of the various components of the lock. The longest shot in the film—the only long-shot that I remember—was of a hand taking a brass rod from its place in the stock-room. Nowhere in the film did the human element intrude; it was strictly the story of a lock, and the scenes concentrated the attention upon the lock and its components, with only the hands and fingers of the lockmakers—sometimes, only a screw-driver or a pair of tweezers. The lighting was highly pictorial; nearly all of it was done with a single spotlight. Obviously, the pictorial possibilities of extreme close-ups of a turning-lathe, a grinding-wheel, and similar machines are great; and Mr. Thompson used them to their fullest extent. Moreover, he told his story so perfectly that no titles were necessary; there was, in fact, but a single title in the entire film—the Main Title, which was made by animating a handful of keys which formed the word "Ry-Lock." Mr. Thompson undoubtedly has had success similar to Mr. Schon's—and I know that all of us on the judging committee found it intensely interesting. We use locks every day of our life—but we had none of us realized how interesting their making could be!

Quite a different cinematic style was used by Dr. A. C. Baxter of the Illinois Public Health Service in his two-reel

(Continued on Page 423)

Contest Will Close End Of October For 1934

The American Cinematographer Amateur motion picture contest will become an annual event.

The fine representation in the past two years has encouraged the American Society of Cinematographers to conduct it as an annual event.

Reaching practically into every civilized country, as it does, it is considered the prime International contest for amateurs and is representative of a cross section of the work of all amateurs.

The last day in October of each year has been set for the closing date of this contest. This means that the film must be received in the offices of the American Cinematographer in Hollywood not later than the last day of October.

Plans are being developed for a wider and more significant recognition for the prize winners. The Medal which was established this year will be the basis of the awards. It is felt that this recognition is the greatest honor that can be bestowed upon an amateur, coming as it does from the greatest body of motion picture cameramen in the world.

Great satisfaction throughout the industry and by the amateurs themselves was expressed in the classifications used in this year's judging, as it permitted of a wider recognition than merely the choosing of pictures in their order of importance regardless of subject matter.

Dr. McAfee Tries Sound

• In recognition of his clinical motion picture work, the dental association of New Orleans recently tendered S. H. McAfee, D.D.S., a testimonial dinner and presented him with a complete and elaborate public address outfit so that he could give a lecture through a loud speaker system during the showing of his pictures. This outfit consists of loud speaker, microphone, electric playing and recording phonograph together with all of their controls. These are built in two portable cases.

"With this," remarks Dr. McAfee, "I become the whole works—cinematographer, projectionist, sound technician, title speaker, lecturer, 'neverthing.'"

S. D. Childs Wins Paris Prize

• S. D. Childs, who was given third prize in the 1932 AMERICAN CINEMATOGRAPHER AMATEUR CONTEST for his picture "I'd Be Delighted To," was awarded first honors for the same picture in the Paris competition in their "General" classification.

It will be remembered that the story in this picture was old in its entirety with feet and hands.

San Francisco Elects Officers

• At the December meeting of the Cinema Club of San Francisco the following officers were elected to serve during the year 1934: President, K. G. Stephens; Vice President, Arthur Holton; Secretary, Dr. H. P. Kauffman; Treasurer, F. W. Macondray, and Board of Directors, Messrs. G. A. Young, E. A. Breyman and Gordon Michie.

An "Odd Shot" contest was held at this meeting. These were pictures constructed from members' accumulations of unrelated odd shots and were judged on the basis of the best picture that could be assembled from this type of material. Three prizes were awarded, first to Art Holton for "The Life of Prof. Zilch," second to Gordon Michie for "A Trip to Ensenada" and third to Fred Kolb for "The Magic Carpet."

Portland Club Has Library

• One of the features of the Portland Cine Club is the library of 16mm film which that organization maintains for its members. They have just added what they term their "Oregon Film," a club film made up from the best shots of its members of scenes and activities in the State of Oregon.

At their meeting on January 26th the feature of the evening was the showing of color films. Also at this meeting directors for the ensuing year were elected.

Ells Shares Honor

• Fred C. Ells, who was awarded the gold medal for Educational pictures for his subject "Rice" made in Korea, wishes to share the honor extended him with Mrs. Ells, who in the words of Ells: "Stood by loyally, helped faithfully and finally insisted that the film be submitted in the competition."

Ells believed that the source of inspiration deserved some recognition, so two dozen carnations was his form of tribute and acknowledgment.

Victor Sound Demonstrated

• The new Victor Animatograph projector of sound on 16mm film will be demonstrated at the February meeting to the members of the Los Angeles Cine Club.

The meeting will be held on Feb. 13 at the Hollywood Citizen-News Auditorium. The Hollywood Citizen store under the direction of Ray Sebastian will furnish the projectors and mechanical equipment.



Crennan's Special Finder

• Ollie V. Crennan, of New Rochelle, N. Y., is particular about finders on his cine cameras. Several months ago we published a reproduction of a special finder he had made by C. P. Goerz Company. It is adjustable for parallel, with distance markings on the rear from four feet to infinity. It is only necessary to set finder to correspond to distance engraved on taking lens and set field opening to correspond to lens being used. He claims the field of the view finder is adjustable to accommodate lenses of from one to four inches in focal length and is very accurate.

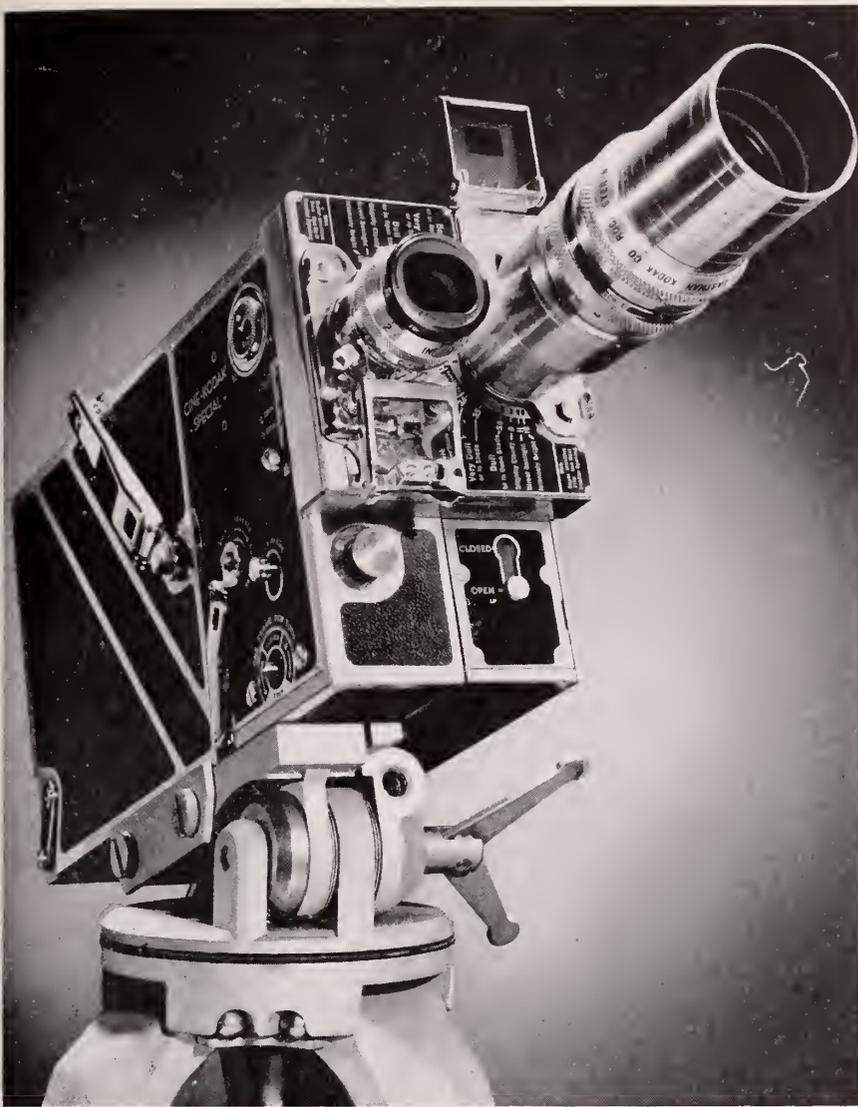
Professionals To Address Cine Club

• Members of the Los Angeles Cine Club will be addressed by professional cinematographers of Hollywood at the February meeting which will be held on the 13th of that month. The meeting will be sponsored by THE AMERICAN CINEMATOGRAPHER and the professional side of the program arranged by the magazine.

Outdoor photography will be the subject with Dan Clark, A.S.C., who was the chief cinematographer on all the Tox Mix pictures, speaking on composition and outdoor lighting to demonstrate to the Amateur what to concentrate on and how to read light. Cinematographer Clark will make some special 16mm subjects to illustrate his talk.

Ray Fernstrom, a newsreel man of renown, will tell what and how to get the news. What constitutes news and how to find the dramatic highlights of news.

Composition will be explained from the artist's standpoint by Randolph B. Clardy, winner of gold medal in 1933 for his 8mm picture, "Cattle Country."



The most capable of all 16 mm. Movie Cameras

You get professional scope at amateur cost with Ciné-Kodak Special, the 16 mm. camera built and equipped to studio standards.

DDOUBLE exposures...dissolves...fades...mask shots...slow motion—they're all within the Special's scope. For this remarkable 16 mm. camera has a full complement of accessories that includes many devices you previously found on 35 mm. studio cameras only.

Ciné-Kodak Special has a variable shutter; two hand cranking shafts—eight-frame and single-frame—as well as a spring motor drive; a reflex finder for ground-glass focusing with all lenses; interchangeable 100-foot and 200-foot film chambers; mask slot between lens and film; double lens turret for six interchangeable lenses.

A Custom-Built Camera

The basic model, equipped with *f*.1.9 lens, set of six masks and one 100-foot film chamber, is priced at \$375. Special adaptations of this model or additional equipment furnished to order. Write for the abundantly illustrated Ciné-Kodak Special Book.



You can make a scene such as this with the Special by double exposure, and animation filming with the single frame release button. First exposure of the girl against a dark background... wind back the film... then single frame exposures of the toys.



Circle, oval, and two vertical and two horizontal half masks are supplied with the Special. Masks of heart, keyhole and other designs may be ordered. To use them you merely slip the mask in a slot between lens and film.

If it isn't an Eastman, it isn't a Kodak

Eastman Kodak Company, Rochester, New York 



WHEELS OF INDUSTRY

Synchronized Photo-Flash Lamp

• A small, practical Synchronized Flash Lamp device which attaches directly to the Leica camera without requiring adjustments or alterations of any kind is announced by E. Leitz Company. This device consists of a polished metal tube which slides into the clip found on every Leica camera, a reflector, and connection for camera release button. The batteries are contained in the metal tube, and the reflector, being made of heavy paper, silver-foil lined, folds so as to be compact. Two receptacles are provided, one for the standard Photo-Flash Lamp and the other for the miniature bulb which is supplied with the outfit for testing the power of the batteries and synchronization.

As the shutter release button is pressed, the flash is fired.

Leica Lens Booklet

• E. Leitz, Inc., has issued a booklet giving information about the eleven different Leica lenses. The booklet is written in the conversational style of a discussion between a Leica owner and the owner of a larger camera. This booklet No. 1220 will be sent without cost upon request to E. Leitz, Inc.

Solite Sunshade and Filter Holder

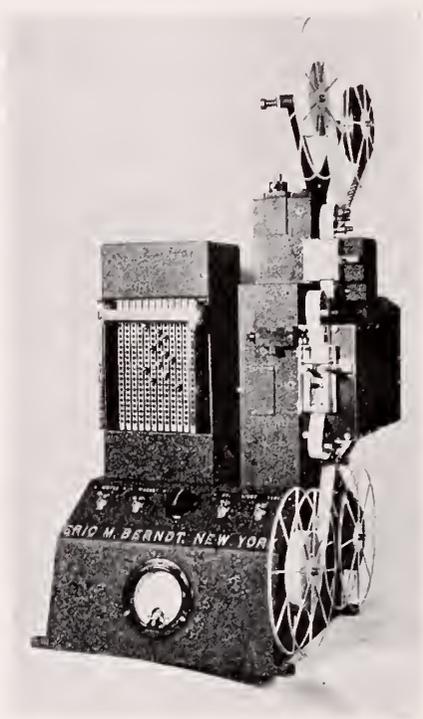
• Solite Sales Co., Inc., of New York, well-known manufacturers of lighting units, announce a sunshade and filter holder under the trade name of the Contra Light Sunshade and Filter Holder. This is especially designed for the Leica camera and is claimed to fit all Leica lenses excepting Hektor 73mm F:1.9 and 105mm F:6.3.

This is made up of four units consisting of the filter holder, glass filter, filter cap and contra light sunshade cap.

16mm Sound and Picture Printer

• Eric M. Berndt, the well-known manufacturer of special 16mm cameras for both silent and sound pictures, announces a companion to this equipment in the nature of a combination 16mm sound and picture printer.

With the strides being made by 16mm sound on film, this printer reaches the market at a timely period. It is claimed



to have thirteen outstanding features, among which are:

1. Bench type printer, strongly built of cast aluminum and weighs only about 45 lbs.
2. Capacity 400 feet and machine prints 25 feet per minute but can be stepped up if necessary.
3. All wiring and motors and take-up belts are enclosed.
4. Sound is printed continuously while picture is printed intermittently.
5. Apertures made of stainless steel.
6. Picture gate is of relieving type which applies tension during exposure and releases when film is in motion.
7. The intermittent consists of a steady cam movement hardened and ground using two claws, one above the other.
8. Breaker Box and automatic light change included.
9. The printer is so designed that the

lamp house can be easily removed and a 16mm or a 35mm head can be added to convert it into an optical printer.

10. It operates entirely on 110 volt a.c. except the printer lamp which operates on 6 volt battery.
11. The meter in front indicates the exposure on the sound track.
12. The machine is available with either take-up reels or flanges.
13. All electrical connections are in the rear, and controls in front of the machine.

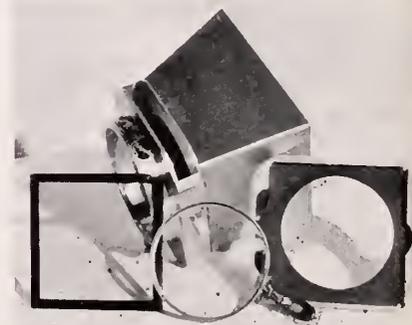
Bass Bargaingram

• The Bass Camera Company has issued its January Bargaingram of 16mm equipment. This consists of a 20-page listing of material useful to the amateur. It includes practically every item necessary in picture making. Undoubtedly the amateur will find a great deal to interest him in this folder, as among the items listed are many things that will materially aid him in his picture making. This Bargaingram will be sent to any interested amateur by the Bass Camera Company if they will address that company at their Chicago office.

Lens Shade and Filter Holder

• The Hollywood Camera Exchange announces a new combination lens shade, filter and disc holder. This holder will accommodate the 3-inch square filters and the standard O. B. Disc.

This combination is light in weight and is designed mainly for still cameras. It fits directly on the lens.



MOVIE FILM FREE!

Here's How you can get a roll of Panchromatic Film Free (8mm or 16mm).

Help us answer the question, "WHAT TO SHOOT?" Perhaps it is a little picture you have already made, or one you would like to make.

What we have in mind is what we term "Backyard Movies," simple little plots that can be made around the house, in the neighborhood, in parks, on vacation trips, at the seashore or bathing beach. Write them out in your own words. They do not have to be in scenario form. List the scenes in sequence in simple language. For each of these continuities we publish in the AMERICAN CINEMATOGRAPHER (The Motion Picture Camera Magazine) we will give a roll of Panchromatic Film Free to the authors.

These continuities do not necessarily have to tell a story; they might be of a documentary nature. The way in which you have taken the picture might be unusually interesting.

Maybe you have conceived a little continuity around your hobby, your business or children or some phase of home life . . . send it in; it may win you a roll of Panchromatic Film.

Send as many plots as you wish, only write each one on a separate piece of paper. Be sure to have your name and address on the same sheet of paper and please write on one side of paper only.

Here's your chance to get film free !

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EDITOR

AMERICAN CINEMATOGRAPHER

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Hollywood, California

Bass bought 'em all!

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STEWART WARNER

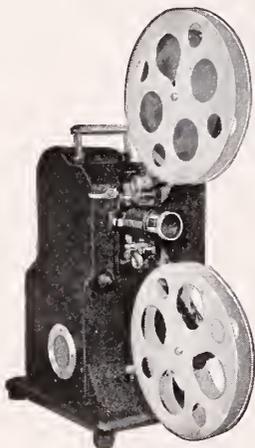
500 watt, extra brilliant lens—High speed rewind—forward and reverse—separate light switch for lamp — low priced bulb — pilot light. Compact, smooth running and biggest value at regular price of \$125.00. What a buy!

\$87.50 Complete with case, cord and reel

**ONE YEAR FACTORY
GUARANTEE**

With Each Instrument

Extra 1" W. A. lens at.....	\$5.50
Extra 1½" W. A. lens at.....	\$5.75
Extra 3" Long Throw Lens.....	\$7.75



Your old projector, any make, accepted in trade.

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Dealers Write For Details

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179 W. Madison St., Chicago

Camera Headquarters for Tourists

How I Made "Life"

(Continued from Page 412)

in the case of Eastman Super-Pan, down till you see the perforated numbers. This is where the laboratory starts development and proves a most accurate place to set your dial. Then I switched to the other mask (which would block off the lower right side of the picture) and after putting the neutral density filter in place and squaring up the matte-box I began shooting the so-called dreams (sand-pile, skating, sliding, riding—right down to that 18-foot mark, where we went out to a nearby stream for a two-foot fishing scene. It took practically all one Sunday to leisurely get this 20-foot shot, but it came out perfect the first time and I look upon it as the best result I have ever accomplished. Try it some time—you'll surely enjoy the result.

Now just a little about lap dissolves. A succession of six quick dissolves gets Bob out of bed, hands and face washed and wiped, teeth brushed, sleeper off and shirt and overalls on—down to the breakfast table. This is a good afternoon's work. One point here is interesting. There is no place to cut a dissolve, as the action took us to three different parts of the house where lights and reflectors had to be set up and adjusted—great care had to be taken to correctly time all these actions and go over each one in practice at least three times before filming. At that I had to retake this sequence for in the last scene Bob put on his overalls without his shirt. There is a fade-out here and when the next scene opens at the breakfast table he appears in shirt and overalls. There was nothing to do but retake these dissolves. Two weeks later with everything set up to retake I noticed that Bob had a new hair cut—nothing to do but wait another week. In Hollywood, I believe, they have a regular job for someone just to watch for details such as these.

These dissolves were made with a 70DA Filmo equipped with a crank for backing up the film. A good lap dissolve should occupy about two feet of film, which finishes to about a foot of actual dissolve. Of course, they can be made a lot shorter, depending on the action desired. A good way to learn dissolving is to practice (without film) by watching your crank turn and learning to count slowly with the turn. Then with this count in mind learn to smoothly close the iris diaphragm of your lens from the exposing stop. The most important thing to learn is to be able to back crank (with hand over lens) to the approximate place on the film where you began to close your lens. In two foot dissolves with a Filmo it takes four turns of the crank. Then, of course, you start your new scene from the closed stop and

iris in your lens the same way to the exposing stop you are using for this scene. Don't let your enthusiasm for dissolves lead you astray. There are certain places where they should be used, but this practice can be very easily overdone—just as the use of certain red filters can be easily overdone. A good variation in dissolves can be accomplished by the use of a Vignetter in place of the lens diaphragm. This can again be varied by the use of both. Take your scene off with the lens diaphragm, then bring in your new scene with the Vignetter (opening it from the closed position). Be sure your lens has previously been correctly set for proper exposure. This will give you the effect of the new scene burning into the center of your picture and expanding toward the edges as the old scene fades out.

In conclusion, I want to list some rules that I have made for myself in future work of this kind:

1. Get a good, simply story—go over it thoroughly with your actors—with children be sure they really know what you are trying to do. I found that a screening of the first "rushes" before hitme got them into the spirit of the work and many times after that I was checked or corrected by the kids themselves.
2. Don't hurry—don't tire your actors or yourself. Fifty foot rolls will save film wastage.
3. Choose handy, accessible locations and note exposure and time of day; you may have to come back later for another shot.
4. Have a good exposure meter—and always use it.

In lighting interior scenes (a volume could be written)—in addition to conventional lights, try using a high spot light for back lighting your subject. It adds a very pleasing third dimensional effect. The use of reflectors outdoors is always worth the extra effort.

6. If the unexpected happens—as is very often the case with children—it may prove better than you had planned—try to vary your story accordingly—this happened in "Life."

Filming the Music Lesson

(Continued from Page 413)

Scene 33. Close-up of professor's hands playing smoothly. Fade out.

Of course if you want to carry on from this to the girl playing out in the yard or further scenes of her sneaking out of the front door, it will add to the picture.

The thing that makes this picture a bit unusual is the reaction of the animals to the discord and to the harmony. It

puts an interesting touch to the picture—in fact, it makes the picture an interesting document.

If the animals listed in the picture are not a part of the household you can substitute a cat if you have it or a neighbor's cat—or some other animal on the street can be shot from time to time when you can get the proper action.

It might be difficult to get a dog howling. If you can get him to snap his head up and shoot at 8 a second you will get fast motion on the screen and get the impression of the discord—or something happening that is unusual. Eight pictures a second might also help with the bird fluttering in the cage.

Employing the close-ups as indicated eliminates a lot of acting on the part of the professor and the girl—which frequently is desirable, as it is difficult to secure the right impressions from amateurs.

Table-Top Sequences

(Continued from Page 410)

them the inexpensive "Simplex"—and then, between each frame, move the arms, legs, or body of the doll to give the right effect of motion. This will take a bit of experimenting: your action (or, as it is professionally called, "Animation") must be reasonably smooth, so the best way to do is to move things only a little, and make one frame of each stage of motion. In some actions, however, you may separate the stages farther, and make two or three frames. It's a long, hard task—especially if you are using more than one character—but it's interesting, and I guarantee that the result will thrill the kiddies. What youngster wouldn't be thrilled at seeing her own favorite dollie walking around on the screen, quite as though she were alive?

For stop-motion work, your lighting should be relatively soft, and more nearly from the front: since your exposures are longer, you can either stop down more, or use less light; I'd recommend the former.

And, as a thought on either of these ideas suggested: why not plan a little photoplay of the children, showing them

playing with the toys, growing tired, and falling asleep: then the table-top sequence can come in as a dream. Two or three hundred feet of 16mm film will give you a first-rate production of this type (only fifty or a hundred feet need be used for the dream—especially if it's stop-motion). And does it give you something unusual for your library? Ask the audience: they'll say "Yes—AND HOW!"

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Making Better Titles

(Continued from Page 414)

SOLUTION 2

Caustic Soda.....1 1/2 oz.
Water to 32 oz.

The developing solution is compound of equal parts of Solutions 1 and 2. In warm weather, this may be diluted somewhat, if desired. With this solution, development may be prolonged almost indefinitely without greying the whites; and it gives exceedingly rich blacks.

Occasionally, an amateur, in the course of titling one of his films, finds himself called upon to make an "insert" of a white card with black lettering—say, for instance, some printed announcement, a letter, or a newspaper-clipping—which he wishes to reproduce on the screen exactly as it is: i.e., black letters on a white ground. Of course, one can use reversal film for this, or he can treat it as a regular title, thereafter making a print from the title-negative. It is, however, quite possible for the amateur to reverse his own film for this purpose, following any of the methods outlined in the Appendices of the "Cinematographic Annuals." Using positive film for this, and developing it with Mr. Schon's developer until the film, on inspection, appears practically opaque, he can then reverse the image chemically, either with the prepared reversing solutions marketed for use with Agfa and Autochrome color-plates, or with this solution, which is recommended by Messrs. Pathex, for reversing their 9.5mm film:

REVERSING SOLUTION

Potassium Permanganate..... 30 grains
Sulphuric Acid170 minims
Water to 35 oz.

The acid should be added last, in a slow stream, stirring the while. In reversion, the negative is dissolved away, and the film takes on a red color. This normally takes from seven to ten minutes, but should in any case be continued until all of the black image is dissolved. If you have both orange and red lights in your dark-room, the red one may be removed after the film has been five minutes in this bath, and the remainder carried out by orange light.

After reversion, the film is washed until it becomes a clear yellow—usually about seven minutes. The remaining operations may be carried out in white light.

The next step is bleaching, by the following formula:

BLEACH

Sodium Sulphite (crystals).....150 grains
Sulphuric Acid 35 minims
Water to 35 oz.

The film is immersed in the bleach until the parts formerly densest become quite transparent.

The final step is darkening, which is done in a solution made by adding 150 grains of Sodium Hydrosulphite (not Hypo) to the bleaching bath. The film is placed in this until a good positive is produced. Thereafter, it is washed and dried.

Another problem in home title-making is that of fading, which is normally impossible in direct-positive titles. However, Mr. A. D. Frischmann, of the Bronesbury Cine Society, of London, in a letter to the British Journal of Photography, has suggested an interesting method of fading. "The whole title," he says, "is first shot in the ordinary manner, preferably at full aperture, and, after a careful note has been made of the footage used, the film is run back. The title is then replaced by a plain white card, and with the lens at full aperture, the camera is started and the iris diaphragm closed right down, the camera being stopped when the smallest aperture is reached. The lens is now covered, and the camera run to within two feet of the total footage previously exposed. The lens is now uncovered, and, with the camera running again, the iris diaphragm is slowly reopened to full aperture. It will be found, on development, that the title is perfectly faded in from blackness and out again."

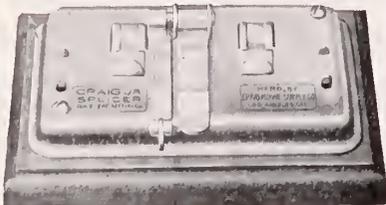
There Must Be a Reason for Every Light

(Continued from Page 411)

artist before he starts filling in with clever touches that make the painting worthwhile.

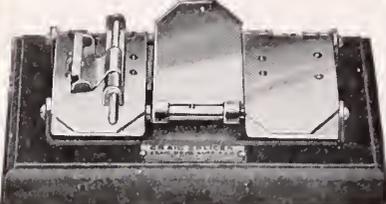
The sole purpose of basic illumination is to give sufficient light to secure a sufficient exposure. Only after this is accomplished can more lights be added to secure effects and artistic touches. The cinematographer is an artist as well as a painter, only his medium of expression is light. We may say that the paint he uses is light; in other words, he paints with light.

The action and type of story controls these touches or, as it is termed in the studio, "the fill-ins." No matter what you shoot you must have enough light to make an exposure; then from that point on you display your artistic touches. This phase of lighting we will discuss in further articles.



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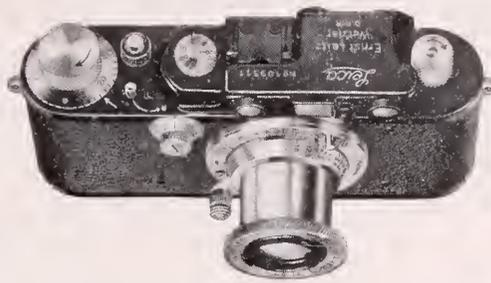
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Film Your Business!
(Continued from Page 415)

production of "Milk—Its Production and Pasteurization." Dr. Baxter's work is apparently connected with the State's medical supervision of the Dairy Industry. As a cinamateur, he was clearly in a position to realize the value of visual presentation; and as a Public Health official he was similarly in an enviable position to film his subject. Since he was making the picture not alone for his pleasure in filming it, or for showing to a general audience, but also to be used in both general and specific educational work, he adopted a very simple, straightforward style. His story, as the title indicates, was that of milk, from the cow to the bottle. Therefore he began by showing the most sanitary dairy equipment and methods; how the cows were kept, fed, cleaned and milked; then, how the milk should be strained and cooled on the farm itself. At this point, he introduced a sequence depicting the Public Health Service's field-staff doing their bacteriological inspection work on the dairy farms. The next stage showed how the milk is received at the local dairy plant; how it is weighed, analyzed for butterfat-content, bacteriological content, etc.; pasteurized (and I wonder how many people know that pasteurization is **not** boiling?) cooled, and bottled. He shows throughout—sometimes with interesting, animated sequences—the many precautions taken throughout; approved styles of bottles and bottle-caps, and, at last, the delivery of the milk to the consumer's doorstep. Like Schon's engraving picture, it makes one gasp, "How can so much be done in just a few hours—and so cheaply?"

**George Meehan, A.S.C.,
Makes Canadian Feature**

• George B. Meehan, Jr., A.S.C., has just returned from Victoria, B.C., where he photographed a Canadian-made feature production, "The Black Robe," for Commonwealth Productions, Ltd., of Victoria. Cinematographer Meehan states the Canadians are doing very creditably in their efforts toward producing motion pictures in Vancouver and Victoria, but that they are seriously hampered by lack of equipment, due to the unduly high duty (usually in excess of 60 per cent) levied on all imports of studio and photographic equipment.

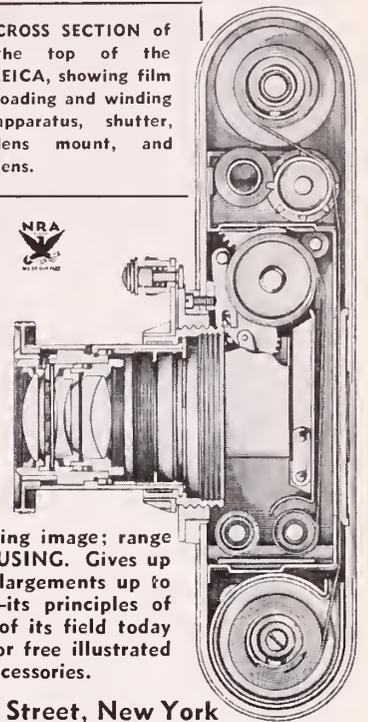


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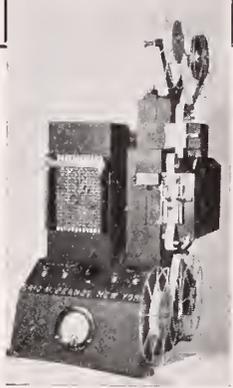
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Candid Photography on the Streets

(Continued from Page 399)

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of the complex form of animation. A strip of motion picture film will readily illustrate this point. It will also show that if you watch your subjects carefully, even though they are in action, you will find spots when natural pictures can be made.

Of course street photography should be of the candid type. It differs, however, from the candid photography that you are accustomed to seeing in the papers and the magazines. They are photographs made of people, that are "in the public eye." People who expect to be photographed. Photographs made on the streets are of people who see no reason or cannot understand why they should be photographed. So when you are caught making a point-blank close-up of someone, you are in a rather embarrassing position. What a logical situation, for that well-known cigarette advertisement, "Be Nonchalant."

A detected camera will cause the most interesting countenance to become affixed with a dumb stare; worse yet, anger! There are many ways of concealing the camera. I purposely chose illustrations for this article, that I had made without subterfuges of any sort. I only exercised care not to make any quick movements, that would attract attention. It is really surprising how much you can get away with if you are watchful. I have successfully used the Leica, hidden in a small box, wrapped and tied like a parcel. A very small hole was in the top of the package to allow for winding of the film and to change the shutter speeds. I allowed the standard Leica lens-shade to project about one-eighth of an inch through a hole in the side of the box. By a couple of marks on the package and lens-shade, I was able to change focus. To make a picture, the parcel was pointed at the subject and with one finger through the hole in the top the shutter was tripped. Practice will enable you to judge very closely your approximate field without the aid of a view-finder. Only in extreme cases will you find it necessary to conceal the camera in this manner. One word of cau-

tion, however, look out for children. Their roving eyes quickly detect the presence of a camera, and they are not the least bit backwards in drawing the attention of everyone to it.

Unless extremely fast film is needed, it is important to use films of a fine grain variety. This will permit enlarging of only the most interesting portion of the negative to a large size. Shutter speeds should be sufficient enough to just stop the action. Normally this will vary from one-twentieth to one-hundredth part of a second. At night it may be necessary to go down as low as one-tenth of a second. Use the slowest shutter speed possible, so that you may stop the lens down to the utmost to secure greater depth.

The variety of subjects will vary with the size of the city and its geographical location. Some cities have large foreign quarters. Interesting situations are always found there. As foreigners gesticulate a great deal as they are talking, photographs of them are often very expressive. With the longer focal length lenses, many shots may be made from automobiles and bus tops. It is not necessary to confine your photography to the business streets as many engaging things are found in the residential sections. Hucksters, ragmen, children at play, and the like suggest themselves as subjects. In the parts of the country that have snowfall, the number of subjects multiply, as snow changes everything. In making pictures during a snow storm do not use a shutter speed greater than one-twentieth of a second. This will allow the snow to blur, thus giving a more natural and atmospheric picture. Candid pictures are easily made on inclement days, as the weather distracts people's attention. Many very pleasing photographs may be made on the streets at night. This is a field in itself and will be dealt with in another article.

A Fireproof Process Screen

(Continued from Page 406)

The basic principle underlying this control, explains Mr. Bodde, is that of the polarization of light, and control of this controls the "hot spot." "By measurement with a photocell photometer," he states, "we find that in most installations the difference in intensity between the so-called 'hot spot' and the edges of the projected picture is about 65 per cent. Now, while I do not want to claim that my screens will absolutely eliminate this 'hot spot,' I do state most positively that measurements show that on my screens, when the screen is properly balanced to suit the projection-installation, the difference in intensity between the center and the edges is less than 5 per cent. In other words, we re-

duce the disparity in intensity which causes the 'hot spot,' to a point where it is within the margin of control afforded by the latitude of the film and processing."

As may be inferred from Mr. Bodde's statement, the screens may—either during their manufacture or afterwards—be accurately balanced so that they coordinate perfectly with the optical characteristics of the background projector system used. This operation requires approximately an hour. It may also be mentioned that these screens are held to be,

not only fireproof, but waterproof, and virtually immune to ordinary abrasion. Therefore, they may be rolled for storage or shipping, with far less risk than with ordinary screens. Mr. Bodde has also evolved an improved system of mounting the screens for use. Wooden rods are threaded through sleeves provided for the purpose, and the screen, instead of being laced into place with long rubber shock-cords, is held in place by heavy rubber bands which are simply looped through eyelets in the screen, and hooked onto the frame.

Cinematographers' Short-Cuts

(Continued from Page 397)

into the camera, would give the film an additional punch. Again, Cinematographer Clark was called upon to improvise. This time, he dug up a large mirror; he placed it at the end of a long outrigger, directly in front of the gun. Setting up the camera beside the gun, with the mirror tilted slightly, he was able to photograph the reflection—and get the desired effect.

Once, when making an air film for Fox, Cinematographer Clark found himself in need of a special camera-mount. Once more, he improvised, as the illustration shows. The camera used was a standard DeVry, which he mounted on a special angle-plate mounting, so that an electric motor could be used, making longer scenes possible. The camera was mounted on a light tripod-head, which was, in turn, mounted on a triangular frame of angle-iron and tubing. This was clamped onto the vertical fin of the plane by means of the large wood-and-metal clamp shown, and held in place by guy-wires. The shot required that the camera be panned as the ship steered; so Clark worked out a simple system of levers, attached on one end to the tripod-head, and on the other to another wood-and-metal clamp fixed to the rudder, which was fortunately of the "balanced" type. By this means, the pilot was able not only to photograph himself in the air, but to "pan" the camera as he steered the ship.

Recently, Cinematographer James S. Brown, A.S.C., making an independent production of the "gangster" type, was called upon to make some night-effect "chase" sequences, in which several automobiles and motorcycles figured. Neither time nor budget permitted him to follow the normal course of rewiring the cars' headlamps with high-intensity bulbs and special batteries—so he improvised. He removed the headlight-lenses, replacing the glass with burnished tinfoil, stretched tightly, making miniature reflectors. To illuminate these, he arranged a group of "hard" reflectors in such a way that, throughout the car's movements in the shot, one or another of them would constantly reflect the sun-

light into the headlamps of the car, which, in turn, reflected it back into the camera. Then, using a 72 filter in the usual manner, he was able to secure his shot exactly as ordered. At times, he was able to use this on three or four cars at once; and in one scene, by using a mirror, which reflected the sunlight into a reflector, which, in turn, threw its beam into the headlamps, he was able to "turn" the lamps on and off, as the action indicated.

Boyle Picture Scores Triumph

• The premiere of "Sweden, Land of the Viking," made in its entirety in color by John Boyle, A.S.C., held in Boston, Mass., at the Tremont theatre was hailed by the critics of that city as one of the finest travel features presented. In reviewing this production the Boston American said: "Some call it Sweden; this writer will call it heaven."

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B. B. Nichols, 731 South Hope St.
Tappenbeck & Culver, 10958 Weyburn Ave., Westwood Village.
Victor Animatograph Corp., 650 So. Grand Ave.
Wilshire Personal Movies, 3150 Wilshire Blvd.
Monrovia: Cliff's Photo Art Shop.
North Hollywood: Studio City Pharmacy, 12051 Ventura Blvd.
Oakland: Adams & Co., 380 14th St.
Eastman Kodak Stores, Inc., 1918 Broadway.
Pasadena: The Flag Studio, 59 East Colorado St.
Richard Fromme, 965 S. Fair Oaks.
A. C. Vroman, 329 East Colorado St.
Richmond: La Moine Drug Co., 900 Macdonald Ave.
Sacramento: Frank McDougal, 1017 10th St.
San Bernardino: Steele's Photo Service, 370 D Street.
San Diego: Harold E. Lutes, 958 Fifth St.
Ace Drug Co., 820 W. Washington St.
Eastman Kodak Stores, Inc., 419 Broadway.
Rogers Photo Shop, 3867 43d St.
San Francisco: Eastman Kodak Stores, Inc., 216 Post St.
Hirsch & Kaye, 239 Grant Ave.
San Francisco Camera Exchange, 88 Third St.
Schwabacher-Frey Stationery Co., 735 Market St.
Sherman, Clay & Co., Kearny & Sutter Sts.
Trainer-Parsons Optical Co., 228 Post Street.
San Jose: Webb's Photo Supply Store, 66 So. First St.
San Rafael: Webb & Rogers, 4th & B Sts.
Santa Barbara: J. Walter Collinge, 1127 State St.
The Camera Shop, 800 State St.
Faulding's, 623 State St.
Santa Monica: W. W. Martindale, 1319 3d St.
Stockton: The Holden Drug Co., Weber Ave. & Sutter St.
Logan Studios, 20 N. San Joaquin St.

COLORADO

Denver: Eastman Kodak Stores, Inc., 626 Sixteenth St.
The May Co., 16th & Champa Sts.

CONNECTICUT

Bridgeport: Harvey & Lewis Co., 1148 Main St.
Danbury: Heim's Music Store, Inc., 221 Main Street.
Hartford: The D. G. Stoughton Co., 1255 S. Whitney St.
Watkins Bros., 241 Asylum St.
Meriden: Broderick & Curtin, 42 E. Main St.
Middletown: F. B. Fountain Co., 483 Main St.
New Haven: Eugene F. Clark Book Shop, 343 Elm St.
Norwich: Cranston Co., 25 Broadway.
Waterbury: Curtis Art Co., 65 W. Main St.

DELAWARE

New Castle: E. Challenger & Son.
Wilmington: Butler's, Inc., 415 Market St.
Wilmington Elec. Spec. Co., Inc., 405 Delaware Ave.

DISTRICT OF COLUMBIA

Washington: Columbia Photo Supply Co., Inc., 1424 New York Ave., N. W.
Eastman Kodak Stores, Inc., 607 14th St., N. W.
Robbins, National Press Bldg., 529 14th St., N. W.

FLORIDA

Clearwater: Courtesy Cigar Store, Post Office Arcade.
Daytona Beach: Harry's News Shop, 106 N. Beach St.
Jacksonville: Eastman Kodak Stores, Inc., 129 W. Adams St.
Miami: Miami Photo Supply Co., 31 S. E. First Ave.
St. Petersburg: Robinson's Camera Shop, 410 Central Ave.
Tampa: Burgert Bros., Inc., 608 Madison St.

GEORGIA

Atlanta: Eastman Kodak Stores, Inc., 183 Peachtree St.

IDAHO

Boise: Ballou-Latimer Co., 9th & Idaho.

ILLINOIS

Bloomington: Hawkins Studio, 214 W. Washington.
Chicago: Almer, Coe & Co., 105 N. Wabash Ave.
Associated Film Libraries, Inc., Suite 224, 190 N. State St.
Bass Camera Co., 179 West Madison St.
Central Camera Co., 230 S. Wabash Ave.
Eastman Kodak Stores, Inc., 133 N. Wabash Ave.
Fair, The, Camera Dept., 7th Floor, State-Adams-Deborn Sts.
Lake Shore Radio Co., 3204-6 Broadway.
Lyon & Healy, Inc., Wabash Ave. at Jackson Blvd.
Stanley Warren Co., 918 Irving Park Blvd.
Norman Willets Co., 318 W. Washington St.
Wolk Camera Co., 201 S. Dearborn St.
Evanston: Almer, Coe & Co., 1645 Orrington Ave.
Hattstrom & Sanders, Inc., 702 Church St.
Galesburg: Illinois Camera Shop, 84 So. Prairie St.
Moline: Seaholms Kodak Co., 1507 Fifth Ave.
Rockford: Johnson Photo Shop, 316 E. State St.
Springfield: Camera Shop, The, 320 S. Fifth St.

INDIANA

Evansville: Smith & Butterfield, 310 Main St.
Fort Wayne: The Howard Co., Inc., 112 W. Wayne St.
Sunny Schick, 401 W. Washington Blvd.
Indianapolis: L. S. Ayers & Co., Dept. 290, 1 West Washington St.
South Bend: Ault Camera Shop, 122 S. Main St.
Terre Haute: Snyder's Art Store, 21 S. 7th St.

IOWA

Cedar Rapids: Camera Shop, 220 Third Ave.
Davenport: Eastman Kodak Stores, Inc., 318 Brady St.
Des Moines: Eastman Kodak Stores, Inc., 808 Locust St.

Iowa City: Rexall & Kodak Store, 124 E. College St.
Sioux City: Lynn's Photo Finishing, Inc., 419 Pierce St.
Eastman Kodak Stores, Inc., 608 Pierce St.
Waterloo: Mack's Photo Shop.

KANSAS

Topeka: Hall Stationery Co., 623 Kansas Ave.
Wichita: Jack Lewis Film Service, 329 Sedgwick Building.
Lawrence Photo Supply, 149 N. Lawrence Ave.

KENTUCKY

Lexington: W. W. Still, 129 W. Short St.
Louisville: A. L. Bollinger Drug Co., Stiltz & Frankfort Ave.
Sutcliffe Co., 225 S. 4th Ave.

LOUISIANA

Alexandria: The Newcomb Studios, 324 Johnston.
Monroe: Griffin Studios, P. O. Box 681.
New Orleans: Eastman Kodak Stores, Inc., 213 Baronne St.

MAINE

Auburn: Wells Sporting Goods Co., 52-54 Court St.
Portland: Bicknell Photo Service, 15 Preble St.

MARYLAND

Baltimore: Eastman Kodak Stores, Inc., 309 N. Charles St.
Stark-Films, 219 W. Centre St.
Zepp Photo Supply Co., 3044 Greenmount Ave.
Hagerstown: R. M. Hays & Bros., 2830 W. Washington St.

MASSACHUSETTS

Boston: Eastman Kodak Stores, Inc., 38 Bromfield St.
Boston Camera Exchange, 44 Bromfield St.
Cinecraft Co., of New England, 80 Boylston St.
Ralph Harris Co., 30 Bromfield St.
Iver Johnson Sporting Goods Co., 155 Washington St.
Andrew J. Lloyd Co., 300 Washington St.
Pathscope Co. of the N. E., Inc., 438 Stuart St.
Pinkham & Smith Co., 15 Bromfield St.
Stillfilm Sales Co., 40 Stuart St.
Braintree: Alves Photo Shop, 349 Washington St.
Cambridge: E. M. F. Electrical Supply Co., 430 Massachusetts Ave.
Lowell: Donaldson's, 75 Merrimack St.
Lynn: Moehring's, Inc., 490 Washington St.
New Bedford: J. Arnold Wright, 7 S. Sixth St.
Newtonville: Newton Photo Shop, 92 Bower St.
Pittsfield: E. C. Kilian, 411 North St.
Salem: Pitman Movie Service, 45 Summit Ave.
Springfield: Harvey & Lewis Co., 1503 Main St.
J. E. Cheney & Co., Inc., 301 Bridge St.
Worcester: Harvey & Lewis Co., 513 Main St.

MICHIGAN

Detroit: Crowley, Milner & Co.
Clark Cine-Service, Rooms 203-204 Professional Bldg., 10 Peterboro.
Detroit Camera Shop, 424 Grand River W.
Eastman Kodak Stores, Inc., 1235 Washington Blvd.
H. C. Film Service, 12191 Ilene Ave.
J. L. Hudson Co., Dept. 290.
E. B. Meyrowitz, Inc., 1516 Washington Blvd.
Flint: Gardner Photo Service.
Grand Rapids: Camera Shop Stores, Inc., 56 Monroe Ave.
Photo Service Shop, 44 Monroe Ave.
Jackson: Royal Film Service, 125 Michigan Ave. W.

(Continued on Page 428)

Measuring Color Intensities

(Continued from Page 396)

coloring, effective in the case of actresses for a street wear and personal appearances.

From there, taking into consideration the measurement of photographic reflecting powers of colored objects, filter factors, etc., it will be possible to transfer this established visual balance between the costume and the individual to the film in more perfectly balanced blacks and grays. These may be brought into proper relation to the background and still be complementary to the coloring of the individual as it registers on the film. While the colors in the costumes will, of necessity, be of different value than those for street wear, still, this newer method will enable those having artistic supervision, to carry what we might term the "personal" colors of the individual through for use in photography. Not only will these scientifically determined color intensities photograph in balance with the actress and the background, but will afford her the valuable psychological stimulus of knowing she is wearing the colors best suited to her own coloring and personality.

In addition, by means of these new copyrighted aids, more intelligent use of color in settings and backgrounds may be achieved. Art directors will be enabled to work from known values placed in balance and transfer these into correct intensities so they will be in photic balance.

The writer is confident that use of this scientific approach to the use of color intensities for black and white photography will be a great impetus to the continued evolution of the motion picture into a more artistic and significant force.

We have all seen instances where concentration upon the relationship of blacks and grays in sets and backgrounds has been to the disadvantage of the players, with consequent injury to the entire tonal composition—cases where the actors, most vital and important of all the factors involved, have fallen short of registering in the desired manner.

These instances are far too many and result from improper use of color in costuming and make-up in relation to the other factors—audiences are still primarily interested in the characters and the story they unfold. Without detracting in any way from the importance of bringing settings in correct tonal balance, it still remains that all this effort is, to an extent, valueless, if the characters themselves are not properly photographed.

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(Continued from Page 426)

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Saginaw: Heavenrich Bros. & Co., 301 Genesee.

MINNESOTA

Duluth: Eastman Kodak Stores, Inc., 3 W. Superior St.
LeRoy: Ivan E. Meyers, Home Movie Service, 215 W. Main St.
Minneapolis: Eastman Kodak Stores, 112-116 So. Fifth St.
Gospeter's Blue Front, 1006 Nicollet Ave.
National Camera Exchange, 5 South Fifth St.
Owatonna: B. W. Johnson Gift Shop, 130 W. Bridge St.
St. Paul: Eastman Kodak Stores, Inc., Kodak Bldg., 91 E. Sixth St.
H. W. Fisher Photographic Supplies, 381 Minnesota St.

MISSOURI

Kansas City: Eastman Kodak Stores, Inc., 916 Grand Ave.
F. O. Calvin Co., B. M. A. Building, Union Station Plaza.
Eastman Kodak Stores, Inc., 19 E. 11th St.
Hanley's Photo Shop, 116 E. 12th St.
St. Louis: Eastman Kodak Stores, Inc., 1009 Olive St.
Famous-Barr Co., M. P. Dept. 6th & Olive St.
Geo. D. Fisher & Co., 915 Locust St.

MONTANA

Billings: Midland Drug Co., 23 N. 27th St.
Bozeman: Alexander Art Co.

NEBRASKA

Lincoln: Eastman Kodak Stores, Inc., 1217 O St.
Eastman Kodak Stores, Inc., 419 S. 16th St.
Omaha: J. G. Kretschmer & Co., 1617 Harney St.

NEW HAMPSHIRE

Lebanon: Photocraft Co.
Newport: K. E. Waldron, 1 A Main St.

NEW JERSEY

Atlantic City: Eastman Kodak Stores, Inc., 1735 Broadwalk.
Bayonne: Milton Mendelwager, 192 Ave. B. Cliffside Park: Louis C. Ghiosay, 639 Anderson Ave.
East Orange: Edmund J. Farlie Jr., 45 N. 19th St.
Hawthorne: Hawthorne Home Movie Service, 52 MacFarlan Ave.
Irvington: Wolf Bros., 1340 Springfield Ave.
Jersey City: Levy's Sport Shop, 149 Monticello Ave.
Montclair: Edward Madison Co., 42 Bloomfield Ave.
Newark: Anspach Bros., 838 Broad St.
Paterson: Robt. C. Smith, 40 Hamilton St.
Sykes Drug Store, 179 Market St.
Summit: Eastman Bookshop, 380 Springfield Ave.
Trenton: Howard E. Thompson, 35 Newkirk Ave.
Union City: Heraco Exchange, Inc., 611 Bergenline Ave.
West New York: Rembrandt Studios, Inc., 526A Bergenline Ave.

NEW MEXICO

Santa Fe: Capital Pharmacy, Inc.

NEW YORK

Albany: Albany Photo Supply Co., Inc., 204 Washington Ave.
Binghamton: A. S. Bump Co., Inc., 180 Washington St.
Brooklyn: Geo. J. McFadden, Inc., 202 Flatbush Ave.
Abraham & Straus, Inc., Fulton & Hoyt Sts.
J. Navilio, 1757 Broadway.
Buffalo: Buffalo Photo Material Co., 37 Niagara St.
Hauser Bob Studio, 11 West Tupper St.
J. F. Adams, Inc., 459 Washington St.
Nowak Optical Co.
United Projector & Film Corp., 228 Franklin St.
Goshen: T. H. Finan.
Haverstraw: E. H. Vandenburg, 3 Broadway.
Hempstead: Agnew's, 47 Main St.
Islip: H. L. Terry & Sons.
Ithaca: Henry R. Head, 109 N. Aurora St.
Long Island City: Leonard F. Kleinfeld, 4202 Queen's Blvd.
New Rochelle: Artist's Photo Service, 219 Huguenot St.

New York City: Wm. C. Cullen, 12 Maiden Lane.

Adam Archival Corp., 305 W. 56th St.
Ambercomb & Fitch, 45th & Madison Ave.
Bloomingdale's 59th & Lexington Ave.
J. H. Booser, 145 E. 60th St.
Columbus Photo Supply Co., 146 Columbus Ave.
Abe Cohen's Exchange, 120 Fulton St.
Davega, Inc., 111 East 42nd St.
Davega, Inc., Empire State Building.
Eastman Kodak Stores, Inc., 356 Madison Ave. at 45th St.
Eastman Kodak Stores, Inc., 745 Fifth Ave., Squibb Bldg.
Fotoshop, Inc., 136 W. 32nd St.
H. & D. Folsom Arms Co., 314 Broadway.
Gall & Lembke, Inc., 7 East 48th St.
Gillette Camera Stores, Inc., 117 Park Ave.
Gimbel Bros., Dept. 575, 33rd St. & Broadway.
Joseph P. Hackel, 1919 Chanin Bldg., 122 E. 42nd St.
Harry's Camera Exchange, 317 W. 50th St.
Hecker's Camera Store, 1519 Amsterdam Ave.
Herbert & Huesgen Co., 18 E. 42nd St.
Lugene, Inc., 600 Madison Ave., between 57th & 58th.
Luma Camera Service, Inc., 302 W. 34th St.
Mogull Bros. Electric Corp., 1944 Boston Road, Bronx.
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New York Camera Exchange, 109 Fulton St.
Pago, Inc., 1095 Sixth Ave.
Pickup & Brown, 368 Lexington Ave.
Rab Sons, 1373 Sixth Ave.
Schoenig & Co., Inc., 8 East 42nd St.
Sibley, Lindsay & Curr Co.
Frank Tanham & Co., Inc., 9 Church St.
Times Building News Stand, Inc., Times Building.
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Rochester: Marks & Fuller, Inc., 36 East Ave.
Smith, Surrey, Inc., 129 Clinton Ave., South.
Rome: Fitchard Studio, 133-135 W. Liberty St.
Schencetady: J. T. & D. B. Lyon, 236 State St.
Syracuse: Geo. F. Lindemer, 443 S. Salina St.
Francis Hendricks Co., Inc., 339 So. Warren St.
Troy: A. M. Knowlson & Co., 350 Broadway St.
Utica: Edwin A. Hahn, 223-225 Columbia St.
Yonkers: W. J. Dolega, 242 Nepperham Ave.

NORTH CAROLINA

Charlotte: W. I. Van Ness & Co., 213 N. Tryon St.

OHIO

Akron: Pochrandt Photo Supply Co., 16 N. Howard St.
Zissen's News Exchange, 63 S. Main St.
Metzgers Photo Art Store, 183 S. Main St.
Stamford: T. J. Hulsey.
Canton: Ralph Young News Agency.
The Camera Shop, 531 Market Ave. N.
Cincinnati: Eastman Kodak Stores, Inc., 27 West Fourth St.
Huber Art Co., 124 Seventh St., W.
John L. Huber Camera Shop, 416½ Main St.
L. M. Prince Co., 108 W. Fourth St.
Cleveland: The Home Movies, Inc., 2025 Euclid Ave.
Dodd Co., 652 Huron Road.
Eastman Kodak Stores, Inc., 806 Huron Road, 1862 E. 6th St., 1915 E. 9th St., Union Trust Bldg.
Escar Motion Picture Service, Inc., 10008 Carnegie Ave.
Halle Bros. Co., 1228 Euclid Ave.
Higbee Co., 90 Public Square.
Columbus: Capitol Camera Co., 7 E. Gay St.
Columbus Photo Supply, 62 E. Gay St.
Home Movies Co., 234 S. High St.
Don McAllister Camera Co., 73 E. State St.
Dayton: Dayton Camera Shop, 1 Third St., Arcade.
Middletown: Lee R. Chamberlain, care Roy A. White's Elec. Shop, 48 S. Broad St.
Portsmouth: V. E. Fowler, 824 Galia St.
Salem: Butcher's Studio, 166 South Broadway.
Steubenville: Beall & Steele Drug Co., 424 Market St.
Toledo: Gross Photo Supply Co., 325 Superior St.
Franklin Print & Eng. Co., 226-36 Huron St.
Youngstown: Eastman Kodak Stores, Inc., 7 Wick Ave.
A. C. Saunders, 177 Benita Ave.
Zanesville: Zulantz's Drug Store, Widney, cor. Seventh & Main.

OKLAHOMA

Oklahoma City: H. O. Davis, 522 N. Broadway.
Tulsa: Camera Shoppe, Inc., and the Charles High Productions, 1213 S. Boulder Ave.

OREGON

Lakeview: Getty's Photo Studio, I.O.O.F. Bldg., Center & Main Sts.
Marshfield: Meier's News Stand, cor. Broadway & Anderson.
Pendleton: J. T. Snelson, 608 Gardner St.
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Lipman-Wolfe & Co., Kodak Dept., Fifth, Washington & Adler Sts.
Meier & Frank Co., Kodak Dept., Fifth, Sixth Morrison & Alder Sts.

PENNSYLVANIA

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Easton: Easton Sporting Goods Co., 2nd and Northampton St.
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Harrisburg: James Left Co., 225 N. 2nd St.
Johnstown: Johnstown News Co., 115 Market St.
Lancaster: Pugh's Art Shoppe, 33 W. King St.
Langhorne: National Entertainment Service, 360 Bellevue Ave.
Lebanon: Harpel's, 757-9 Cumberland St.
Philadelphia: Klein & Goodman, 18 South 10th St.
Camera Shop, 51 N. 52nd St.
G. P. Darrow Co., Inc., 5623-5 Germantown Ave.
Eastman Kodak Stores, Inc., 1020 Chestnut St.
Home Movies Studios, 20th & Chestnut Sts.
MacCallum Stores, 1600 Sansom St.
M. & H. Sporting Goods Co., 512 Market St.
Newsreel Laboratory, 1707 Sansom St.
Strawbridge & Clothier, Dept. 201, Market, Eighth & Filbert Sts.
George W. Tegan, 420 E. Mt. Airy Ave.
John Wanamaker's Motion Picture Dept., No. 1 Broad St.
Williams, Brown & Earle, Inc., 918 Chestnut St.
Pittsburgh: Eastman Kodak Stores, Inc., 606 Wood St.
B. K. Elliott & Co., 126 - 6th St.
Joseph Horne Co., Magazine Dept.
Kaufmann Dept. Store, Inc., Dept. 62, Fifth Ave.
Reading: W. F. Drehs, 341 Court St.
Scranton: Houser's, 133 N. Main Ave.
Wallace & Cook, Inc., 2-5 N. Washington Ave.
Scranton Home Movies Library, 316 N. Washington Ave.
Shamokin: Jones Hardware Co., 115 E. Independence St.
Wilkes Barre: Ralph DeWitt, 2 South River St.
Windber: New Arts Feature, 508 - 15th St.
York: Sweigart's Photo Service Shop, 278 W. Market St.

RHODE ISLAND

Pawtucket: Thomas N. Simpson, Broadway & Exchange St.
Providence: E. P. Anthony, Inc., 178 Angell St.
Starkweather & Williams, Inc., 47 Exchange St.
Westcott, Slade & Balcom Co., 95-99 Empire St.

TENNESSEE

Jackson: Southern Pictures Corp.
Knoxville: Jim Thompson Co., 415 W. Church St.
Memphis: Memphis Photo Supply Co., 122 Union Ave.
Nashville: Geo. C. Dury Co., 420 Union St.

TEXAS

Abilene: W. C. Cosby, 249 Pine St.
Dallas: Jamieson Film Laboratories, 2212 Live Oak St.
E. G. Marlow Co., 1610 Main St.
Fort Worth: The Camera Shop, Inc., 133 W. Sixth St.
Chas. G. Lord Optical Co., 704 Main St.
Houston: Star Elec. & Eng. Co., Inc., 613 Fannin St.
San Antonio: Fox Co., 209 Alamo Plaza.

UTAH

Salt Lake City: Eastman Kodak Stores, Inc., 315 S. Main St.

VIRGINIA

Norfolk: G. L. Hall Optical Co., 257 Granby St.
Richmond: G. L. Hall Optical Co., 418 E. Grace St.

VERMONT

Burlington: G. W. La Pierre's, 71 Church St.

WASHINGTON

Bellingham: Clyde Banks, 119 W. Holly St.

(Continued on Page 430)

Wheels of Industry

(Continued from Page 398)

Photography (especially with modern materials and methods) is preeminently a medium by which we can render tones and delicate gradations. Let us make the most of this fortunate circumstance to enhance the beauty of our work. Keep the range of tones within the limits of the film, and avoid crude, startling, or uncertain tones. We must cultivate the ability to see everything pictorially and must use the subject-matter as so much picture-material.

Tone is also of great importance in suggesting depth or the third dimension in photography. Inasmuch as both film and screen are flat—two-dimensional—we can only suggest the third dimension, or depth, by technical tricks; chief of these are perspective and tone. If we examine a landscape in sunlight, we find that in the foreground we have very great contrasts in light and shadow; the sunlight, striking the nearby objects, makes them unusually brilliant, while adjacent shadows seem darker by comparison. In the middle distance, this contrast becomes less marked: the light objects are still bright and the shadows dark, but with less contrast than in the immediate foreground. But in the far distance, on the horizon and on the mountains, the highlights have lost more of their brilliance, and we see no black shadows; the distance has "greyed" all tones. If our picture does not show this differentiation of tones as it recedes from the eye we have lost that normal effect of depth and perspective.

It is all well enough to talk about the control of tones and key in cinematography—but how are we to accomplish this? Let us consider an ordinary scene: to photograph this in a normal key—that is, a series of tones which strive to imitate the natural effect of the scene photographed, with a normally wide scale of tones—we would simply use normal photographic practice throughout: correct exposure, correct development, and correct printing. But suppose that we want to add to this same landscape a feeling of spring—freshness—joy. Instead of portraying this in a naturalistic manner, we must now crowd our tones toward the highlights. In the original scene, our

highlights were white, our half-tones a wide range of greys, and our shadows black. Now we must make our highlights white, our half-tones a shorter range of light greys, and our shadows medium grey. The technical methods by which this is achieved are overexposure, normal development, and light printing.

Now we take the same scene again, but with the desire to impart a feeling of vagueness and mystery. To do this we must crowd our tones into the greys, so that our highlights become light grey, our half-tones remain in the middle greys, and our shadows become dark grey instead of black. This can be done by overexposure, normal development, and heavier printing, or by normal exposure, and underdevelopment.

Once more we take the same scene: this time trying to express sombreness, severity and grief. Now we crowd all the tones toward the shadows. Our highlights become grey instead of white, our half-tones darker greys, and the shadows remain black. This can be accomplished by normal exposure, underdevelopment, and deep printing.

Yet another effect may be obtained by retaining only the ends of the scale: the highlights and shadows—practically eliminating the intermediate greys. This emphasizes the highlights, and may be done by extreme underexposure, with normal development and printing.

Jackson Rose, A.S.C., Honored

• In listing "What's Who in Pictorial Photography," the American Annual of Photography pays high tribute to Jackson J. Rose, A.S.C., who is listed as one of the outstanding pictorialists of the year. Out of a group of fifty-two names, ranked as the leading exhibitors of Pictorial Photographs at the world's Salons during the past year, there appear but twenty-seven Americans, among whom is Mr. Rose, credited with having had fifty-two prints accepted at sixteen major Salons and Exhibitions during the year.

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(Continued from Page 428)

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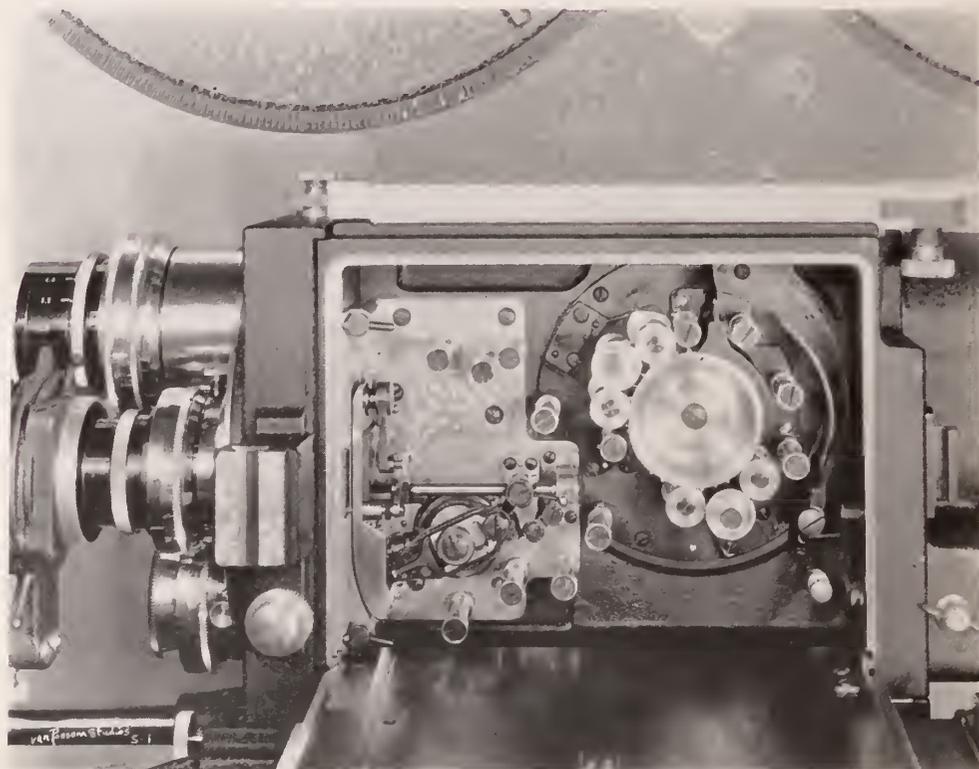
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Volume XIV MARCH, 1934 Number 11



What to Read

APPLICATION of Leica Lens by Clarence Slifer, A.S.C.....	438
EMPLOYMENT Vital Factor in A.S.C. Plan.....	439
THE "Language" of Design by L. Owens Huggins, A.S.C.....	440
IMPROVED Camera Crane by William Stull, A.S.C.....	441
IMPROVISING For The Newsreel by Ray Fernstrom, A.S.C.....	442
PHOTOGRAPHY of the Month.....	443
OPTICAL Printing and Technique by Lynn Dunn, A.S.C.....	444
WHEELS of Industry.....	448

Next Month

- Part 2 of the Optical Printer and its use in the studio today as told by Lynn Dunn, A.S.C., will be one of the outstanding features of our next issue.
- A discussion of Effect Filter by George Scheibe, well known Hollywood manufacturer of Filters.
- Economies of Process Photography by Farcio Edouart, one of the foremost cinematographers in this branch of work in the Hollywood studios.
- There will be other interesting contributions on the technical phases of cinematography.

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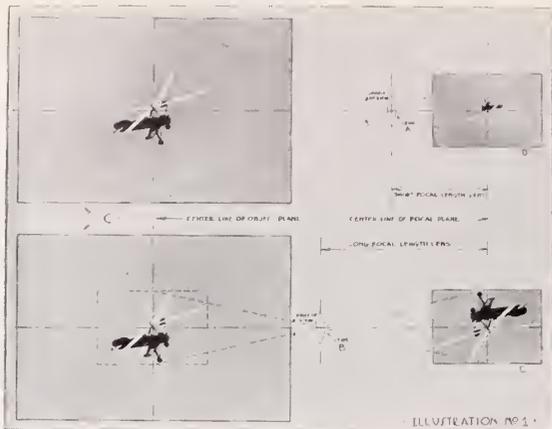


Illustration No. 1

Application of Leica Lens

By
Clarence Slifer, A.S.C.

MANY cameramen have rightly termed the Leica camera, the universal camera. One of the essential features of this camera is the interchangeability of its lenses. Eleven lenses are available and they cover a wide range of focal lengths and apertures.

The miniature camera novice should not become confused and presume that in order to enjoy the full advantages of the miniature camera, it is necessary to employ all eleven lenses. This large variety of lenses is provided to meet the personal tastes and requirements of both amateur and professional cameramen.

Some miniature camera enthusiasts prefer to use only one lens on their Leica, for they feel that this is the limit of

their photographic ability. Other cameramen bubbling over with enthusiasm "buy the works." Due to their lack of sufficient photographic knowledge, they suffer from an over indulgence in photographic equipment.

By the better understanding of your camera lenses and their applications, more satisfactory pictures will be obtained, it will also add immeasurably to your enjoyment of picture making. From the standpoint of the user there is nothing mysterious about lenses or their uses. The novice should remember that lenses are measured by only two scales, focal length and aperture. The focal length of the lens controls the angle of view and the size of the photographic image. The aperture of the lens governs the amount of light that is admitted to the photographic emulsions. Lenses that admit a large amount of light are commonly called fast lenses (because they permit the making of photographs at high shutter speeds).

In illustration No. 1 the effect of the focal length of a lens upon the size of the photographic image is shown in exaggeration. A and B represent two lenses of different focal lengths, C represents the object (autogiro in flight) which is identical in both cases. D and E represent the resultant pictures made with the two lenses. Notice that the short focal length lens embraces a wider angle of view, but that it gives a smaller image of the autogiro. While the

(Continued on Page 469)

Illustration No. 5



Illustration No. 4



At Right Illustration No. 3

At Bottom Illustration No. 2



Employment in A. S. C. Plan Vital Factor

BASED on and conceived in the present economic trend and the industrial readjustment that is struggling toward an equilibrium, and applying those principals on which the American Society of Cinematographers was founded, that organization has added as an important part of its widened activities, for the benefit and betterment of its members, a department of employment.

This agency was engendered in the thought and fostered in the principal that as a Society it operate not only in the field of science and research, but that it initiate as one of its activities—that looks toward the human side of its members—a force which would have the concerted and combined power of its large and representative membership to give the individual that much needed assistance which is now a peculiar part of the times and prevalent conditions.

Through the history of the motion picture industry those creative artists who have entrusted their business activities to men versed in the business world—to men who have an intimate knowledge of contact, contract and employment conditions—those artists have found that their material condition and existence was greatly benefited. These agencies have left the creative mind free to concentrate its efforts on the task of building and conceiving the important artistic details that have brought pictures to the high level they have reached.

As operated by the American Society of Cinematographers this move has a two fold economic side. It betters the condition of the individual cinematographer; it places him in the plane of creative artists, and because the Society operates as an individual unit with no entangling alliance, its financial problem is at the absolute minimum.

It employs only one executive head; it pays no financial tribute beyond its own operative forces; it recognizes no foreign authority either in a moral or financial sense. It also concentrates its

forces, its thought and all of its activities toward the welfare of Cinematography and Cinematographers.

The launching of this constructive agency has been hailed by the cinematographer, whose vision has not been introverted, but who can glimpse the lasting benefits to him as an individual and to the craft as a whole, as a movement which has been cradled in a constructive motive and an agency whose potentialities and benefits can rebound only to the credit of the entire craft.

Contracted and non-contracted members have entrusted their business problems as they are related to their work in the studios to this newly formed department. They acknowledge its power, its assuming of a responsibility that was sometimes beyond the scope of the individual; they recognize in it a medium that is possible only through such an organization as the American Society of Cinematographers, whose purpose has never reached out for autocratic powers, but whose sole aim has been the welfare and betterment of the Cinematographer.

Recognizing the importance of the recent five year contract negotiated by the society with the major studios, together with the fact that the independent producer consults that organization on its cinematographic problems, the American Society of Cinematographers is acknowledged a potent force in the employment situation.



Photo by Frank Tanner, A.S.C.

By checking this photo with the resume at the end of this article you will note it falls under the following classification under the heading **LINE**, **Short Sharp curves**, **Oblique lines** and **Acute angles**. **Under tone** it would correspond with **Extreme Key**; while under design it would fit **Rhythm** and **Informal Balance**.

The "Language" of Design

By

L. Owens Huggins, A.S.C.

IN OUR two previous articles we have considered "The Language of Line" and "The Language of Tone." There is an infinite variety of ways in which line and tone may be combined. The rules of Design tell us how to combine them to achieve the effects we desire. The object of Design is beauty and expressiveness; and the elements of beauty, which are apparently unanalyzable, are achieved through the application of the laws of Design.

Among the elements of Design are the following:

RHYTHM.—Rhythm is a system of accentuating certain elements in design to produce the visual equivalent of measured movement as in dancing or music. It is also an arrangement of lines, masses or tones to form a connected

path along which the eye may travel from one point to another. Rhythm thus conveys the idea of motion to the eye, compelling it to follow in a definite direction; it contains therefore the sense of change or progression. Rhythm is also accomplished through the repetition of the same motif at regular intervals. This is one of the oldest forms of design, and was used by the ancients in architecture, dress, pottery, etc. Here is another tool by which we may express certain thoughts or moods. As we have suggested, Rhythm implies a feeling of movement, energy, activity, vivacity. Conversely, lack of Rhythm will produce a sense of inertness, passiveness, lifelessness, stagnation.

BALANCE.—Balance is static, and produces a sense of rest or cessation of movement. There are two kinds of Balance—Formal and Informal. In the first (Formal), the masses, lines and tones on both sides of the picture are exactly alike, and therefore have the same power of attraction to the eye. This is the equalization of forces; in other words, masses of equal size and interest are placed on both sides of the picture. The human body is an excellent example of Formal Balance. Here we have a method by which we may suggest formality, stateliness, conventionality, symmetry, precision. The second type (Informal Balance) is always achieved through the use of different masses on both sides of the picture. These masses differ in their ability to attract attention because of differences in size, shape, tone or interest. But regardless of the fact that both sides of the picture are different, they must balance in some respect: for instance, a large mass of comparatively little interest is placed on one side and this is balanced by a much smaller mass of greater interest on the other. This method of Balance leads to greater unconventionality and variety, and in extreme cases may give a sense of the eccentric and fantastic.

PROPORTION.—Proportion is the relationship of sizes of masses, depth of tones, length of lines, and importance of interests between the parts of a composition and the whole. In other words, it is the Law of the Inter-relationship of Parts. Large masses speak of simplicity, directness, boldness. Smaller masses and lines suggest greater uncertainty, as it takes the eye more time to see and analyze the separate parts.

PATTERN.—Pattern is the regular distribution of these masses, lines, shapes and tones.

OPPOSITION.—Opposition is the joining of lines at right angles, or the contrasting of large masses to small ones, long lines to short ones, light tones to dark ones, breadth to height, in order to obtain strength, variety and interest.

TRANSITION.—Transition is the softening of the severity of these contrasts, by the use of connecting lines, masses of intermediate sizes, tones of intermediate value, etc.

EMPHASIS.—Emphasis is the art-principle by which the eye is first carried to the most important feature in any composition, and from that point to every other detail in the order of its importance. Emphasis is achieved by the use of lines leading to a certain point, by position in the picture-space, by difference in the tone of the point of interest from its surroundings, by unusual or unexpected shapes, lines, etc., and by selective focusing (as in a photographic portrait, where the features are sharp and the background out of focus). Emphasis is a most important tool, enabling us to single out one object among many and center the attention on that.

SUBORDINATION.—Subordination is the reverse of Emphasis. Its purpose is to eliminate interest from certain parts of the composition in order that Emphasis may play its proper role. Examples are the subordination of branches to the trunk of a tree, of spokes to a wheel, of side doors

(Continued on Page 472)

Improved Camera Crane

By

William Stull, A.S.C.



The new General Service Studio camera-crane. Dwight W. Warren, A.S.C., Chief Cinematographer for Educational Studios, and Director Charles La Mont are riding the boom. Below, left to right: Victor Raby, builder of the crane; Jack C. Baker and Carl Jensen, the designers. As will be seen, one man can operate the device, despite its weight of over six tons.

A NEW camera-crane, one of the largest in the industry, has recently been placed in use by the General Service Studio. Not only is the new boom one of the largest of its type in use, but it includes several improvements in design and equipment which make it one of the most practical equipments of its kind.

The new crane was designed by Jack C. Baker, of the studio's Mechanical Design Department, and Carl H. Jensen, a well-known Los Angeles Consulting Engineer. It was fabricated entirely in the shops of the General Service Studio, and represents an unusual example of speed in the design and fabrication of so large and intricate a machine: the preliminary drawings were started in December, 1933, and the crane was finished and ready for use before the middle of February. The first production upon which the new crane is being used is the Harold Lloyd picture, "Cat's Paw," photographed by Walter Lundin, A.S.C.

In general appearance, the new crane is similar to the majority of the large cranes already in use, though exceeding them in size by a yard or more. It is hand operated, in accordance with the general practice, and adapted for use either on the stage or as a trailer on road or street. It is does not need to be loaded on a truck for transportation, being equipped with running-gear which permits the crane to be towed anywhere like an ordinary trailer.

The running-gear consists of four truck wheels, with heavy-duty pneumatic tires. All four wheels are steerable, though the two rear ones may be locked in the straight position for transport. Four-wheel, hydraulic brakes and Timken roller-bearings are fitted.

The spring-suspension is of the L. & E. type, consisting of two pairs of transverse springs at each end of the chassis. These springs take the place of conventional axles, and allow individual action by each wheel, exactly the same as the "knee-action" springing in many current automobiles. The suspension system was designed and built by Lundelius and Eccleston, of Los Angeles.

The chassis of the crane is a conventional square truss of steel I-beams. Upon this chassis is fitted the mounting for the crane itself: this mounting may be levelled independently of the angle of the chassis, by means of four screw-jacks, one at each corner of the false frame between crane and chassis. In the centre of this false frame, resting on a massive bronze ball-joint, is a short, vertical steel tube, fitted with a heavy ball thrust-bearing, which serves as the horizontal axis for the crane's rotation. Upon this is a U-shaped steel saddle, in which the crane arm is fitted, and which serves as the axis for the arm's vertical movement.

The crane-arm itself is of Duralumin, in the usual bridge-truss form. From its axis to the end at which the camera is placed, the arm is 24½ feet in length, exceeding by

nearly three feet, it is said, the length of any comparable camera-crane. Beneath the arm, at the fulcrum, is a bronze sector, at present used as a bearing for the friction brake; ultimately, it is planned to cut gear-teeth in this sector, meshing with a driving-gear, so that the arm may be raised or lowered by one man, operating a crank or wheel.

As is usual in these booms, the weight of the long crane-arm, the camera, cameramen, etc., is counterbalanced by lead weights placed in a receptacle on the short end of the arm. However, in this design, a new feature has been introduced: instead of merely placing a number of weights in a retaining box, and securing an approximate balance, the designers have utilized the familiar principle of shifting weights, to secure a highly accurate balance. A fixed weight is placed at the short end of the arm, as in conventional practice, but the actual balance is adjusted by means of a sliding weight-box moving on the top of the arm. In this box is kept a standard weight, which may, in case of need, be supplemented by additional weights. The box is fitted with rollers along its bottom, which serve as wheels or bearings for its travel. It is moved in and out from the end of the arm by means of a helically-cut shaft, or worm, which passes through the box. This helix is rotated, through a bevel-gear drive and a shaft and crank, from the under-side of the arm. This drive is so located that both it and the anticipated raising gear may be worked from a central position, by a single operator. This method of counterbalancing is so accurate that the boom may be operated, with any load, by a single man. Obviously, it permits far speedier and more accurate counterbalancing of any load than is possible with existing methods; its use should result in greatly improved efficiency in the making of crane shots.

The head which carries the camera is, essentially, of conventional design. An L-shaped base is pivoted to the end of the boom-arm, and kept level by two tubular radius-arms. Upon this is pivoted the principal camera-mount, which carries the camera (with or without a blimp) mounted on a standard friction pan-and-tilt head, seats for two cinematographers, and mounts for two lights. A third light

(Continued on Page 474)

Improvising for the Newsreels

By

Ray Fernstrom, A.S.C.



Ray Fernstrom, intrepid newsreeler and raconteur, with a Mitchell camera to his right and an Akeley to his left, rigged out specially by him for air work.

ONCE a year the Los Angeles newsreel boys wind up their football coverage with the famous East-West Rose Bowl contest in Pasadena. This year on New Year's day it rained for the first time in the history of this great national event. And this year I worked with that old go-getter Mervyn Freeman, helping to add scenes to his usual thorough coverage for Universal Newsreel. We were set up on the top of the bowl along with the rest of our troupe from the competitive reels. The rain came down on our heads, on our cameras and into the complicated device that is known as a view finder. This one in particular is made up of a number of lenses, prisms, ground glass and a million screws. In good weather this results in a clear upright magnified image of whatever the camera is pointed at and covers the field seen by each of the various lenses used.

As the game progressed the rain slowly seeped in among the nice shiny pieces of glass, onto the inside walls of the finder and onto the bottom, giving off a fine fog that slowly obliterated any view of the game. With a long telephoto lens in the camera, our ability to follow the fast action of the players grew rapidly less. Here was a case of "improvising" while the camera still worked. Reaching into the lens case we found a couple of ordinary paper clips. These we bent so that the ends could be stuck into crevices on top of the camera. The outer ends we bent into the near shape of the field covered by our lens. Sighting through our rifle sights we luckily kept a pretty good "bead" on the game until the end of the half, when we had time to take the real finder apart and wipe off the dew. When we later saw our efforts on the screen, only one scene was a little off center. Oh, the luck of the newsreel men!

Speaking of Merv Freeman reminds me of another story I pumped out of him, that shows even better how far in improvising a newsreel cameraman has to go in order to ALWAYS GET THE PICTURE. Merv was strapped to the periscope on the outside of a submarine once. He insisted on getting a scene that was to look on the screen as if it were shot through the periscope as the sub made a dive. Once fastened on the "pole" he found it impossible to pan or tilt his camera. Here was a tough break. Kicking frantically at the steel tubing as his feet and body submerged he finally succeeded in giving a signal to the officers inside the conning tower. Up to the surface came the sub and soon a head came up out of the hatch cover to find out

the trouble. After some discussion, Freeman, dripping wet, asked for a set of head phones and mouthpiece so that he could give directions to the sub commander, pointing the sub when he couldn't point his camera.

Thanks to his insistence and ingenuity he got his picture and a thorough soaking as well, since he did not give the order to rise until his neck was down to the level of the blue Pacific.

In contrast to this he told me about making a shot from the Goodyear blimp. Merv, a hound for odd angles, wanted a shot from way back in the gondola looking forward over the shoulders of the pilot and out through the forward windows at the boat race he was covering. Once set up back there in the cramped ballast bin, he tied his camera down with sand bags and asked for a straight dive at the pulling crews in the long thin shells that were cutting thin furrows in the Olympic basin below. From a thousand feet they dove, down, down to nearly a mere hundred, with Merv on his nose. Three times they tried it on different races. Here too was a case of pointing the ship at the "picture" when there was no possibility to direct the camera. The close quarters and small windows prevented any semblance of this.

There is no cameraman in the newsreel business to whom quite so many stories are attached as Joe Johnson, veteran of many years, on the staff of Paramount News.

It is a rare occasion when Joe will give you a yarn first hand, but here is a Lulu. Back in 1919 when Joe was covering for Pathe News, he got a hot tip that Elsie DeVillers was going up for a record parachute jump. That was back in the days when lady jumpers were a real novelty, and novelty is news. So off Joe went to the flying field after ordering a plane from which to shoot. All the competitors from the other newsreels were there eager for action, everything in readiness, except Joe's plane. He stalled the others until they would wait no longer. One after the other the competitors' planes took the air. Just as the last one left, Joe's ship landed. In hopped Joe, no time to tie in his camera, and found himself high in the sky before he realized nothing was at hand to fasten his camera to the plane. Suddenly he remembered his leather belt that held his pants up. It became a case of losing his trousers or

(Continued on Page 473)



PHOTOGRAPHY

of the MONTH

“BOLERO”

Paramount Production

Photographed by **Leo Tover, A.S.C.**

Based on the life-story of a famous dancer, “Bolero” differs from the usual treatments of this theme in having a star who can actually dance; accordingly, the camera-treatment of the dancing sequences is greatly benefited. Instead of having to “cheat”—that is, use doubles for the few long-shots, and suggest dancing with close-ups of a non-dancing star—Cinematographer Tover has been able to show the dances fully. He has made them extremely interesting examples of this type of cinematography. The “Bolero” number, especially, is unusually well handled; Tover’s camera-treatment, lighting, etc., are really on a par with Ravel’s astounding composition, which is used in the accompanying score. The opening shot of the second portrayal of this dance is particularly effective—one of the few really justified crane-shots seen recently.

Tover’s handling of the dramatic portions of the film is also good, even though not so spectacular as his treatment of the choreographic sequences. He has treated his players very kindly, giving George Raft something of the sleek screen personality of Valentino—a surprising, abrupt change from former treatment; Carole Lombard has seldom been shown to better advantage, despite the difficulty of strange, pre-war costumes. Sally Rand has also been photographed beautifully—and her fan-dance is a pictorial gem. The Paramount Sound Department deserve high praise for the excellent recording of the musical score, which is unusually fine recording.

“NANA”

Samuel Goldwyn Production

United Artists Release

Photographed by **Gregg Toland, A.S.C.**

In this production, a highly-publicized Russian star—Anna Sten—makes her bow to American films. In her previous, foreign-made films, she was shown as an unusually fine actress, but a none too photogenic screen personality. In “Nana,” however, Cinematographer Toland has literally given her a forceful screen personality. His lighting and photography stamp her immediately as a screen “find”—perhaps the discovery of the year. In many quarters, the credit for this is given to Producer Sam Goldwyn and Director Dorothy Arzner: it cannot be denied that both deserve the highest praise; for it takes the highest type of cinema-mindedness to produce and direct such a picture, and to “make” a new star; but without the inspired camerawork which literally made Miss Sten a magnetic screen personality, all other effort would have gone for naught.

Viewed strictly as photography, “Nana” is well up to Toland’s high standard. Not only are there many individual scenes and sequences of great merit, but the atmosphere of the period—the late 1860’s—is perfectly recreated. This was difficult, for the architecture and costumes of the

period, and its innate atmosphere, lend themselves badly to photographic pictorialism. Adhering to the tenets of good cinematography, while at the same time holding to the spirit of the period, is a fine and difficult achievement. Cinematographer Toland has in “Nana” a film of which he may well be proud.

“SUCCESS STORY”

RKO Production

Photographed by **Henry W. Gerrard, A.S.C.**

This picture shows Cinematographer Gerrard working in a style radically different from his recent films—a harsh, brittle mood, as different from his recent work as night from day, but excellently keyed to the dramatic mood of the story. Gerrard’s camerawork is as deft as ever, despite the change in mood, and plays an important part in building up the peculiar emotional response of the story. It is particularly interesting to note the manner in which slight changes in makeup and photographic treatment accentuate the transition of Douglas Fairbanks, Jr., through the course of the action, from an uncouth young gangster to a polished business-man. The print seen in preview was extremely poor, making it very difficult to give photography fair consideration.

“NO MORE WOMEN”

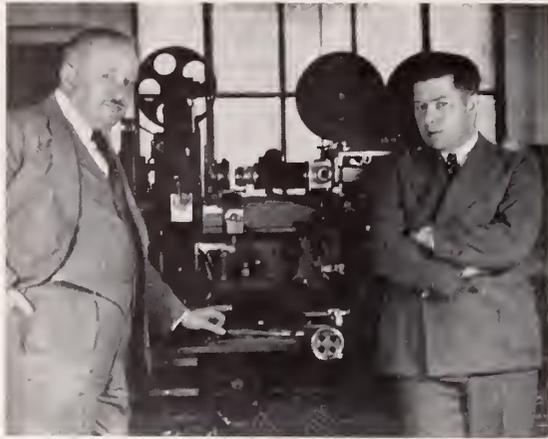
Charles H. Rogers Production for Paramount

Photographed by **Harry Fischbeck, A.S.C.**, and

Theodor Sparkuhl, A.S.C.

Photographically, “No More Women” is of a decidedly higher order than might have been expected of the latest of the rowdy McLaglen-Lowe series. Although played primarily for comedy, and laid against the rough background of the San Pedro waterfront and the operations of the salvage fleet, the film shows, none the less, much fine camera-work. The outstanding feature, of course, is the underwater camerawork, showing the divers at work. These are unusually interesting; well handled, and often most pictorial. Some of the other scenes, as well, are photographically interesting. There are many effective angle-shots about the salvage-boats, both at sea and in the harbor; one scene showing them returning to port—photographed through a fisherman’s seine—is very striking. Another scene—showing one of the many battles between the two stars—is a fine example of camera-minded direction: it is played entirely in the dark, with an occasional figure momentarily silhouetted against a small window; it appeals to the imagination far more than any actual fighting—suggesting a real conflict of Titans.

The fight on the roller-coaster provides an outstanding thrill, and is a great success for Farciot Edouart, A.S.C., and his special-process staff. It is one of the most realistic examples of process work seen in a long time, and an outstanding thrill.



At left, Vernon Walker, A.S.C., head of R.K.O. Special Effects Dept. At right, Lynn Dunn, A.S.C., first assistant to Mr. Walker.

OPTICAL Printing, or "Projection Printing," as it is sometimes called, is a process of rephotographing at approximately unit magnification, from one motion picture film to another. The apparatus used for this work is almost invariably specially designed and built, and consists essentially of a standard motion picture camera, fitted with a registration movement, facing a printer head, likewise equipped with a registering or 'pilot-pin' movement, and mounted on a rigid lathe-bed. With the one exception of speed of operation, this method is by far the most satisfactory of all motion-picture printing methods. Full control of the original film and the raw stock is possible at all times, and the process is subject to an almost infinite degree of modifying manipulation.

Optical printing is utilized for an endless variety of work. Duplicate (or "Dupe") negatives may be made of a positive film when the negative is not available or when a new negative is wanted; scenes which are unsatisfactory in action or quality can often be salvaged; many shots formerly made in the camera—such as fades, dissolves, matted shots, and double-exposure or "split-screen" and composite scenes—can now be made on the optical printer. Moreover, an entirely new range of trick effects, such as "Wipe-offs," Trick Transitions, and the like, have been made possible by this device. In a word, the optical printer is called upon to do almost everything in the line of "dupe" trick photography. For that reason, it is generally considered as the backbone of the trick camera department. Regardless of whether or not a production includes any of the generally accepted forms of special-effects camerawork, it is certain to include a considerable footage of optically printed film; I would venture to say that during the past four or five years there has not been a single production released that did not utilize the services of the optical printer to a considerable extent.

Unfortunately, the average production cinematographer's knowledge of optical printing seems more or less limited. He knows the principle of it, to be sure, but he usually knows little of how much film from his production goes through the process, or of the many steps involved in it. He becomes very conscious of it, however, when in viewing a preview of his picture, he finds some bad jumps in contrast or quality where the dissolves are cut in. His immediate reaction is usually to condemn the man in charge of the work. Limitation of his knowledge on the subject causes him to give little thought to the many steps involved between the time when the exposed dupe negative is delivered to the laboratory and when he views the shot on the screen, cut into his picture. While he keenly appreciates the extent to which laboratory manipulation may

Optical

influence his own work, he does not stop to consider that it must logically play an even greater part in the success or otherwise of optical printer work. In my own estimation, the laboratory work is responsible for not less than half of the success or failure of optical printing. Unless the man in charge of optical printing has full control of every step in the making of a dupe negative, he should not be held entirely responsible for the quality of his work. It should be remembered that where in regular production cinematography the laboratory is a factor in three basic steps, i.e., the development of the original negative, the making of the print, and the development thereof, in optical printing the laboratory is a factor in no less than six such steps: the development of the original negative, the making of the duplicating positive, the development of the duping positive, the development of the duped negative, the making of the final print from that negative, and the development of that print. Obviously, the margin for laboratory errors is rather more than doubled, and successful results indicate an extremely high degree of laboratory cooperation.

Consistency is of course the most important consideration in quality optical printing. When once a satisfactory system of duping is worked out to fit the conditions and equipment at hand, the consistency of the laboratory work is the greatest single factor in obtaining continuous good results. To my mind, granting that the printing equipment itself is satisfactory, the making of the lavender duping print is of the greatest importance in securing good dupes. Needless to say, without a good print, duplication of the original negative is next to impossible. A slight variation from the proper contrast in the lavender print can be compensated for in the exposure and development of the dupe negative, or by change in the duplicating raw film used. But this, of course, means variation from the set system which has been worked out, and uncertainty as to the ultimate results.

Every man doing this type of work has to contend with certain definite sources of difficulty. If he can reduce these to a single source, and concentrate his attention upon this one, he will find that his results become more satisfactory. In my own work, I find that my greatest single source of worry is to get the prints from my dupe negative to match the original. If these prints do not match, the complaints are not long in coming. Although I may know that the dupe negative is perfect, the producer, director, and some others usually judge by what they see on the screen. If the dupes can be normally printed to match in the working print, a perfect match in the master print can be demanded. In the RKO Camera Effects Department, this evenness is maintained by obtaining from the film editor samples of his original positive from the scenes to be duped. These samples are systematically filed, and sent to the laboratory with the dupe negative for print matching purposes. This system also aids in checking for light-changes and variation in contrast.

To maintain the necessary consistency in the quality of the work done for a large studio, as much latitude as possible is necessary in the two major steps. These steps—the making of the duping print and the development of the dupe negative—must have great latitude in order to take care of any variation in film, positive and negative developer, and optical printer light and speed. This last factor, however, is of little trouble when one has proper checking facilities such as a photocell photometer and a tachometer. We have found that a duping print reproduces best when

Printing and Technique

By

Lynn Dunn, A.S.C.

Optical Printer Operator, R.K.O. Camera Effects Dept.
Vernon Walker, A.S.C., Chief

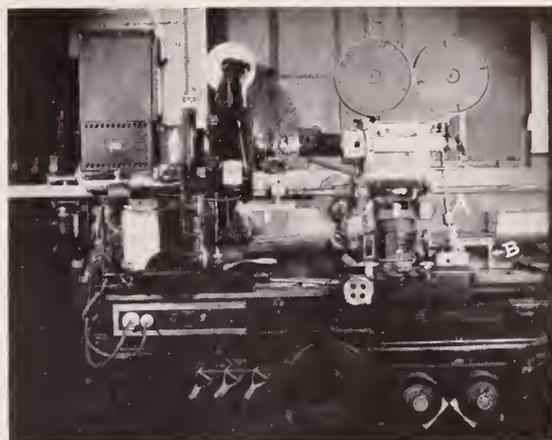


Illustration No. 1

made on a soft positive stock and developed normally. This print should be timed so that the highlights are printed through about three points darker than would be the case in a normal print for projection. This will still permit the blacks to be easily penetrated if the duping positive stock is of the proper softness, such as Eastman Duplicating lavender. The duping negative raw-stock used should be soft enough to permit a full normal development. DuPont Orthochromatic is about the softest acceptable stock for duping which we have yet found.

It must be admitted that the above system is not the best for really fine-grain results: but the problem of consistency from day to day, in quantity work, seems to be of greater importance. My own experience leads me to the conclusion that, much to the contrary of the opinions held by many technicians, with the present fine-grain raw films we have available today, the question of grain is not of as great importance as that of variation in matching the original contrast in a dupe. A dupe can be rather excessive in grain, but match the original well in contrast, and give a much less noticeable "jump" in quality on the screen than if the reverse condition were true. A jump in density is inexcusable unless the negative density of both ends of a dissolve do not match each other. This discussion of grain is in reference to dissolves that are "jump cut" to the original negative. Grain is, of course, much more objectionable when the dupe is run at any length; but under normal present-day conditions the grain of the average properly made dupe is not noticeable to the general public. In checking, this has been found to be the case about 90 per cent of the time. I have noticed much less difference in the grain of different duping stocks than in the results obtained from different developers. The developer used is usually one of the limitations put on the optical printer man. It is all too often a case of "Do the best you can with what is furnished you."

An interesting method of duping, which I used for about a year, is from a duping print timed normally, and developed in negative developer for about two-thirds normal time. The dupe negative is then made on soft lavender positive stock, and developed exactly the same as the duping print. This is an ideal system for fine grain, but is obviously much too critical to be followed without extra careful laboratory supervision, so that strict consistency may be maintained. Any slight variation in either step throws the process off balance, due to the lack of latitude in the method.

Another element that enters the question when a radically different type of duping print is used is the fact that one is very often called on to dupe a stock scene received from another studio. This print is, of course, the more orthodox type of lavender, and it must sometimes be mixed in a series dissolve with a special type duping print such

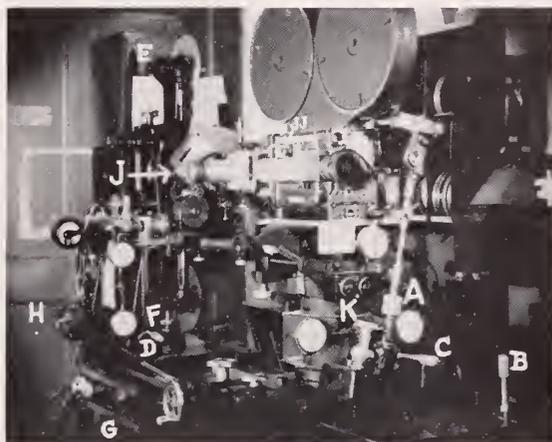


Illustration No. 2

as described above. Obviously in this case, one or the other type will suffer in reproduction. For these reasons the optical printer man is unwise to stray very far from the beaten path of commercial quantity duping.

When we reach the discussion of equipment, we come upon a difficult subject, due to the fact that very little is standard except the general lay-out of the camera and printer facing each other on a lathe bed and driven in synchronism. From a mechanical viewpoint the quality of the dupe depends upon three things: the lens; the quality and evenness of the light; and uniform speed. Any sharp, clean-cutting lens having an absolutely flat field can be used; a focal length of four inches is most acceptable, as it places the camera at a good workable distance from the printer head. The speed need not be faster than f:4.5. Aside from the regular cine lenses, there are on the market a number of copying lenses which are excellent for optical printer use. I have found that a well diffused 1,000 Watt, tubular projection lamp is very satisfactory for a printing-light; this light should be strong enough to enable the lens to be used well closed down, giving improved definition. The motor should be powerful enough to drive the printer without speed fluctuation. A voltage regulator should be in the line, and the speed-control should be by a rheostat rather than by change of pulleys.

The above is an outline of a simple printer which could be used for straight dupes and registration printing. As there is no standard in optical printers, every one is an individual design—usually a conglomeration of many ideas. All optical printers start out with the simple layout as outlined above, and are added to as the money is appropriated. If

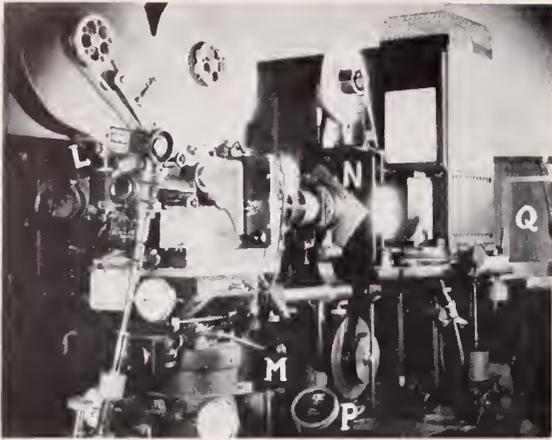


Illustration No. 3

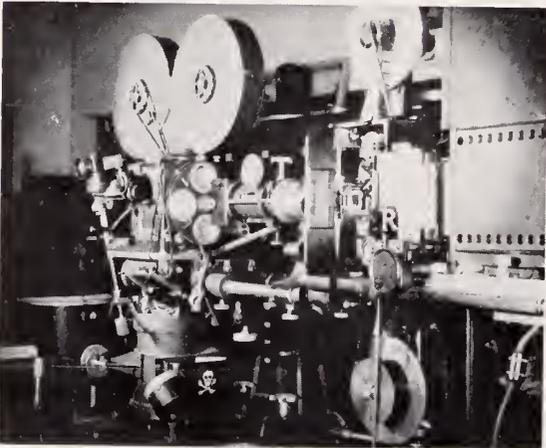


Illustration No. 4

the studio executives have full confidence in the head of their Effects Department, the money can usually be obtained from time to time for developing helpful additions to the optical printer. As certain new problems to be done on the optical printer appear, an appropriation can usually be obtained to complete the job, if the printer is not equipped to handle it. The success or failure of the problem at hand naturally has a great deal to do with the ease of obtaining additions to such a printer. If the optical printer is properly designed from the start, the additions can be made easily, and they will become an integral part of the machine. This of course requires close cooperation between a first-class machinist-designer and the printer operator, under the supervision of a confident and progressive department head. The efficiency and appearance of the printers in use at any studio will tell the story of this cooperation.

For a concrete example of optical printer design, I can do no better than to point to the one used in the Camera Effects Department at the RKO Studio; not only is it an equipment with which I am most intimately familiar, but its completeness speaks eloquently of the spirit prevailing in the department, under the leadership of Vernon Walker, A.S.C. The accompanying illustration (Figs. 1, 2, 3 and 4) are of four different angles of this printer. With the exception of the wipe-over device (N) all attachments are permanent fixtures. The machine itself is one of the most modern in design; for efficiency in all around printing and trick work, together with ease and precision of operation, it cannot, to the best of my knowledge, be equalled anywhere. Due to the fact that at present RKO has but one optical printer for all types of work, this machine is constantly in use. In addition to all straight duping, special

trick matting shots and multiple-exposure work, this machine is called on to make all of the registration prints for use in Mr. Walker's process-background work. This method has been the ultimate means of his securing perfect registration in his process composite. These prints are made at a printing speed of about eighteen feet per minute, while duping speed is twenty-four to thirty feet per minute. The printer can run as high as forty-two feet per minute for emergency rush work.

Fig. 1 is a full shot of the RKO optical printer from the operating side. The lathe bed is six feet long, allowing for zoom up shots and reduced aperture work. The four rheostats mounted on the lower right side of the printer are for control of light, printer-speed, and motor rewind speed. The printer-head moves vertically, and the camera-head moves laterally. Both movements can be made by hand or motor. The camera can also be rocked mechanically. Figures 2, 3 and 4 show plainly the general layout and accessibility of all controls and parts.

In Fig. 2, the five similar dials facing us are indicators to calibrate the above-mentioned movements, graduated to one thousandth of an inch. Another of this same type of dial (not visible in the picture) is used to indicate focus, which is varied by travel of the lathe carriage. "A" in Fig. 2 shows the camera drive shaft with a footage counter mounted on top. This shaft has a gear-change for eliminating alternate frames. "B" is the motor rewind control. Film in the printer can be rewound in either direction at a speed of over ninety feet per minute. "C" and "D" are controls to connect or disconnect the camera and printer-head independently while in motion. The printer head can be run in either direction. "E" and "F" are the automatic geared take-ups for the printer-head. "G" is a switch-box for most of the electrical controls, including an automatic stop. This feature causes the printer-head to stop at any frame previously notched on the edge. This is handy when a scene needs certain frames eliminated, or held to be photographed more than one. "H" is the air-pressure control; air is piped to both sides of the movement, and just below the printer-head. The air is used to prevent "breathing" of old film, and for cleaning film entering the movement.

"J" in Fig. 2 is the eyepiece for one of our latest additions, an intercepting prism. When this prism is moved in, it throws the image on a special ground glass showing the exact line-up as on the camera ground glass. This ground glass has mounted on it a means for accurately registering a film for line-up purposes, with arrangements for moving this film along, frame by frame. In this way, any movement of the printer can be made to match a movement on another film. "JJ" is a built-in film-punch—the only one I know of which places a notch as close as four frames from the one in the aperture. "K" is the mounting for two signal lights. The left light is a red warning-light, which comes on when either camera or printer-head is moved more than one thousandth of an inch from its normal line-up. The other is a marker light, and comes on during a fade when the shutter reaches a predetermined opening. As our printer light-tests are two-foot fades, this enables us to read the correct shutter-opening for the density picked. This same marker-light, manually operated, is used to indicate the exact frame where a dissolve starts and ends, enabling the film editor to quickly and accurately cut in his dissolves.

Fig. 3 shows the printer from the threading side. The counter, "L", has a large frame-indicator, which aids in making dissolves any number of times to an exact length. Crank "M" operates the rocking of the printer-head. This feature is used for giving slight movement to boat and air-plane scenes, etc., and for other shots requiring more motion; and also for quickly levelling up certain scenes, and titles. Mounted on rods between the two reads is the wipe-over device, "N". Interchangeable mattes of all types

(Continued on Page 470)

Used in 7 out of 8
American Pictures in
“1933’s TEN BEST”

OF THE Ten Best Pictures of 1933 chosen in the *Film Daily’s* poll, eight were American productions. Of those eight, seven were photographed on Eastman “Gray-Back.” This is outstanding evidence of the acceptance enjoyed by Eastman Super-Sensitive Panchromatic Negative among cameramen and producers . . . and a signal tribute to the versatility and unfailingly high quality of the film itself. Eastman Kodak Company, Rochester, N. Y. (J. E. Brulatour, Inc., Distributors, New York, Chicago, Hollywood.)

EASTMAN *Super-Sensitive*
Panchromatic Negative (Gray-Backed)



WHEELS OF INDUSTRY

Rolleicord Camera

• According to an announcement from Burleigh, Brooks, Franke & Heidecke, maker of the Rolleiflex Camera, they have placed another edition of that well known instrument on the market under the name of Rolleicord Camera.

According to specifications this camera has a narrower distance between lenses, is compensated for Parallax, round focusing knob with metre scale; rigid focusing mechanism; one lever compur shutter for both setting and releasing; frame finder for sport pictures, and other adaptations for filters, etc.

16mm Negative and Positive

• With the establishment of processing plants in various parts of the country by independents for the developing of negative and positive 16mm film, seemingly this type of amateur work is gaining more headway.

With Fotoshop in New York City opening a department for this work and Dunning Process Company in Hollywood specializing in a fine grain 16mm development and printing, the first steps toward popularizing negative and positive seem to be under way.

Leica in Science Booklet

• A handy pocket size booklet has just been issued by E. Leitz, Inc., of New York, on the use of the Leica Camera for Macro and Micro photography. It was authored by Willard D. Morgan.

It is a 68-page booklet selling for 25 cents and covers many phases of the use of the Leica in science industry and education. It gives methods, tables and accessories needed and available for this type of photography.

Victor Repair Department

• This month the Los Angeles branch of the Victor Animatograph Company which is under the guidance of C. H. Ralke, will install a repair department to take care of all coast activities.

The home office in Davenport has sent a specially trained man from the factory to have charge of this new department.

New Filmo Model

• Bell & Howell Company makes the important announcement of a 16mm magazine-loading motion picture camera, light

in weight, low in price, and rectangular in shape—entirely different in appearance from any camera previously made by this company, but embodying the traditional Bell & Howell features of fine



design and rugged, precise construction. This new camera has been christened Filmo Model 121.

The magazine-loading feature makes for instantaneous loading. You just slide in a 50-foot film magazine, close the camera door, and the camera is loaded.

Filmo 121 is only 2¼x3½x5¼ inches in size and weighs about two pounds.

There are two viewfinders. One is a direct-sight finder (spyglass type) affording a large and brilliant field. The other is a waist level finder of the reflecting type used on still cameras.

Two speeds, 16 and 24, are provided for, as are single frame exposures. A downward pressure on the starting button puts the camera in operation at 16 or 24 speed, according to the setting of the speed control lever. An upward movement of the starting button exposes a single frame. This provision opens up many interesting possibilities in animation work.

A Cooke 20mm. F 3.5 universal focus lens is standard equipment. However, a Cooke 1-inch F 1.8 lens, suitable for both

black and white or Kodacolor movies, can be supplied, either with or without Kodacolor filter.

An exposure chart covering all outdoor light conditions, seasons, subjects, and hours of the day is built into the new camera's side. There is an accurate film footage dial and a permanently attached, folding winding key.

The shutter is of a unique and distinctive type with oscillating action—motion picture's closest approach to the focal plane shutter of a still camera. This affords an unusual sharpness of image. The exposure time at normal speed is approximately one thirty-fourth of a second.

New Victor Model 3

• According to Victor Animatograph Corporation, Davenport, Iowa, the new 1934 Model 3 Victor Camera has been designed and priced to dominate the moderate priced camera market.

One of the most noticeable improvements in the Model 3 is the addition of a convenient attached winding crank. The camera has five operating speeds (including S-L-O-W-E-R Slow Motion). Other features include: Duplex twin-mounted spring motor, cushioned control, variable tension for different operating speeds, built-in exposure guide, self-setting film footage scale, multiple-field view finder with visible level (to prevent unintentional side tilting of camera), and provision for hand cranking.

Standard lens equipment consists of the f:2.9 one-inch Universal Focus Dallmeyer Triple Anastigmat. Lenses of other makes and specifications can also be supplied, as can Kodacolor equipment. All standard 16mm cine lenses are interchangeable on the camera.

Earlier models of this same camera have been extremely popular with movie makers in all parts of the world. The original Model 3 was priced at \$125.00, whereas the new improved instrument, with many additional features and more beautiful appearance, is priced at only \$72.50.

Embodying the many refinements listed above and the fine craftsmanship which is characteristic of Victor products, the Model 3 at its present attractive price promises to be the outstanding camera value of the year.



Photo by H. W. Voss

HOME MOVIE SECTION

Contents . . .

SOUND For Home Movies by William Stull, A.S.C.....	450
THE Family Newsreel by J. Dickinson Reed.....	451
HOW About the Eight? by Wm. J. Grace.....	452
LOOKING For Local Color by Milton R. Krasner, A.S.C.....	453
PARDON My Pups by Dwight W. Warren, A.S.C.....	454
BREAKING Light Laws by Arthur Campbell.....	455
BACKYARD Movies . . . March Winners.....	456
WALKER'S Filter Factor Calculator.....	458
HERE'S How by A.S.C. Members.....	460

• **PROFESSIONAL** Criticism of the Amateur picture is a part of the service offered by the AMERICAN CINEMATOGRAPHER. Many are not aware of this. Hundreds of pictures have been reviewed this past year by members of the American Society of Cinematographers for the Amateur.

Next Month . . .

- The response to our offer of 100 feet of Panchromatic 16mm Film Free for Home Movie Continuities has been unprecedented. Next month there will be another installment of these winners.
- There will also be another outstanding plot that you can shoot around your home.
- Technical side of Picture Making will be touched upon, giving you the lowdown on how to do it.

Sound for Home Movies

By

William Stull, A.S.C.

THE amateur of today is in virtually the position of the professional showman of six or seven years ago. At that time, it will be recalled, sound suddenly appeared. Sound—of any kind—became a desirable feature of any programme. Yet the regular "Vitaphone" and "Movietone" equipment (for showing, respectively, talking pictures synchronized to disc and film recording) was almost prohibitively expensive. Therefore many exhibitors continued to play silent pictures, providing musical accompaniments and sound-effects by non-synchronous reproducers. This was done by using two turntables, each equipped with an electric pick-up, and feeding into a common amplifying and reproducing system; a "fader" was included, by which sonic lap-dissolves could be made from one record to another, with the volume of the piece being played diminishing as the volume of the succeeding piece increased. Many theatres built up sizable libraries of sound-effect records, using both the 33 1/3 R.P.M. sound-and-broadcast standard record,

An amateur-made equipment for synchronous recording on discs. The recording (and reproducing) turntable is driven by its own electric motor, and synchronized with the camera through a flexible shaft. The amplifier serves for both recording and reproduction.



and the 78 R.P.M. commercial phonograph records. In due time, as synchronous sound-equipment became more economically available, the theatre men added it, or, in some cases, adapted their non-synchronous equipment to synchronous reproduction.

The amateur can well do the same.

Essentially, the situation is the same. Sound-on-film reproducing equipment is available—at a price; so too (on special order, and at a very stiff price) is sound-on-film recording equipment. Sound-on-disc reproducing equipment, of the synchronous variety, is available, at a somewhat lower price; sound-on-disc recording equipment—of a kind—can be made, or adapted from existing apparatus; though somewhat intricate and expensive, it is possible. Non-synchronous sound-on-disc reproducing (and recording) equipment may be had for very little cost—and for this there is a virtually unlimited supply of records, both of music and sound-effects already available.

Therefore, the most practical thing at the moment would appear to be the use of non-synchronous disc-recorded accompaniments and sound-effects, graduating from this to experiments with synchronous disc recording and reproduction, and eventually, to the use of a complete sound-on-film installation when such become really practical for amateur use.

If you own one of the ordinary electric-reproducing phonographs (Victor, General Electric, Graybar, Majestic, Columbia, Philco, etc.), you will be able to use it, after a fashion, for this purpose. The average "automatic" phonograph, however, is of little use for this purpose: for aside from the fact that such machines are quite expensive, they play their records through from start to finish, whereas, for your purpose, you will often want to start, say, in the middle of a record, playing only a few bars before repeating, or changing to another record. The ordinary phonograph, of course, permits this; but it suffers from the same drawback as a single projector: the pauses between records. And these pauses, since you are not likely to play a record through, but merely to use certain themes in it, may become quite annoying and frequent.

Therefore, by all means the best non-synchronous electrical reproducing outfit is one that contains two turntables, two pickups, and a "fader." You can easily assemble such an outfit from standard parts—there are a number of portable turntable-and-electric-pickup outfits, such as the "Columbia" and "Rotrola," available—and, using a good mid-range radio, with a dynamic speaker, for the amplifying and reproducing unit for both turntables, would give you an excellent non-synchronous sound system for well under \$100. But this price may very well be bettered by a little judicious "shopping": you should be able to pick up one of the non-synchronous, double-turntable theatre outfits already mentioned very reasonably, either from one of the smaller theatres, which has used and discarded them in favor of synchronous equipment, or from a theatre-supply firm which has taken them as a trade-in. The turntable parts of such outfits are especially desirable for such use, as they not only have the twin turntables, often working at either 33 1/3 R.P.M. or 78 R.P.M., and a fader, but also the pickup arms are connected with pointers, working over graduated scales, which permit you to set your needle down accurately, at any predetermined point. Often, too, by eliminating the driving motors, and substituting the proper gearing, these devices may be made into acceptable synchronous reproducers, driven by the projector through a flexible shaft. Nearly all of the newer projectors have motors built to handle such an extra load, and are fitted with shafts to which such a drive may be attached. This outfit might well be used, too, for synchronous recording. In such a case—unless from the start you had planned for recording, and used, say, the chassis and pickup of a home-recording phonograph—you would probably have to make some changes in the electrical circuit, and possibly in the pickups. In this connection,

(Continued on Page 467)



The Family Newsreel

by

J. Dickinson Reed
Continuity Editor

HOME movies are doubly interesting if they tell a story: it doesn't have to be an epic, either—just some simple idea which will give every member of the family something definite to do. And it really isn't hard to find such stories; every day, in every home, a dozen little incidents occur which could be used as the basic story-idea for an entertaining home movie.

For instance, every photographer who has a small son or daughter has probably had the experience of finding the baby playing with the family camera—well, why not make that incident the basis of a story? Here is a continuity written around such an occurrence: it is simple, easily made, and will require about 150 feet 16mm. You will notice

that it can be made entirely outdoors—but if you like to make interiors, much of the action can be moved indoors. In the same way, you can adapt almost every point in the story to suit your individual requirements: perhaps you won't want to show Father asleep on the back porch—well, a garden hammock will do just as well, and he'll probably be more comfortable! Perhaps you haven't a hedge handy for the big love-scene—well, why not the front porch, the family car, or almost any place where such action would naturally happen? Maybe you haven't a dog—or a cat: if you haven't, maybe your neighbors have; and if you can't beg or borrow them, you'll probably have some other pets—even a canary or a parrot—who will do just as well. It is just the same with your players: maybe your family doesn't fit the specifications of the cast-sheet; well, your friends can help you out (everybody likes to get into an interesting movie)—or, if necessary, you can even alter the cast to fit your own family. Adaptation must be the keynote of success in home-movie-making: don't follow any idea slavishly "just because it's in the book"—keep the basic thought, and adapt it to meet your own requirements. And here is Idea Number One:

THE FAMILY NEWSREEL

Cast of Characters

Father.....The family photographer
 Sonny (3 or 4 years old).....
 Junior.....The pride and problem of the family
 Betty.....Sonny's big brother
 Towser.....Junior's heavy date
 Maria.....The family dog
The cat
 Mother, friends, etc., ad lib

Scene 1. Long-shot of Father, asleep on the back porch. A newspaper is spread over his face; it rises and falls rhythmically.

Scene 2. Close-up of the newspaper heaving up and down as Father snores.

Scene 3. Long-shot (from a different angle), showing Sonny approaching Father.

Scene 4. Medium-shot of Sonny, interestedly watching the movement of the newspaper.

Scene 5. Medium-shot of Sonny. He sees something; pan to camera lying on table near Father.

Scene 6. Close-up of Sonny, looking around furtively. The coast seems clear. He smiles gleefully.

Scene 7. Long-shot. Sonny picks up camera, and runs out of the picture.

Scene 8. Close-up of Sonny examining camera. He peers into the lens, looks through finder, etc. Then he sees something outside the picture, and looks toward it.

Scene 9. Medium-shot of Towser, looking toward camera, wagging his tail.

Scene 10. Close-up of Sonny, calling Towser.

Scene 11. Long-shot of Sonny, pointing camera at Towser.

Scene 12. Medium long-shot of Towser (Sonny in foreground, if possible). Towser Towser insists on presenting his rear to camera.

Scene 13. Close-up of Sonny. He presses shutter-release of camera.

Scene 14. Close-up of Towser, barking.

Scene 15. Close-up of Maria, the cat.

Scene 16. Long-shot of Sonny calling the cat.

Scene 17. Close shot of Maria licking milk from saucer.

Scene 18. Medium-shot of Sonny. He takes a picture of the cat.

Scene 19. Medium long-shot of Junior and Betty, seated by hedge. He tries to kiss her.

(Continued on Page 466)

How About the Eight?

By

Wm. J. Grace

(Editor's Note: Wm. J. Grace has devised so many interesting things for the 16mm camera . . . and now his devices for the 8mm is stepping that economical little instrument up in the field, also because of the growing popularity of the 8mm camera, we have asked Mr. Grace to furnish us with a series of articles on the 8mm camera. This is the first of his contributions.)

NOT quite two years ago a husky little infant was laid on the doorstep of our movie house. We haven't paid much attention to him because he's been a good little tad and has gone his quiet, unobtrusive way, growing steadily. That child, like his older brother, 16mm, is a great deal like his forebears, in that he retains the general family characteristic but exhibits the natural generation-to-generation evolution of striving for even greater success.

Sixteen has been popular for nine or ten years now. When it first came into the picture, it was left pretty much to its own devices for awhile. Then, as the possibilities of a film which could be safely handled attracted attention, and as its lower cost made the allure still greater, Sixteen enjoyed a rapid growth. Here was a field for the comparative layman to dabble in motion pictures. There was no danger of fire from an explosively inflammable film, and the cost was so much lower than that of "standard" film. The still camera enthusiasts welcomed the chance to blossom forth in still greater fields, and Sixteen caught a firm hold.

Not only did Sixteen grow in popularity for family and travel filming, but its low cost and safety attracted much commercial interest. To satisfy the demands for equipment which could satisfactorily project the picture on a screen of sufficient size to exhibit before small audiences of a hundred people, projector and lamp manufacturers developed hand in hand equipment far in excess of home projection

mands. During the past two years Sixteen projectors have been increased in brilliancy over 300 per cent—from 200 watts to 750!

These things were what stood in the way of Sixteen—"Can the screen be illuminated brilliantly enough to make it practical," and "Won't the small size of the picture cause too much graininess even if it could be projected to large sizes!" Well, you Sixteeners who have been in the ranks for the past two or three years know the answer.

Where does all this lead us? Right up to the question of the practicability of the newest member of the motion picture family—8mm. The growth of Eight will parallel the growth of Sixteen, is my prediction. Of course, it is inevitable that Eight will profit by the advancements already made in Sixteen, just as Sixteen profited by the developments in Thirty-five up to the time of Sixteen's birth. But the same objections will be raised and the same objections will be overruled regarding Eight as in the case of Sixteen.

The first reason for the existence of Eight is its low cost. In the first place, Eight film is so much smaller that four times as many pictures may be taken on the same amount of sensitized cellulose acetate (non-inflammable celluloid to you) as on Sixteen, and ten times as many as on Thirty-five. Where a four-minute screen time of Thirty-five costs about \$15.00, Sixteen costs \$6.50, and Eight only costs \$2.25. Now just imagine that. Eastman, the only manufacturer of 8mm film at present, advertises the fact that each 8mm scene only costs about ten cents, one-tenth of a dollar. This is just about the cost of each still picture of, say, 3 1/4 by 4 1/4 inch size, and what a difference between a still and a motion picture!

The second reason for the growing popularity of Eight is the fact that the lenses are so much smaller that they are much less expensive to manufacture than those for Thirty-five and Sixteen. It is easier to make small pieces of perfect optical glass than large ones. The cost of the mechanical parts of a camera or projector is not as great in proportion to the total as one might think. It's the little piece of highly refined and carefully ground sodium silicate stuck out in front that makes them cost so much.

The third thing about Eight which appeals to the photographer is the small size of the associated equipment possible with the tiny film size. In a little box which may be slipped in one's coat suit pocket it is possible to build a complete movie camera, loaded with film and equipped for making not only regular movies, but trick movies as well. Eight may have certain limitations at present, but they are to be found mainly in the projection end of the system. About the only possible objection to Eight just now as far as taking pictures is concerned is the absence of super-speed film and color film. You may depend on it, too, that film manufacturers will quickly accede to the demands of the movie-making public for these films when they consider the time economically ripe. The purchase of the

(Continued on Page 468)



In lower left hand corner is the frame counter which Mr. Grace has installed on an 8mm camera.



For those who are inclined to want effects in the 8mm pictures, Mr. Grace has made the lap-dissolve possible in this camera by equipping it with a rewind feature. At bottom left circle is the adjusting key for rewind. Next to it is the rewind key itself.



takable individuality. On a wheat ranch, for instance—like the one used for so much of the action of "Golden Harvest"—there are literally thousands of little details which combine to give the impression of reality: conceivably, you could reproduce such a ranch near the studio, but even with the most painstaking planning you would miss enough of this 'local color' to destroy much of the desired impression of authenticity.

And what has all this to do with amateur cinematography? Just this: that if the amateur will look for, and use, this sort of 'local color' in his films (especially the dramatic ones), he will find that he has learned how to make films that are different from the ordinary run of non-professional photoplays—films that make an audience sit up and take notice.

After all, just what do we want for an amateur photoplay?

First of all—aside from a reasonably smooth technique—a story which can be satisfactorily produced with the means at hand: parts which can be acted believably by the players available; action which is interesting—and natural; and a convincing, natural background against which to enact the story.

Of these considerations, the most important, to my mind, are the background available, and its relation to story and players. You can have the most unique background in the world—but if it conflicts with the story and players it is worthless. Worse yet, you may have a highly unusual background available—and not use it. We've all seen these things happen—even in our own films. But how can we prevent it?

Principally, I believe, by careful planning. When we first decide to make a photoplay, we should stop and think; survey the material we have to work with—especially the local color. What can we make out of it? How can we use it to the full? Once we can answer these questions, our picture is half made, though not an inch of film has been exposed. The perfect answer, of course, should be that we've made our background a really integral part of the story—a motivating force; almost an actor. If we can do that, we can be sure of a convincing, interesting film—one that will be sure to interest an audience.

Let's consider how this has been done in some professional pictures. For instance, there is my own "Golden Harvest." True, not all of the action took place on the Oregon wheat ranch: but the two leading players, Chester Morris and Richard Arlen, were cast as the two sons of a wheat grower; farming—wheat-farming—was bred in their blood, and even though Morris went to the city and became a grain-pit speculator, he was still a farmer under the skin; his kinship to the grain growers made him a fortune, and then impelled him to throw it away in an heroic effort to save his neighbors on the farm. The ranch atmosphere was truly a motivating part of the plot.

In "State Fair," the big fair was more than a background: it was truly a motivating factor—as fully an actor as were any of the flesh-and-blood players. The story of the fair was the story of the various characters; from start to finish, its influence was felt; it brought each one of them problems—happiness—triumph—and sorrow. It conspired against them; it thwarted them and, in spite of it all, they attained happiness.

In much the same way, the Steel Mills of Pittsburgh were used in a rather unimportant film released last year, "No Other Woman," while, back in the silent days, one of Lillian Gish's most powerful roles was in a film called "Wind," in which the Texas climate was used as the principal menace.

In the amateur field, I recall a film entered in the 1933 American Cinematographer Amateur Film Contest—one which was so good it received Honorable Mention. It was made by Elton Fox, of Oakland, California, and was called

(Continued on Page 468)

Looking for 'Local-Color'

By

Milton R. Krasner, A.S.C.

LAST summer, the Charles Rogers production unit at Paramount sent me up to the Oregon wheat country to make a picture called "Golden Harvest"; this spring, another company from the same unit will go to Honduras, to photograph "Green Gold" among the banana plantations. Nice trips, both of them—but despite Mr. Rogers' good will for cinematographers, neither trip is a mere pleasure-jaunt: there is a sound business reason behind them. Mr. Rogers realizes that you've got to have more than simply a good story, competent actors, a good director, and an expert cinematographer to turn out a really successful picture: you must have an atmosphere that is convincing—that is so completely natural that the audience forgets that it is looking at a make-believe story, and feels that it is really participating in something real.

Now, probably the biggest single item in building up such an atmosphere is 'local color'; the thousand-and-one details, little and great, that combine to give any locality its unmis-

"Pardon My Pups"

By
Dwight W. Warren, A.S.C.

A FEW weeks ago I photographed a two-reel comedy, released by Educational Pictures, called "Pardon My Pups." It isn't a great picture—very few two-reelers ever are—but I believe it is a picture that home-movie makers ought to see. Stripped of the routine embellishments of the professional comedy, it is a simple little home story of the type that home-movie makers are always looking for—but not always finding.

The picture begins with a double-exposed title; the background is a series of lap-dissolves carrying you from the front fence, up to the house, and finally to the gabled roof, all the time with a driving rain beating down. As the last title fades, the scene fades to a close shot of a ceiling; the rain is coming through, dripping down drop by drop into the room below. We follow a drop down, and see that it is falling down upon little "Mary Lou," asleep in bed. She wakes, gets up, and wakes "Sonny," her big brother, reminding him that it's his birthday. He likes that—until he starts to wonder what he will be given for a birthday-present: he wants a motorcycle, but his father wants to give him a dog, a thoroughbred spaniel puppy. "Sonny" is afraid of dogs; but the birthday-present idea is the only alibi father can think of to justify buying himself a pup.

After breakfast, the argument still rages: motorcycle vs. dog. One of "Sonny's" friends—and a rival in love—drives up with a birthday-present: a dog. "Sonny" is terrified, refuses the dog, and angers his father. Finally, "Father" lays down an ultimatum that "Sonny" is going to get a dog, whether or not he likes the idea.

Here we fade to a traveling-shot of feet, walking along a railroad-track: it is "Sonny," running away. He pauses by a sign which reads, "You are now leaving Farmington—population 10,899." Slowly, he takes out a pencil, crosses off the last 9, and replaces it with an 8. He resumes his journey.

Soon a train whizzes past; and as "Sonny" steps back onto the track, he picks up a menu which has blown from the diner. That reminds him—he's getting hungry! Just then, he smells something appetizing: we cut to a close-up of some bacon sizzling in a pan. A tough-looking hobo is cooking his meal. "Sonny" approaches, hungrily. But one look at the tough customer tells the boy he'll get no meal there; tightening up his belt, he resumes his march.

Soon after, crossing a trestle, he stops—something is hurt underneath the bridge! He hurries down—and finds a dog. It is a very forlorn-looking spaniel—so forlorn that it finally overcomes his fear of dogs. He picks it up, and says, "Well, I guess I'm licked. Back home for us, doggie!"

The next scene shows him—still carrying the spaniel—entering the back door of the girl-friend's home. She gladly helps him to bathe the dog, and make it presentable.

While they're doing this, we cut back to the bridge, which is near a road. A big, shiny roadster draws up; in it is

the same boy who had offered "Sonny" the other dog. He stops, calls out to the tramp, "Seen a dog around here? Mine jumped out of the car near here a little while ago." The tramp points under the bridge: they run down, but no dog.

Here we cut back to "Sonny," entering his home. "Mother" and "Father" are arguing over his having run away. "Sonny" enters, much to "Father's" gratification—he knew the boy would be back! But when they learn of the dog, the parents aren't so happy. "What—a mutt in my house?" storms "Father." "Take it away—I won't have it!" "Sonny's" suggestion that the dog seems about to have pups makes things still worse; finally, despite his pleading, he is forced to take her to the pound, to be destroyed.

Shortly after, the boy friend comes to the house, to tell "Father" that he won't get the pup he'd been planning on. "Queenie," its expectant mother, had run away and was lost. "Mary Lou" suggests that maybe the dog "Sonny" found is "Queenie."

Meanwhile, "Sonny" reaches the pound—but can't bear to have his dog destroyed—so he decides to hide her with his girl-friend.

"Father" and the boy-friend reach the pound, after a mad drive; no dog has been there. They drive home—and arriving there, they find "Sonny" and the missing dog just stealing into the girl-friend's house. The dog is "Queenie," after all; and her master decides to punish her for running away. But "Sonny" has different ideas—he considers her his dog now, and the two boys fight over it. Finally "Sonny" gets his opponent down, and chokes him into admitting that "Queenie" is "Sonny's" dog.

As "Father" picks the two boys off the ground, scolding them for fighting, "Mary Lou" calls excitedly from the house—"Come quick—something's happened!" And we fade out on "Queenie," surrounded by her very new family.

This is, of course, only a very brief outline of the professional film; just enough, I hope, to hint at the story's possibilities as a home-movie production. Like any outline, it doesn't have to be followed exactly: just as a professional producer adapts a story to meet his own requirements, so, too, should the amateur producer adapt it to meet his par-



(Continued on Page 464)



A simple but effective two-light set-up. A single lamp, well to the left of the camera, gives front-light; another—high and masked by the piano—gives back-light. The low angle makes the shot especially effective.

Breaking Lighting Laws

By

Arthur Campbell
Cinematographer

A CRAFTSMAN, someone has said, is a man who knows how to do the right thing at the right time; an artist is a craftsman who knows how to do the wrong thing at the right time. This is especially true of the photographic craftsman. Photographic craftsmanship means doing the right thing at the right time—sedulously abiding by the basic rules of good photo-technique. Photographic artistry involves not only adherence to these basic rules of photo-technique, but knowing when and how to violate these canons in order to obtain some special effect.

In the two preceding articles, we have tried to suggest the basic rules of good cinematographic lighting technique.

We have tried to outline a series of lightings which, if followed, would assure uniformly good lighting of both people and sets in close-ups, medium-shots, and long-shots. But there are times when a uniformly correct lighting will not meet the dramatic requirements of a scene: times when the dramatic meaning of the scene and action is widely at variance with the conventional. In such cases, the camera and lighting should attempt to match the mood of the action—even if in so doing they must strike boldly away from accepted rules.

The most important factor in this is the visual key of the scene. It can be closely matched to the dramatic key of the action: a high (or light) key for scenes of especial joy and freshness; a normal key for normal scenes; a low key for heavily dramatic action; and an excessively harsh, contrasted key for melodramatic action.

We have already discussed normal-key lighting. High-key lighting, as a rule, can be achieved by a normal balance of lighting, but a higher intensity, with—if you are using negative-positive—light printing. Low-key effects, for scenes of sadness or severity, can be achieved by a normally-balanced lighting, with lower intensity (that is, with the lights either of lower power, or farther from the subject), or, with negative-positive, by normal exposure, underdevelopment, and dark printing.

Then, there are special effects which we can get only by altering our basic lighting set-up. For instance, we can get some very interesting effects by lighting the set itself in a low key, and picking out the principal character or characters by strongly lighting them with some sort of a concentrated light. Likewise, for highly dramatic or melodramatic action, you can get some fine effects by deliberately creating harsh shadows, offset by equally harsh high-lights. This can often be done with but one or two lights, strongly picking out the important objects, and casting strange shadows. In such shots the importance of backlighting cannot be overlooked, for it will help make your people stand out from the dark background, and give relief to your composition.

Source-lightings are very effective, and interesting to make. In making them, it is usually advisable to have a soft general lighting on the set and players (usually in a low key), and then pick out your principal player or object with a stronger light, ostensibly from some source shown or suggested in the picture—such as a lamp, a window, or even a match—but actually coming from some photographic source outside the picture-area, such as a spotlight or a regular light fitted with a concentrator, as suggested elsewhere in this issue. In some special instances, you can ignore all other lighting, and—thanks to SuperSensitive film and fast lenses—use a flashlight, or even—as in one sequence is "Strictly Personal," photographed by Milton Krasner, A.S.C.—a match, or the glow of a cigarette.

For many melodramatic scenes, very interesting effects can be obtained by placing the lights lower than usual—perhaps actually on the floor under the camera, for instance. Firelight effects can be secured by placing the lamp on the floor, and waving strips of flimsy material in front of it to simulate the flickering flames as reflected on the faces of the actors.

Night-interior sequences are very fascinating, especially if your action calls for the switching on or off of the lights. For example, imagine a shot of a room, totally unlighted; a door opens, silhouetting against a dimly-lighted corridor someone entering, showing merely that somebody comes in—but not who. Then, the lights in the room are switched on, as the actor apparently presses the switch that controls the room lights. Similarly interesting effects can be made with an unlighted set, showing an intruder exploring with an ordinary, powerful hand-torch or flashlight.

On the other hand, shadow-effects against a brightly-lit background (lit from behind, as from lamps F and G in

(Continued on Page 465)



BACKYARD MOVIES

Movie Film Free

Here are the first winners of a 100 ft. roll of 16mm Panchromatic film given for those who send us simple continuities or plots that can be made by any Home Movie Maker. Elton Legg clicks with two this month. Harland Hutchings, of Kansas City, winner of Gold Medal in our 1933 Amateur Contest, also wins a roll. Many more were received, but these represent the best of the first to come to us. **BACKYARD MOVIES** will be a regular feature of the *American Cinematographer*. Try your hand.

Now to view the winner
With (his or her) smile from ear to ear,
He (or She) is the Champion Smiler—
And wins the keg of beer!
(Close-up of the one with the best smile.)

The End,
—ELTON LEGG.
Council Bluffs, Iowa.

“Thirteen Spades”

Cast of Characters

Josephine, Vernita, Howard, Harley—
.....The Bridge-hounds
Dorothy.....The Date
Tommy.....The Dater

Scene 1. Fade in. Long-shot across living-room. The Bridge-hounds are grouped around the bridge-table. Josephine is shuffling the cards preparatory to dealing. Pan camera around to Dorothy as she settles herself in an armchair and starts to read a book.

Scene 2. Close-shot, preferably from a low angle. Dorothy stifles a yawn and idly turns a page . . . then settles herself comfortably for a dateless evening.

Scene 3. The bridge-table, shot from above. The cards are being dealt. Harley starts picking up his cards as they are dealt.

Scene 4. Bridge-table, shot over Harley's shoulder. Harley's hand picks up his cards . . . each one is a SPADE.

Scene 5. Exterior long-shot of front porch. (A photoflood inserted in the porch lamp will suffice if you use SuperPan film). Tommy arrives, smoking a cigarette, and rings the doorbell. (A close-up of Tommy's hand pressing the button can be inserted here.)

Scene 6. Close-up of Dorothy. She hears the bell . . . is startled . . . looks up quickly into lens, moves her hand toward her mouth, and with an expression of bewilderment starts speaking.

TITLE: “OMIGOSH! I FORGOT ALL ABOUT TOMMY!!”

Scene 7. Medium long-shot of Dorothy. She finishes speaking title, drops her book, and gets up hurriedly.

Scene 8. Medium long-shot of bridge-table. Include all players, but leave enough room for Dorothy to come in at one side. Harley has just picked up his last card (with a contented gesture) and put it into his hand as Dorothy comes into the picture. She pantomimes that she wants the room cleared before she goes to the door.

Scene 9. Exterior shot of Tommy at
(Continued on Page 464)

“Sharp Work”

A very baffling trick picture can be made very easily with about six butcher-knives, and two actors, who we will call No. 1 and No. 2. The setting is any backyard, with a wooden background—such as a wall, a barn door, or even a fence. For the best results this background should be dark.

Tie about ten feet of thin, strong, dark cord to the handle of each butcher-knife. Then have Actor No. 1 stand up against the wooden background, and pin him in with the butcher-knives. Place the camera in an inverted position, and in a location where you can get a close-up of No. 1, showing all the knives. Start the camera, and after a few feet let someone outside the picture jerk the butcher-knives out, by means of the black cords. Keep the camera running continuously, and hold the shot for a little after all the knives are withdrawn.

Now begin on Actor No. 2, with the camera right-side up. Get a close-up of him with a knife clinched in his teeth, looking as barbarous as possible. Then make some long-shots of him as he throws the knives toward the camera; have him hold one in his teeth, four in one hand, and one—the one he is to throw—in the other.

After the film has been processed, cut out the scenes made with the camera inverted; turn the film end for end, so that the picture is right-side up on the screen, and you will find the action reversed: the knives will be flying into place, pinning No. 1 in. Assemble your film as follows: begin with No. 2, in close-up, clinching a knife in his teeth; then cut to No. 1, standing against the wooden background. Then the shot of No. 2, throwing the first knife. Then the shot of No. 1, showing the first knife striking the board—and so on until all

the knives have been thrown, and shown striking. You'll turn out a really “different” picture very easily! Of course, varying the angles—giving a variety of close-ups and long-shots of these actions—will give more variety. And No. 1 should look terrified at the right times!

—ELTON LEGG.
Council Bluffs, Iowa.

“The Smile Contest”

People like the idea of making movies at a party—but it isn't often that the guests can be persuaded to take their acting seriously. Here's an idea that capitalizes this!

Make a close-up or two of each guest. When the film is processed and projected, you will find that the group can nearly always be divided into groups according to the intensity of their smiles or frowns. Group them this way, and ahead of each group cut the following titles:

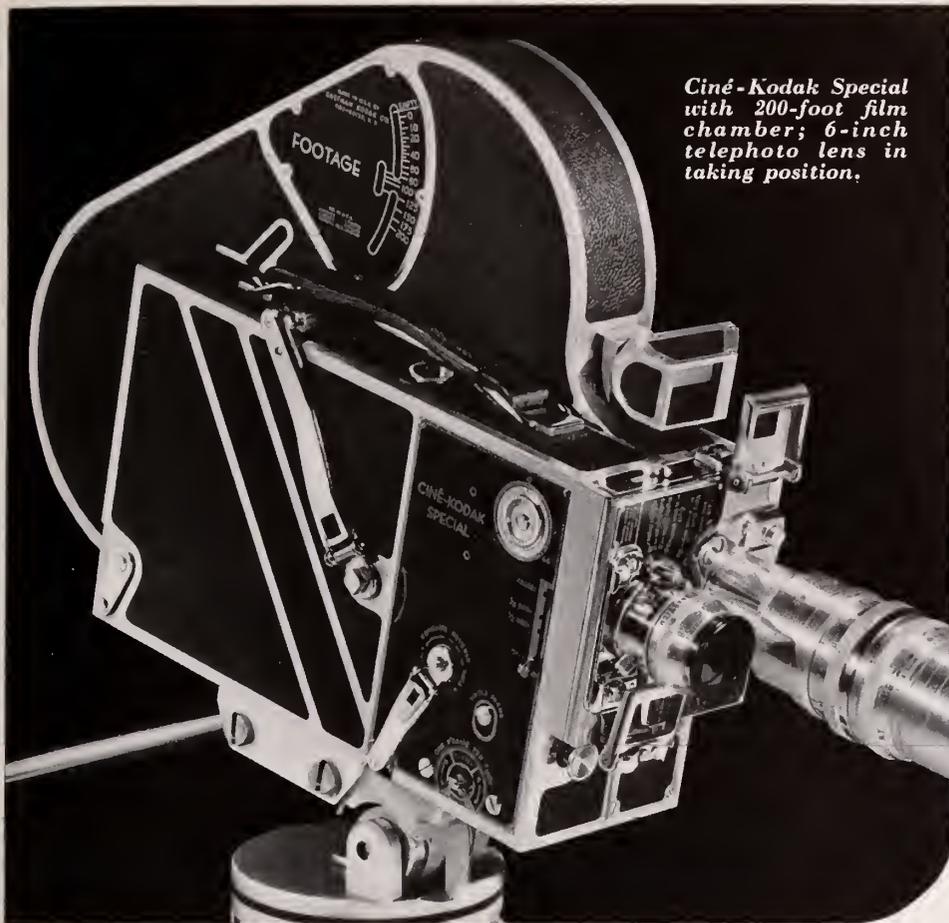
From the children to the Old Folks,
All will take a part
To find the broadest smiler.
Let the contest start!

Notice in your judging
Expressions of the eyes—
These contestants are too forlorn
To capture any prize.

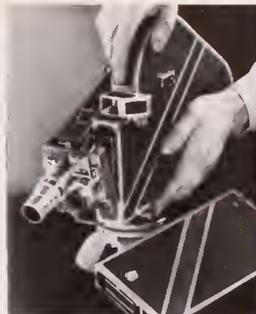
(Close-ups of the frowners follow here.)
These are slightly better,
They came through with a grin—
With a little practice
They couldn't help but win.

(Close-ups of those with a slight smile.)
Here's some competition
Extremely hard to meet—
You judges must agree
Every one should beat.

(Close-ups of the good smiles.)



Ciné-Kodak Special with 200-foot film chamber; 6-inch telephoto lens in taking position.



Interchangeable 100-foot and 200-foot film chambers enable you to switch from one film to another in a few seconds.



A reflex finder shows on a ground glass screen the exact field and focus of all of the six lenses supplied for the Special.

CINÉ-KODAK SPECIAL

CHALLENGES YOUR HIGHEST MOVIE MAKING AMBITIONS

FAR and away the most versatile of all 16 mm. movie cameras, the Special frees you from the inevitable restrictions of popularly priced home movie equipment.

Four of its unique refinements are illustrated at the right. Others include eight- and one-frame hand crank shafts, double lens turret for any of six interchangeable lenses, camera speeds from 8 to 64 frames a second, film meters on both film chambers and camera mechanism. With the Special, fades, dissolves, double and multiple exposures, slow motion and mask shots are simple and sure. The basic model, with Kodak Anastigmat *f*.1.9 lens, 100-foot film chamber, and set of six masks, is priced at \$375. Alterations for special scientific or technical work will be estimated.

The complete and interesting story of the Special is told in the Ciné-Kodak Special Book—free upon request.

Eastman Kodak Company, Rochester, New York



The Special's exclusive variable shutter makes fades and dissolves easy and certain—gives extra exposure control.



Circle and oval masks, also vertical and horizontal half masks, slip into a light-trapped slot between the lens and the film.

If it isn't an Eastman, it isn't a Kodak



Walker's Filter-Factor Calculator

At the bottom of this page we have reproduced a filter-factor calculator designed by Elton Walker, a cinematographer of Los Angeles. Walker has made some mighty fine scenic pictures and displays a splendid knowledge of filter values in his 16mm productions. In 1932 he was among those given certificates of merit for his beautiful scenic entries. We have reproduced below the Walker Calculator. We printed it in such a way that you can cut it out, mount it on a cardboard and have it as a permanent part of your photographic equipment.

At the left is a chart showing the filter factors for various filters. The first column is the factor for panchromatic film, the second column for supersensitive film. You can make your own chart to fit the filters you own. The center circle is divided into three sections, the outer section representing camera stops, the center section representing filter factors, and the inside section representing various camera speeds. (Remember, this was designed for 16mm use.) On the right of the illustration are the two inner circles representing the filter factors and exposures per second. Cut that out and place it right above the other and you will see it takes the place of the two center circles.

Mount this entire illustration on cardboard, punch a hole in the exact center of both circles, mount the smaller

over the larger in such a manner that the second portion can rotate freely on its center axle or pin.

Let's say you find the normal stop by your exposure meter is F11. Notice in the center illustration we have placed 0 opposite F11. Now let's say you are using a filter with a factor of 3. Look above 3 on the second circle and you will find F6.7. That is the proper stop with that filter.

Now let's say you were going to shoot the picture at 32 frames per second instead of the normal 16. Turn the 0 to F6.7 and you will find that your proper exposure would be F4.7.

Briefly the way to use this calculator is to turn the 0 on the second circle to a point underneath the F value that would be normal without a filter. Then determine your filter factor and look at the F value above that filter factor and you have the proper stop to use.

If for instance you are not using a filter, but slow motion and you are going to shoot 32 frames per second and your normal is F11, as determined by meter or experience, if you will set the 0 at F11 and look above 32 on the bottom circle you will find that your proper stop is F8.

If you want to make your own value chart here are some of the factors for the standard filter when used with Panchromatic Film: K1-1.5, K2-3, K3-4,

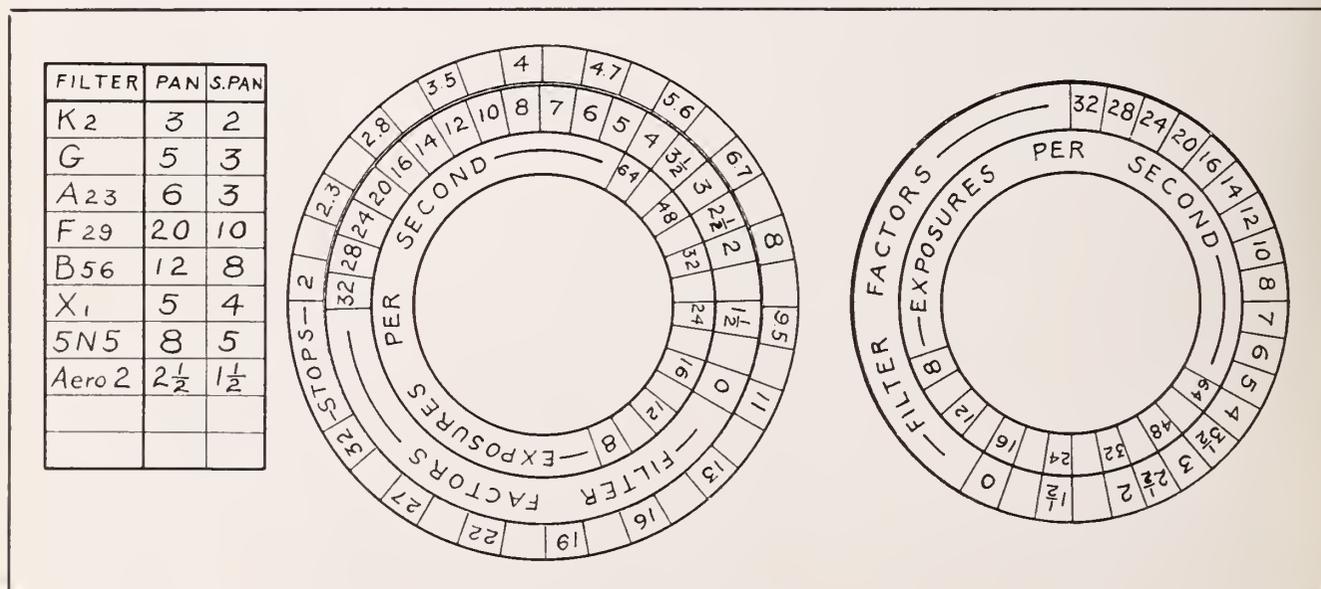


"Snout" or concentrator designed by Arthur Campbell, cinematographer for the American Cinematographer, to go on a Solite Lamp. This can be used where concentrated light is needed for back-lighting, fire-place effect and for concentrating on some object.

Aero 1-1.5, Aero 2-2.5, 23A-6, 25A-10, G-5. Here's the values for Supersensitive Film. (We do not give the values for the K filters for this film as they are practically never used by the professional with this type of film): Aero 1-1.25, Aero 2-1.5, G-3, 23A-3, 25A-4, 29F-8.

If you already own filters that are merely designated by X, say such as 2X, that merely means that filter has a factor of 2, if 4X the factor is 4.

In giving you the factors we have only touched upon the most popular types of filters. There are, of course, many more than these, but if you are delving into photography where you are using them you will already understand their filter factors.



Announcing the new Filmo 121 Camera

MAGAZINE LOADING

only \$67.50



Bell & Howell presents the Filmo 121 — a magazine-loading 16 mm. movie camera that's so small and light, so utterly *convenient* in its handling, that you'll want to carry it everywhere you go!

And look at the price tag — \$67.50! The only thing that can surprise you more than that (a *record* low price for genuine Filmo value) is this array of features:

Magazine Loading: Just slip in a 50-foot film magazine, shut the door, and start shooting! You can re-load in a second or two!

Single Frame Exposure: Push the starting button *down* (it's guarded against accidental starting, by the way) and you get movies; push it *up* and you expose one single frame—no more. Great for animated movies and trick title work.

Two Film Speeds: 16 (normal) and 24 (semi-slow) frames per second. At 24 frames you can slow up races, football games, nervous actors, street scenes, and other too-fast action.

Two Viewfinders: The famous Filmo spyglass viewfinder and a waist-level finder—both as brilliant as looking out a window!

Built-In Exposure Guide: Gives F stops for every season, every hour of the day, every scenic condition, every outdoor illumination.

Lenses: Standard equipment is the finest 20 mm. universal focal lens you could buy — the Cooke F 3.5; and it's interchangeable with Cooke speed and telephoto lenses, including the F1.8 for Kodacolor.

With its sturdy die-cast aluminum case, paneled in fabricoid, and its plated fittings, Filmo 121 measures only 2¼x3½x5¼ inches and weighs only 2 pounds! There's a tripod mounting, of course. And the leather strap handle *snaps* flat to the camera when not in use. You can have a swank leather carrying case for \$7.50.

Dash to your dealer's tomorrow — or send us your name and address. We want you to know more about this little Filmo 121 that's going to make movie making more popular than ever.

BELL & HOWELL COMPANY, 1848 Larchmont Ave., Chicago; 11 West 42nd St., New York; 716 North La Brea Ave., Hollywood; 320 Regent St., London (B & H Co., Ltd.)

Established 1907.



■ **Filmo 70-D Camera**—Filmo 70-D offers a three-lens turret head so you can carry your speed and telephoto lenses always ready for instant use. Seven film speeds provide for slow to fast motion in all degrees. A unique spyglass viewfinder frames the picture for any lens you're using. Optional equipment is the critical focuser, giving you direct focus through the lens. Price, including leather case, \$251 and up.

■ **Filmo 70-E Camera**—Four film speeds, including 64 frames a second, and a Cooke F1.5 speed lens make Filmo 70-E a camera with which to conquer photographic extremes. Perfectly exposed movies possible under the most adverse lighting conditions. In the making of color movies (using a Kodacolor filter) the Filmo 70-E gives results of startling fidelity and beauty. With Sesame-locked case, \$185. With F 3.5 rather than F 1.5 lens, \$150.



BELL & HOWELL FILMO

PERSONAL MOVIE CAMERAS AND PROJECTORS



HERE'S HOW

by A. S. C. Members

FILTERS. "Using SuperSensitive Panchromatic film, what filters would you use under the following conditions: 1. Taking pictures into the morning sun, when a bluish tint predominates? 2. Same, but when a reddish tint predominates? 3. Taking pictures into a setting sun, with the sky cloudy, and a reddish tint predominates? 4. Taking pictures into a sunset with broken clouds covering sun and sky, and when a bluish tint predominates? 5. Above the clouds, for a night-effect scene? 6. Above the clouds for a good day scene? Also, what books would you recommend on filters and their use?"—F. J. N., Brownsville, Tex.

It is a bit difficult to answer your first two questions properly, as you do not state whether you mean actually at sunrise, or later, when the sun is higher in the sky. However, for No. 1, I would advise either a "G" or a 23-A filter, if you want to cut through the bluish haze. For No. 2, I doubt if a filter is necessary, since the reddish tint would act similarly to a red filter. In both 3 and 4, the color of the clouds (i.e., whether they are light or dark), and the effect you want to get, would influence your choice of filters. Generally speaking, I would say that for No. 3 no filter would be necessary, except possibly a light Neutral Density filter, to cut down the glare and contrast. For No. 4, I would again advise either a "G" or a 23-A, to penetrate the bluish haze; and if you have light clouds, and want a dark sky for a background, use an "F" filter.

My own experience in aerial cinematography has been limited, but Elmer G. Dyer, A.S.C., who worked with me on "Night Flight," advises either an "F" filter (with the exposure held very low) or a 72 (or "Gamma") filter for aerial night-effects. If you can use Infra-red-sensitive film, use that and an "F" filter. Mr. Dyer also advises that he finds the three most valuable filters for regular aerial work are the Aero 2; "G"; and E-22. The latter is Mr. Dyer's favorite: it is similar to the "G", but of a darker red-orange hue. It is, however, rather unstable, and therefore a 23-A would be a better substitute for most work.

I can strongly recommend an article on "Filters and Filter-Factors," by Emery Huse, A.S.C., and Gordon Chambers, which appeared in the December, 1931, issue of this magazine, as one of the most practical treatises on Filtering for SuperSensitive film. Mr. Dyer's article on Aerial Cinematography, in Vol. II of the Cinematographic Annual, should also be helpful to you.

—Oliver T. Marsh, A.S.C.

MAKING A BEADED SCREEN. "How can I make a beaded screen for projection?"

Begin with a piece of canvas of the size you wish your screen to be; if you stretch it on a frame, like a painting, it will probably be more convenient to work with. Then give it two coats of flat white paint. Next, apply a heavy coat of Sherwin-Williams' White "Rubber Enamel." On this sprinkle small, white glass beads. These can be procured from any theatrical costumer. They must be put on while the paint is still "tacky"; it is best to put them on with a blower, but if you haven't one, a passable job can be made sprinkling them on by hand and shaking off the surplus. Be careful not to leave any empty spots, however. This "Rubber Enamel" never gets really hard, and the screen is flexible enough to be rolled up for storage or transportation. If you want a really good job, put a black border around the edge, with rounded corners, to match the picture. (You can use black "Rubber Enamel" for this, and treat it, too, with beads.) This border sets the picture off better.—Arthur C. Miller, A.S.C.

WIPE-OFFS. "How are the 'wipe-off' effects seen in professional films made?"—R.H.L., Brooklyn.

The "wipe-off" effects used in professional pictures are made on the Optical Printer, described in an article in this issue by Lynn Dunn, A.S.C., Optical Printer expert at the RKO studio. The amateur can make some simple wipe-offs directly in the camera, however, by fitting a tapering lens-hood on the lens, long enough so that a blade moved in front of it will be reasonably sharp. You make your "wipe" and rewind, thereafter synchronizing your wipe-in with the wipe-out.

—Vernon Walker, A.S.C.

NEUTRAL DENSITY FILTERS. "In a number of articles in The Ameri-

can Cinematographer, I have seen mention made of Neutral Density Filters. I have used them in Kodachrome work, but not in black-and-white. How should these filters be used?"—R.G.C., Cambridge, Mass.

The neutral density filter is a filter which, instead of being colored, is a neutral-tinted gray. Hence, instead of altering the color-rendition, it simply absorbs a certain percentage of the light; these filters are made in several grades, according to their absorption; the most commonly used are the 25 percent, 50 percent, 75 percent and 100 percent absorption filters.

Their uses are many. For instance, if you are working on the beach or desert, or anywhere where you are faced with a large expanse of glaring sand, pavement, etc., you can reduce this glare with the N. D. filter. Similarly, suppose you are working outdoors, where the lighting and subject combine to give a very contrasty result, you can soften the contrast by using a neutral density filter and opening your lens up, rather than stopping down to suit the light, which would naturally increase the contrast. The N. D. filter has, it must be remembered, a tendency to grey over the picture. Incidentally, if you are faced with the reverse of the situation just mentioned—that is, a very flat light, perhaps with a subject lacking in contrast, you can often improve your picture a great deal by stopping down your lens, or by using one of the "Contrast Group" filters—G, A and F. If your light is too poor to permit much stopping down, you can often do so by either slowing your camera-speed, or opening the shutter, if you have an adjustable one.

—Jackson J. Rose, A.S.C.

RANGE-FINDERS. "Is there any 16mm camera equipped with a built-in range-finder, such as are used on the 'Leica' and 'Contax' miniature still-cameras?"

J.E.G., Seattle.

The new Bell & Howell semi-professional "Filmo" is so equipped, and is, to the best of our knowledge, the only cine camera with this feature. It does not, however, interlock with the lens, as in miniature camera practice, but gives a reading on its operating dial. Almost any cine camera can advantageously be fitted with a supplementary range-finder.

—John W. Boyle, A.S.C.

AWARDS WON BY C. and R. COLES



The Silver Medal for Photography in the American Cinematographer Annual Contest.

Picture Titled "The World's Fair"

The Silver Cup in the Annual Contest, Metropolitan Motion Picture Club of New York.

Picture Titled "Cinecoles Review"



"DESERT SUNSET"
A still by C. & R. COLES



*-pictures
taken with a*

WESTON EXPOSURE METER

The problem of *correct exposure* was not left to chance by Charles and Robert Coles in making these prize-winning pictures. The following excerpts from a report covering their trip suggests an easy solution to your own exposure problems:

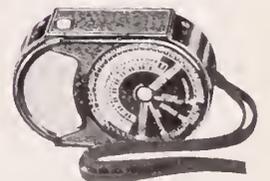
"Last summer we took a trip to Arizona via Chicago. We had only one day to spend filming the World's Fair. The brilliancy and unusual color of the buildings made the judgment of exposures very difficult; particularly since we were using a variety of filters. In Arizona, with glaring sunlight and intense shadows side by side, the exposure problem was even more difficult. Desert sands, canyon shadows and sunlit cliffs, all in one scene, taxed the latitude of the film. To record both the dazzling highlights and inky shadows, the exposure had to be precise. So for both of these pictures all exposures were made using a Weston Exposure

Meter. The conditions under which both pictures were taken were so unfamiliar to us, that exposures which we estimated were entirely different than the meter readings. But, we disregarded our own experience and relied solely on the meter. The Weston Meter has completely solved this exposure problem for us."

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\$1,000 in CASH PRIZES
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HOME MOVIE CONTEST

The fine advance being made by amateurs in home motion picture making has prompted the AMERICAN SOCIETY OF CINEMATOGRAPHERS through its magazine the AMERICAN CINEMATOGRAPHER to offer \$1,000 in cash prizes for their 1934 contest which will close on the 31st of October . . . that is, all film must be in the offices of the AMERICAN CINEMATOGRAPHER on that date. The rules and the entry blank will be printed in subsequent issues.

This \$1,000 will be divided very simply. There will be a grand prize of \$250.00 for the best all around picture. There will be from 10 to 15 prizes in the various classifications of \$50.00 each. Even though you may not win the first prize you would have a chance at the \$50.00 given for the best picture presented in the following classifications. Scenic, Travel Educational, Scenario, Home Movies, Kodacolor,

Technical and any other classifications which might be brought forth by the enteries made.

WATCH FOR FURTHER ANNOUNCEMENTS

There will be more prizes of equipment to be designated in March. In that issue we will also print the rules, the entry blank and more information.

●
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 to the April
 issue for full
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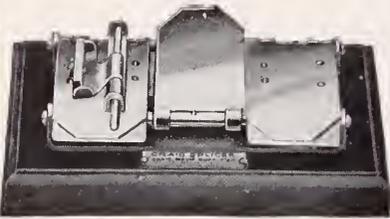
BACKYARD MOVIES

(Continued from Page 456)



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front door. He is waiting, nervously. He flips his cigarette away . . . rings the bell again . . . pantomimes his impatience.

Scene 10. Same as Scene 8. Harley looks disgustedly up at Dorothy, and around at the other players.

Scene 11. Close-up of Harley. He speaks.

TITLE: "I'VE GOT TO PLAY THIS HAND—LET'S GO TO THE KITCHEN."

Scene 12. Medium long-shot of Bridge group. Harley finishes speaking, and starts to get up.

Scene 13. Quick flash of Tommy, still waiting.

Scene 14. Long-shot of hallway. The Bridge-hounds troop out of living-room and go toward kitchen. One carries the table, another an ash-tray, and each carries his cards in his hand. Dorothy comes last, still hurrying them out.

Scene 15. Closer shot of Tommy at the door. He is still waiting. Dorothy's face appears in the glass window at the upper part of the door. She recognizes Tommy, and opens the door. He enters, closing the door behind him.

Scene 16. Long-shot of hall—toward door. If convenient, you can get a very good angle by shooting this from the stairs. Tommy and Dorothy are talking together, while he removes overcoat and hat. They exit to the living-room.

Scene 17. Shot of the bridge-table, from directly above. Harley's partner spreads out her hand.

Scene 18. Medium close-shot of Harley's partner, from over Harley's shoulder. She speaks, disgustedly.

TITLE: "I HOPE YOU'RE SATISFIED! I HAVEN'T GOT A SINGLE SPADE!"

Scene 19. Close-up of Harley's partner, speaking.

Scene 20. Close-up of Harley, made from low set-up, below table-top level. He glares triumphantly at his partner and speaks.

TITLE: "I SHOULD WORRY ABOUT THAT!"

Scene 21. Medium-shot of Harley, showing table-top. He spreads his hand out on the table, and says:

TITLE: "I'VE GOT 13 SPADES!"

Scene 22. Close-up of Harley's cards spread out on table.

Scene 23. Medium-shot of Dorothy and Tommy seated on the davenport in living-room. They are enjoying themselves. Suddenly they hear loud voices from the kitchen. (You may add several Russian-style "flashes" of the mouths of the Bridge-hounds, talking excitedly). Dorothy and Tommy hear the noise, look

toward the kitchen, and look at each other.

Scene 24. Long-shot of living-room. Dorothy and Tommy get up together and hurry out through doorway toward kitchen. The camera may be panned with their movement, if necessary.

Scene 25. Long-shot of kitchen, looking toward living-room door. Harley is standing, gesticulating wildly and shouting. The other Bridge-hounds are disgustedly holding their hands to their ears. They look helplessly toward the door as Dorothy and Tommy enter. Harley continues to shout and wave his hands.

FADE OUT

TITLE: "THE END."

Note: Both the main title and the End title will be very effective if made as double-exposure titles, with a shot of the 13 Spades arranged on the table-top for a background.

Contributed by

HARLAND B. HUTCHINGS,

Kansas City, Mo.

'Pardon My Pups'

(Continued from Page 454)

ticular case. As a whole, however, I think that this story is unusually well suited to the needs of the home-movie maker. The locale could be almost any home, in any town; the players could be any family or group; even the dog could be almost any dog. Technically, the story is rather easily filmed; there are only two bona-fide interiors—the bedroom, for the opening sequence, and the living-room, where most of the arguments about dogs take place; the girlfriend's home, where the dog is bathed, can be made either as an interior or an exterior, as may seem best. A porch would serve admirably for this. The rest of the picture can be made out of doors.

The casting can be very flexible; as it stands, the story gives almost every member of the family a part to play; but this isn't by any means an iron-clad cast—you can add parts, or eliminate them, in order to adapt the story to your own needs.

Essentially, however, the story offers the qualifications most needed for a good amateur picture: a simple, believable story; parts that can be played believably by any family or group; and technical requirements well adapted to the often limited means of the home-movie maker; best of all, the essential idea is such that the story can be reshaped in a number of different ways, as may be best suited to the desires and needs of the home producer.

BREAKING LIGHTING LAWS

(Continued from Page 455)

last month's article) can be highly effective and are easily made. The shadows thrown by inanimate objects on your set can have an important meaning, and play a vital part in your composition.

But, with all the attention paid to set-lighting, don't by all means forget the importance of lighting people—especially in the closer shots. You can make or break a face with your lighting. Even with a very few lights at your disposal you can obtain beautiful effects. The illustration, for instance, was made with only two lights: one, for the front-light, a bit to the left of the camera, and about on a level with the girl's face; the other light high, for back-light, with both lamp and stand screened from the camera by the piano. Notice how the back-light makes the girl's head and figure stand out from the dark background. The low camera set-up also adds interest to the scene. With this lighting, too, the player has a reasonable freedom of movement: her face will be well lit at almost any angle—if she turns, there will be a nice interplay of light and shadow, while, if she turns her head far enough to her left, the back-light will outline it interestingly.

For strongly dramatic close-ups, try using a strong top-light, from directly overhead, or the reverse, a strong light from below; then switch your lighting to a normal arrangement—and you will understand why most of our great stars have their own favorite cinematographers, and will allow no one else to photograph them!

Your lighting can flatter a face—or distort it. Fat faces can be made thinner through the use of hard shadows, rightly placed; long noses can be made to appear short by well-chosen camera-angles; crooked noses can even be straightened by judicious "line-lighting." Deeply-set eyes can be brought out by a strong front-light, while over-prominent eyes can often be made more attractive by reversing the procedure. In fact, almost every defect can be remedied by the proper use of lighting, and its accessories—concentrators, diffusers, etc.; the examples that could be quoted are endless.

However, remember that you must learn to walk before you can run or dance—so master the basic technique of lighting before you essay any experiments with mood, key, or effects. Only when you have really mastered the basic elements can you seek special effects by altering or violating these basic rules. But, once you have mastered the fundamentals of lighting, you will find new joy in experimenting with advanced lightings. Undoubtedly you will make many mistakes—we all do!—but a well lit, well photographed shot will more than repay you for other wasted efforts. You will develop the true cinematographer's instinctive "feeling" for lighting—you will start to read light, translating it into terms of what will actually appear on the screen. And then the true joy of cinematography will be yours.

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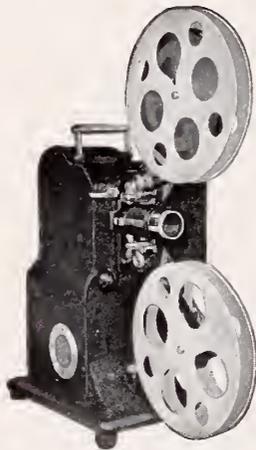
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The Family Newsreel

(Continued from Page 451)

Scene 20. Sonny peeps out from hedge, behind Junior and Betty.

Scene 21. Close-up of Sonny, peeping through hedge. He grins.

Scene 22. Close-up of Junior kissing Betty.

Scene 23. Medium long-shot of Sonny. He takes a picture of Junior and Betty kissing, then slips away.

Scene 24. Close shot of Sonny, winding the camera.

Scene 25. Long-shot of back porch; Father is still sleeping. Sonny tiptoes up.

Scene 26. Close shot of Sonny; he takes a picture of Father, asleep.

Scene 27. Close-up of Sonny, yawning.

Scene 28. Long-shot. Sonny replaces the camera, yawns again, and curls up beside Father.

Scene 29. Medium-shot of Father and Sonny, both asleep.

TITLE: THREE DAYS LATER

Scene 30. Long-shot of family group in the garden. (As many people as you want can be used in this scene.) Father enters, laughing, and holding up some snapshots.

Scene 31. Closer shot; the family cluster around Father.

Scene 32. Series of inserts—the snapshots. They show the rear view of Towser; the hind legs and tail of the cat; Junior and Betty kissing; and Father asleep under the newspaper. In making the still pictures for these inserts, get the funniest angles you can think of, bearing in mind, however, that they are supposed to have been taken by little Sonny.

Scene 33. Long shot of the group. Everybody is laughing at Junior.

Scene 34. Close-up of Junior—terrifically embarrassed.

Scene 35. Medium long-shot of group. Everyone is teasing Junior; he finally makes a break and runs away wildly.

Scene 36. Long-shot of group, as the snapshots are passed around.

Scene 37. Close-up of Sonny, smiling. He winks at the camera.

FADE OUT.
(The End)

Although this continuity is based on the idea of Sonny's making snapshots, it can very successfully be adapted to have him make movies with Father's movie-camera, if you want to. In that case, of course, the last sequence will take place indoors, instead of in the garden. You can show Father coming home, with the film in his hand; then the family trooping into the projection-room, waiting expectantly. You can show Father threading the projector; then he turns the lights off, and switches the projector on, with the beam pointed into the camera. Now give the camera a

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very swift pan to the right—so fast that everything is blurred; and begin the first of the scenes which Sonny is supposed to have made the same way. The effect will be as though the camera had been very quickly panned over from the projector to the screen. You can get some very good laughs by intercutting from Sonny's scenes to short close-ups of the members of the audience—including Junior, Towser, and Maria—to show their reaction to the scenes of themselves which Sonny has "stolen."

At the end, cut quickly to a close-up of the screen, as the lights go on in the room. After that, you can reverse your angle, and show the group around the projector, and carry on the action of script scenes 33-37. Made this way, the story will require not less than 200 feet 16mm, and possibly more; but of course it can be made rather funnier that way. However, either way, it will make a very entertaining home movie production, which anyone can make—and make well.

Sound For Home Movies

(Continued from Page 450)

It may be mentioned that quite a number of synchronous turntables, with gearing for use with either 33 1/3 or 78 R.P.M., made for attachment to 16mm. projectors, are available at very low prices.

With such equipment, connected to a shaft on the camera (this can be done with the Victor, Filmo, and some other types) and a proper electrical circuit, one can do quite well synchronizing one's own pictures, recording as the picture is made, using the pre-grooved composition records available for home-recording phonographs. Similarly, you can "dub" sound and dialog into your pictures, by using this sort of a recording turntable with a projector, and having the actors speak their lines into the microphone, synchronizing with the lip-movements and action of the picture. In fact, one can sometimes even eliminate the record: last year the Movie Club of the University of Southern California gave several shows very successfully this way—using the Bell & Howell auditorium, projecting the picture on a large screen, they had their actors—well rehearsed—speak their lines into a microphone in the 35mm projection-booth, and reproduced the sound through the regular talkie loudspeakers behind the screen. Those who heard the performances state that, due to very painstaking rehearsal, the students were quite successful.

John Boyle, A.S.C., Bereaved

• Corrinne F. Boyle, sister of John W. Boyle, past president of the American Society of Cinematographers, died early in February, shortly after Mr. Boyle's return from New York.

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HOW ABOUT THE EIGHT?

(Continued from Page 452)

present equipment now offered won't be handicapped by radical changes later on. The camera makers couldn't afford to cause quick obsolescence of thousands of present cameras.

And while we're on this subject of obsolescence, a word to adherents of Sixteen will not be amiss. Don't give up your Sixteen just to follow Eight. Parallel Eight with your present Sixteen, if you want, for there will always be plenty of room in the field for Sixteen, just as Thirty-five still has a solidly carved niche in movie making. Eight is the new thing. Eight is the future of amateur cinephotography. But don't forget that Sixteen will always be in a class by itself, un-failingly serving many purposes which Eight may take some time to encompass.

Every day I am called upon to design special gadgets for amateurs to facilitate easier trick work. Most of this has been in connection with Sixteen equipment, but lately I have had the opportunity to make similar installations on Eight equipment. Accompanying this article is a photographic description of one such installation. I should like to state right now before another word follows that I consider Eight just as fine mechanically and optically as Sixteen equipment or even Thirty-five. I unhesitatingly recommend Eight, either to the hitherto non-movie maker or to the veteran of Sixteen. This strong belief in the possibilities of the new Eight have, I am proud to say, resulted directly in several cases of correspondents purchasing Eight equipment.

This article is the forerunner, it is Eight work. To the newcomer with his little thirty-dollar Eight camera let us extend a welcome hand from amateur movie-land. We hope you will make the most of your equipment and get into the game with both feet. You won't be long in finding that a veritable wealth of inexpensive entertainment is at your command. You are a little brother in motion picture work, but you are just as valuable to the vast throng of movie workers as the most brilliant cameraman in Hollywood, and we fervently pray that you stick with us! To the Sixteener who has been wondering about the tiny Eight, rest assured that big things are going to happen with Eight. It isn't a toy, a plaything for the kids. If you have the money, invest in Eight now. You'll be able to stretch your filming just about three times as far with Eight as you can with Sixteen, and that means three times as much advancement, development, and pleasure as you can now afford.

Looking For 'Local Color'

(Continued from Page 453)

"Water Ways." Those who have been in the San Francisco-Oakland district will surely remember the impression made by the harbor and shipping: well, Mr. Fox utilized this as a basic part of his story. Moreover, he utilized a little-known aspect of it—the port of "Ghost Ships"—a section of the harbor in which scores of old, condemned sailing-ships and some old shipping-board steamers, too, are tied up, decommissioned, and slowly rotting, cared for by a few old sailors turned watchmen. Mr. Fox used this background, and, for actors, he chose one of these old sailor-watchmen and his dog. His film was a simple little picture, but more than ordinarily interesting because of the way he wove his background into the story, and the fact that everything combined to make the film natural—believable.

Cinematographer Gerrard Extols Filters

• With "Little Women," photographed by Henry W. Gerrard, A.S.C., among the films favored to garner the year's highest awards for photography, Gerrard feels that an interesting and important part of his equipment in the making of this production was his diffusion filters.

"I used Scheibe Diffusion filters, especially the half and quarter gradations almost through the entire production," states Cinematographer Gerrard. "All of the exterior sequences and the night interiors, as well as many of the other scenes, were made with these filters."



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Application of Leica Lenses

(Continued from Page 438)

long focal lens has a narrower and a more selective angle of view and gives a larger image of the autogiro.

Of the eleven Leica lenses, six have different focal lengths; viz: 35mm, short focal length, wide angle, 65 degrees; 50mm, standard focal length, normal angle, 48 degrees; 73mm, medium-long focal length, narrow angle, 34 degrees; 90mm, long focal length, narrow angle, 27 degrees; 105mm, long focal length, narrow angle, 24 degrees; 135mm, long focal length, narrow angle, 19 degrees. How the focal length of the lens affects the angle of view is graphically shown in illustration No. 2. Reading from left to right, the pictures were photographed with the 35mm, 50mm, 90mm and the 135mm Leica lenses.

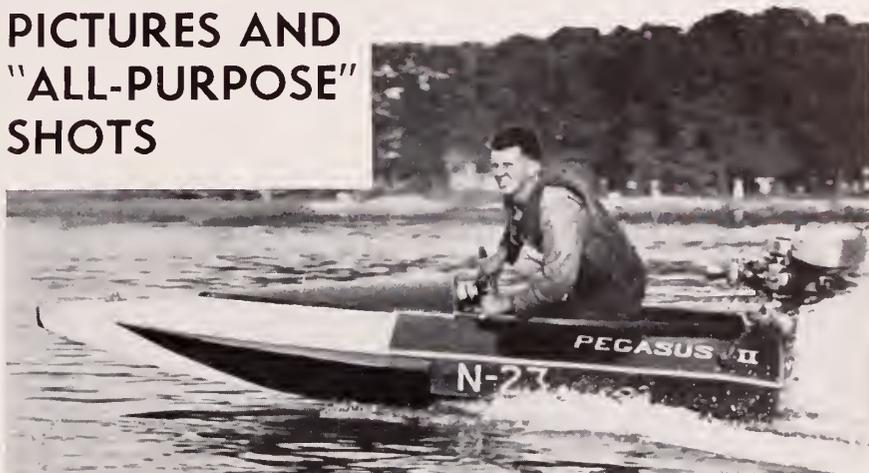
Where large sized pictures of details or distant objects are required, it is advisable to use long focal length lenses. There are limits to the subsequent enlargement of the negative, inasmuch as minute details tend to lose their sharpness even though fine grain film is used. The magnification of the long focal length lenses over the standard 50mm lens is, 90mm lens 1.8x, 105mm lens 2.1x and 135mm lens 2.7x. Illustration No. 3 is a practical example of the above. Here we have one picture made with a wide angle (135mm) lens. For comparison a section of the wide angle picture has been enlarged to correspond to the 135mm picture.

By changing the focal length of the lens, the size of the background objects may be controlled. In illustration No. 4, one picture was made with a wide angle lens and the other with a long focal length lens. In both cases, the camera position was **unchanged**. The foreground figure was moved so as to be the same size for both pictures. Both pictures were made at f4:5, with the focus set for the building in the background. This illustrates the greater depth of focus of the short focal length lens. However, even the long focal length (135mm) Leica lens has a depth of focus equal to that of the lens commonly fitted to 3 1/4 camera.

As the miniature camera does not possess a 'ring and falling' front, it is sometimes necessary to slightly tilt the camera in order to photograph the entire object. Compensation for the resulting distortion in the negative, can easily be made when the negative is enlarged. Merely tilt the paper easel one way or the other, until the distortion is eliminated. Then focus the image sharply at the center, stop the

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lens down considerably, and make the en-
largement. In illustration No. 5, prints
before and after the distortion was elimi-
nated, are shown.

If the lens principles as set forth in
this article are observed, the miniature
camera enthusiast will experience little
difficulty in enjoying the wide range of
the Leica camera.

Optical Printers and Technique

(Continued from Page 446)

mount on this device, and wipes of any
length can be made. Many attachments
are available for making all of the varied
trick wipes called for. The ground glass
window at the top of the lamp-house is
a handy feature for easy and accurate
checking of film density. The lamp em-
ployed is of the 1,000 Watt, tubular pro-
jection type. The tachometer, "P", is
for accurate checking of motor speed.
At the rear end of the printer can be
noticed a metal frame, "Q". The lamp-
house can be readily removed, and on this
frame mounted a larger printing field.
This field can be illuminated by a spot
from behind, or by the reflected light of
two spots from the sides, in front. Any
retouching, matting or filtering can be
easily done, working to a large scale on
this printing field. Matted shots can be
made in practically no more time than it
takes to paint the matte. Shadows and
highlights in stationary shots can be in-
tensified or reduced with the same ease
that a retoucher works on a still picture.
Stationary or moving clouds can be dou-
bled in scenes with great ease.

Fig. 4 illustrates how the printer move-
ment is mounted. The front of this
movement is flush with the front of the
printer-head, permitting the use of hard
mattes in front of the film. The water
cell, "R", helps to reduce the heat from
the lamp on the film. Behind the water
cell are mounted the light-diffusing
screens. The flanges shown can be easi-
ly interchanged for reels. Hand cranks
are on either side of the printer-head for
convenience in threading. The movement
is a standard Bell & Howell pilot-pin
movement, with the rear pressure-plate
cut away. A special feature to be found
in RKO dupes is the reproduction of the
original key numbers; both movements
having been altered for this feature. The
advantage of these key numbers to the
film editor in cutting in the dupes can
readily be seen; these key numbers and
the aforementioned markers quickly settle
any question as to whether or not
the dissolve was made at the point or-
dered. The camera lens-mount, "T", is
of a very original design. By turning the
wheel on the top, the lens will slide in
and out smoothly, coming back exactly
to the original line-up. This is an ad-
vantage for quick reducing or enlarging,
and for certain zoom shots. At the back
of the lens-mount is mounted the inter-
cepting prism mentioned earlier. Below

the mount is the bracket holding the matte-device rods. This bracket has a two-way adjustment, enabling the mattes to be slid in and out during photographing. The insignia below the bracket probably calls for explanation: its significance can readily be understood, however, when it is mentioned that it is on a box containing the writer's pet gauzes, mattes, filters, etc. Although this printer probably looks a bit complicated, the greatest thing about it is its ease of operation, due to the accessibility of all controls. A great quantity of work can be run through it in a surprisingly short time.

In the next issue we will explain the use of the optical printer, especially as regards the trick wipe-overs so popular now. Several illustrations will show the actual effects made on this optical printer, and used in recent RKO productions.

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Together Again

• George Schneiderman, A.S.C., is again working with Director John Ford, upon whose productions Mr. Schneiderman has for many years been the invariable Supervising Cinematographer. The picture that reunites them is "The World Moves On," Director Ford's first for Fox in over a year. The Schneiderman-Ford combination dates back to "The Iron Horse," "Four Sons" and other epics of the silent films.

Boyle's "Sweden" May Go To Russia

• John W. Boyle, A.S.C., whose film "Sweden—Land of the Vikings" is one of the hits of the New York season, has been invited by the Soviet Government to make a similar film in Russia. Cinematographer Boyle has also received similar invitations from South American interests.

Good Shoots "Peck's Bad Boy"

• Frank B. Good, A.S.C., for seven years Chief Cinematographer for Jackie Coogan Productions, will photograph the talkie remake of one of the Coogan hits, "Peck's Bad Boy," starring Jackie Cooper.

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● The 46-foot wide "magnascope" image you see on the screen at Radio City Music Hall—brilliantly illuminated clear to the edges—comes from a Cooke 3 1/4 inch F 1.9 Projection Lens through a standard projection aperture 190 feet away. The years of laboratory work and manufacturing experience behind that performance constitute a favorite legend in British projection rooms, where for years Cooke lenses have been used almost exclusively. These lenses are available in a wide variety of sizes and styles. Write for complete description.

At F 3.5 the range is from 40 mm. to 50 mm.; at F 4.5 from 40 mm. to 85 mm., and at F 5.6 and F 8 the full "zoom", from 40 mm. to 120 mm., is obtainable. Adjustable stops provide for limiting the "zoom" as desired. One crank controls all moving parts. The iris is varied automatically with the focal length to keep the f/ value constant. Close focusing is done with auxiliary lenses. Write for full details. Sometimes available on rental to responsible studios in this country.

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● The efficiency and success of B & H Cooke F 2 Speed Panchro Lenses, which are corrected for the blue and red rather than blue and yellow rays, has caused their almost universal adoption in leading studios. Made in eleven focal lengths, from 24 to 108 mm., B & H Cooke F 2.5 Panchro Lenses, at considerably lower prices, meet many needs where their speed is adequate. Seven focal lengths from 32 to 162 mm. Write for details and prices.

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THE "LANGUAGE" OF DESIGN

(Continued from Page 440)

to the main door of a cathedral. Remember that strength lies in simplicity.

HARMONY.—Harmony is consistency of the whole composition, an agreeable and satisfying arrangement of all the elements of design. All oppositions too rude or startling should be avoided, for the accord must always be more apparent than the difference. Cultivate an appreciation for what is good in proportion, beautiful in line, satisfactory in tone relationships, and the result will be Harmony.

The various elements of design furnish us with as many tools with which to express our thoughts. We may accentuate or suppress any one of these elements to bring out the mood we wish to emphasize in our picture. It remains for us only to select the correct ones.

VOCABULARY OF THE LANGUAGE OF DESIGN

Tone

Horizontal: Stability; sometimes death and finality.

Long horizontals: Calmness, serenity, peace, quiet, tranquility.

Verticals: Strength, courage, dignity, sternness.

Long verticals: Majesty, grandeur, sublimity.

Curves: Beauty, grace, interest, variety. Long, easy curves: Languor.

Short, sharp curves: Action, tension, speed, jazz.

The "S" curve: Grace, elegance.

The "O" circle: Completeness; but too perfect, mechanical.

Oblique lines: Action, motion, speed, power, energy, joy.

Zig-zag line: Violence, threat, weirdness, treachery, horror.

Right Angles: Harsh, cold, mechanical.

Acute Angles: Energy, action.

Obtuse Angles: Rest, ease, monotony.

Triangles: Firmness, physical stability.

Squares: Stolid, mechanical.

Star, halo, radiation: Spirituality.

Numerous dashes: Wind, speed.

Tone

Normal Key: Naturalistic.

High Key: Happiness, gaiety, joy, delicacy, youth.

Medium Key (Use of greys only, elimination of highlights and deep shadows): Vagueness, fogginess, mystery.

Low Key: Severity, restraint, somberness, grief, sordidness.

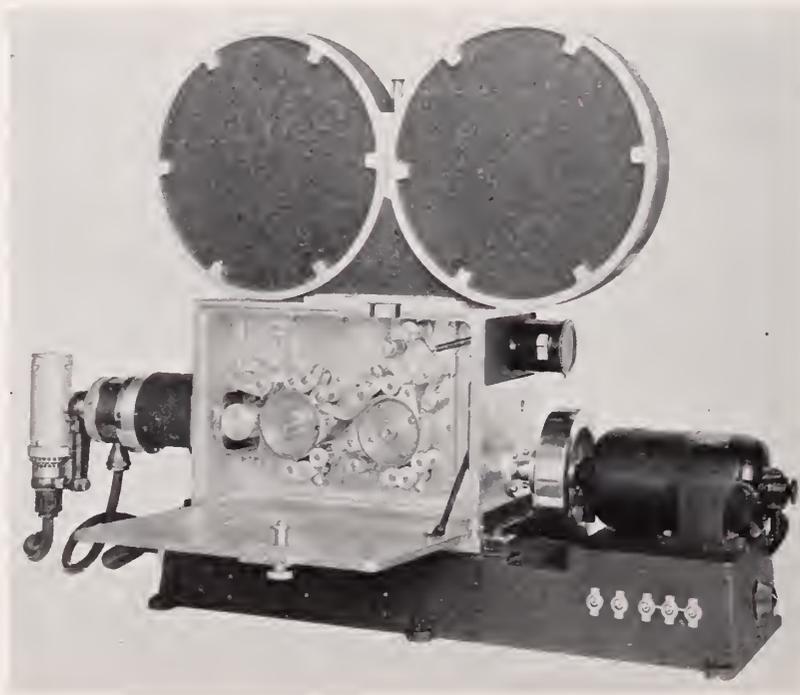
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complete elimination of all half-tones): Unusual, bizarre, supernatural, horrible.

Design

Rhythm: Movement, energy, activity, Lack of Rhythm: Inertness, Passiveness, lifelessness, stagnation.

Formal Balance: Formality, stateliness, conventionality, symmetry, precision.

Informal Balance: Unconventionality, variety; eccentric, fantastic.

Proportion (large masses): Simplicity, directness, boldness.

Proportion (small masses and lines): Uncertainty, confusion.

Opposition: Strength, variety, interest.

Transition: Softening and blending of the above.

Emphasis: Accentuation of one particular feature.

Subordination: Elimination of interest from less important features.

IMPROVISING FOR NEWSREELS

(Continued from Page 442)

the picture. Nothing daunts the newsreeler, so off came the belt to serve a better purpose. And this it did well, but for every second Joe ground, his pants slipped an inch, but he got his picture, pants or no pants.

Eighteen years ago Joe covered the first electric engine to go into service on the Chicago, Milwaukee and St. Paul Railroad. He and Joe Rucker had arranged for the engine to be driven way up into the mountains where particularly beautiful scenery could be photographed as a setting for the locomotive. Not until they reached this place did Joe realize that he had lost a film takeup magazine, the only one he had along. To go back would take too long and it became another case of improvising or losing a picture. Calculating carefully, Joe ground off exactly the twenty-five feet he needed INTO the chamber of his camera without any takeup magazine. His calculations were correct, for the camera did not buckle and he unloaded the film direct from camera to can in his change bag.

To look at Al Brick of Fox Movietone you might think he was a polo player or at least a golfer of the better type. But Al is a real honest to goodness "knight of the groan box," as Red Felbinger calls us, and wears those fancy getups while shooting whatever happens.

Can you imagine lugging one of those heavy movietone outfits for eighteen miles on your back? Well, Al and his sound man did. It was on a story up at Bridal Veil Falls of the Colorado River. Hard as this job was, imagine Al's feelings when he started to shoot his picture and found his camera switch missing. This sounds easy, but remember, reader, those switches control lots of gadgets,

and no switch, no picture. To top the trouble no tools were to be found. Who felt like packing heavy tools on top of heavy cameras? Just as you expect, Al solved the problem. Pounding his pen knife to the shape of a screw driver with a rock, he set to work, removing rheostat, tachometer and balance wheel and covers in order to reach the location of the various ends of wire. With these in reach more wire was needed to improvise a switch that could be reached. Here Al's wearing apparel came in handy. That tricky set of spring suspenders could serve a double duty. He cut a couple of pieces and made a mighty fine job of splicing. With his camera put together again, he merely gripped two ends of the wire together to make the contact that made the picture. I'll bet his expense account carried a strange item that week: "One pair suspenders, used to repair camera switch, \$1.50."

Draper Flies to College

• Plenty of A.S.C. members have been to college—but Lauren Draper, A.S.C., flew to Dartmouth College. He was sent by Metro-Goldwyn-Mayer to photograph the Dartmouth Winter Sports Carnival for a Pete Smith short. Draper is acting as Cinematographer and Director of this film, with Walter Strange, A.S.C., Associate Cinematographer.

Walker Radios Hunt

• When Vernon Walker, A.S.C., was in New York recently, photographing process backgrounds for forthcoming RKO-Radio Pictures, he was enabled to keep in daily contact with the studio by means of Cinematographer J. Roy Hunt, A.S.C., who has a powerful short-wave radio-telephone station in Hollywood.

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WANTED—Motor adapter. J. R. Lockwood, Glendale. Douglas 3361-W.

WANTED—Someone to finance development of a practical 3 color separation camera and printing process. Box G. A., care American Cinematographer.

WANTED—Mitchell High Speed Silent Camera, box only, without equipment. Must be cheap for cash. Box 140, American Cinematographer.

WANTED—Leica Camera and model good condition. Cheap. Box C, c-o American Cinematographer, 6331 Hollywood Blvd., Hollywood, Calif.

WANTED—Motion Picture and Still Cameras, all types, Laboratory Equipment, Lenses, Finders, Leica Cameras. Cash for bargains. Camera Supply Co. Ltd., 1515 Cahuenga Blvd., Hollywood, Calif.

WANTED—Used Leica and Contax Cameras and accessories. Must be cheap for cash. Box 235, American Cinematographer, 6631 Hollywood Blvd., Hollywood, Calif.

Improved Camera Crane

(Continued from Page 441)

may be mounted above the camera, attached directly to the blimp.

The subhead upon which tilt-head, camera, and seats are mounted may be panned through an arc of over 180 degrees, and is controlled by airplane-type foot-pedals, operated by the Operative Cinematographer. It is fitted with ball-bearings. An important feature of this device is the fact that this action is decentered, so that the camera pans around the (vertical) Optical Axis of the lens, making it possible to use the crane on many process and miniature shots which would otherwise preclude panning, and also giving a better general perspective to panned shots.

As has been mentioned, sockets are provided to carry several lamps; ordinarily, one on each side of the camera and a third directly above it; but more may be used, if necessary. A further innovation, likely to be of considerable use, is the provision for a standard microphone-boom, which is mounted on the crane-arm itself, just behind the camera-carriage. At present, a conventional, steel microphone-boom is used, but eventually this will be replaced by a special one built of Duralumin. A seat or platform will be provided for the microphone-operator.

The new crane will rotate through a full 360 degree horizontal arc, and may be raised to a height of nearly 30 feet above the ground. The frame is cut away on one side, to permit this maximum elevation; the boom raises to an angle of approximately 70 degrees, and may be dropped to ground level, or lower.

Elected to A.S.C.

• Mr. Walter Strenge, one of the leading cinematographers in New York, was recently elected a member of the American Society of Cinematographers.

Announcement!

The Brulatour Bulletin, published for more than two years in the leading Cinematographers' publications, was discontinued a few months ago because we felt that the field had been completely covered.

Meantime, scores of cameramen have asked us to resume publication of The Brulatour Bulletin.

Heads of camera departments at practically every major studio have made the same request.

Very recently we have received similar requests from studio production executives who found The Bulletin most helpful in identifying the cinematographers associated with important productions throughout the industry, during actual production period.

At its inception, The Brulatour Bulletin was frankly a publicity feature, designed to extend the service and good-will of Eastman Kodak Company and J. E. Brulatour, Inc., Distributors of Eastman Films.

It proved to be more than that.

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A.S.C.

See Page 488



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Volume XIV APRIL, 1934 Number 12



What to Read

A.S.C. Agency	485
FILTERS for Special Effects by George H. Scheibe.....	486
TRICKS of Optical Printing by Lynn Dunn, A.S.C.....	487
CHARLES Lang Wins Awards.....	488
SUN Shadow Indicator by R. S. Leonard.....	489
CINEMATIC Progress During 1933.....	491
FEATHERWEIGHT Blimp by Henry W. Gerrard, A.S.C.....	492

Next Month

- Fine Grain Developing for Dupes will be discussed by Hollis Moyse, A.S.C., and Fred Gage, A.S.C. The Paraphenylene formula will be the basis of this article.
- Infra Red in the air will be handled by Elmer Dyer, A.S.C., the foremost air cinematographer in the motion picture industry.
- A new Camera Crane and other technical subjects will be treated by members of the American Society of Cinematographers.

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Volume XIV, 1933 - 34

TOPIC INDEX—PROFESSIONAL

Aerial vibration: 89.
 Alaska, silk gloves in: 54.
 Arctic, cinema whaling in: 264.
 A.S.C.'s fourteenth year: 6.
 A.S.C. re-elects John Arnold: 7.
 Background projection: 353.
 Blimp innovations: 492.
 Camera-carriage: 8.
 Camera carriage, mobile: 12.
 Camera cranes: 441.
 Camera cranes, mobile: 12.
 Camera, DeVry sound: 11.
 Camera, Eastman: 174, item.
 Camera, Leica: 138, item.
 Camera, movie mapping: 312.
 Camera sunshade: 174, item.
 Camera-silencing: 172.
 Candid photography: 399.
 Carbon-arc light: 131.
 Cinecolor: 355.
 Cinematic design: 354; 398; 440.
 Cinematic progress: 490.
 Color intensities: 396.
 Developing: 86; 132; 169; 212.
 Development, miniature: 313.
 Diffusion, purpose of: 171.
 Editing: 247.
 Editorial: 52; 270, 309; 439; 485.
 Emulsions: 53.
 Filters: 96, item; 360, item.
 Filter holder: 96, item.
 Filters, names need standardizing: 170.
 Filters, special effect use: 51; 91; 170; 215; 486; 488.
 Fireproof process screen: 406.
 Foreign translations: 400.
 Glow-lamp: 10.
 Indicator, sun shadow: 459.
 Infra-red photography: 166; 310.
 Lamps: 90.
 Lenses: 138, item; 211; 266; 315.
 Lighting: 15.
 Microphones, ribbon: 135.
 Miniature developing: 214.
 Miniature printing: 313.
 Mobile cameras and cranes: 12.
 Monotone viewing glass: 16, item.
 Natural color, value: 52, item.
 News photography: 216; 268.
 Newsreel improvising: 442.
 Optical printing: 444; 487.
 Panorama pictures: 352.
 Patents: 199; 253; 295; 339; 358.
 Printing, miniature: 214.
 Printing optical: 444; 487.
 Process screen: 406.
 Projector, portable background: 134.
 Recording head: 218.
 Science, as an aid: 402.
 Sensitometry: 86; 132; 169; 212.
 Short cuts: 397.
 Sound recording camera: 11.
 Special effects with filters: 51; 91; 170; 215.
 Spectroscopic photography: 166.
 Trick photography: 262.
 Tropics, emulsions in: 53.
 Tropics, microphones in: 135.

PAGE INDEX—PROFESSIONAL

5...Testing Committee Rejects Inferior Equipment.
 7...A.S.C. Re-elects John Arnold For Third Term.
 8...New Camera-Carriage Saves Time.
 9...Names of Filters Need Standardizing.
 10...Optical Twin Fidelity With Glow Lamp.
 11...DeVry Sound Recording Camera.
 12...Development of Mobile Camera-Carriages and Cranes.
 14...Photography of the Month.
 15...Some Don't, But, I Like Light Sets.
 16...Victor 10 FH Projector.
 16...Wheels of Industry.
 51...Special Effect Use of Filters.
 52...Riddle Me This.
 53...You Must Keep Emulsions Dry in Tropics.
 54...We Wore Silk Gloves in Alaska.
 56...Wheels of Industry.
 56...Leica Camera.
 86...Sensitometric Control in the Processing of Motion Picture Film.
 89...Vibration Gives Us Greatest Worry.
 90...Super-Photofloods for the Studio.
 91...Special Effect Use of Filters.
 92...Photography of the Month.
 94...Riddle Me This.
 97...Automatic Speed Control Motor.

131...New Development in Carbon Arc Lighting.
 132...Sensitometric Control in the Processing of Motion Picture Film.
 134...A Super-Portable Background Projector.
 135...Ribbon Microphones Work Best in Tropics.
 136...Photography of the Month.
 166...Future of Spectroscopic Photography.
 168...Practical Side of Laboratory Work.
 169...Sensitometric Control in the Processing of Motion Picture Film.
 170...Special Effect Use of Filters.
 171...The Purpose and Practice of Diffusion.
 172...New Method of Camera Silencing.
 174...Wheels of Industry.
 210...Mechanical Engineering Applied to Lenses.
 212...Sensitometric Control in the Processing of Motion Picture Film.
 214...Controlled Printing for Miniature Camera Pictures.
 215...Special Effect Use of Filters.
 216...News Cine Photography Is Different.
 218...New Studio Recording Head.
 220...Wheels of Industry.
 262...Why Wheels Turn Backwards.
 274...Cinema Whaling in the Arctic.
 266...Mechanical Engineering Applied to Lenses.
 268...Birth of the News Reel; Its Origin and Pioneers.
 270...Edward O. Blackburn Honorary Member of A. S. C.
 272...Wheels of Industry.
 309...Society Solidifies Craft.
 310...Photography With Infra Red Radiations.
 312...Combination Movie-Mapping Camera.
 313...Systematized Miniature Development.
 314...Mechanical Engineering Applied to Lenses.
 316...Photography of the Month.
 318...Wheels of Industry.
 352...Panorama Pictures With Your Leica.
 353...Problems of Background Projection.
 354...The "Language of Line" in Photography.
 355...As to Cinecolor.
 356...Photography of the Month.
 358...Patents and the Cinematographer.
 360...Trend of the Times.
 396...Measuring Color Intensities.
 397...Cinematographer's Short-Cuts.
 398...The "Language" of Tone.
 399...Candid Photography on the Streets.
 400...New System for Foreign Translations.
 402...Motion Pictures as an Aid in Science.
 404...Photography of the Month.
 406...A Fireproof Process Screen.
 408...Tend of the Times.
 418...Wheels of Industry.
 438...Employment in A. S. C. Plan Vital Factor.
 440...The "Language" of Design.
 441...Improved Camera Crane.
 442...Improvising for the Newsreels.
 443...Photography of the Month.
 444...Optical Printing and Technique.
 448...Wheels of Industry.
 485...Members Turn to A.S.C. Agency for Representation.
 486...Filters for Special Effects.
 487...Tricks by Optical Printing.
 488...Charles Lang Wins Academy and Reporter awards.
 489...Sun Shadow Indicator.
 490...Cinematic Progress During 1933.
 492...Feature Blimp Has Many Innovations.
 510...Wheels of Industry.

TOPIC INDEX—AMATEUR

Accessories: 327.
 Aerial filters: 146, item.
 Amateur as professional: 19.

A. S. C. testing committee approves camera: 56.
 A. S. C. testing committee approves projector: 16.
 Beaded screen: 460, item.
 Camera: 56, item.
 Camera, 8 mm.: 106; 452.
 Camera, Bell & Howell 70D: 143.
 Camera, Eastman: 20.
 Camera "sierra special": 18.
 Cinemicrography kodacolor: 369.
 Cinemicroscopy: 182.
 Color and the miniature camera: 505.
 Contest film: 42.
 Continuities: 328; 454; 456; 511.
 Dark room paint: 56, item.
 Developing: 141.
 Enlargements: 63.
 Exposure: 24.
 Exposure faults, correcting: 101.
 Exposure meter: 103; 222.
 European amateurs: 223.
 Family newsreel: 451.
 Film cleaning: 64, item.
 Film, normal of: 280.
 Film preservation: 279.
 Filming Air Races: 102.
 Filters, aerial: 146.
 Hunting with a camera: 59.
 Indian style close-ups: 366.
 Indian Sun Dance: 60.
 Indoor kodacolor: 23.
 Indoor lighting: 62.
 Industrial films: 415.
 Industrial, making an: 142.
 Insurance frauds: 227.
 Jig-saw motiographing: 22.
 Kodacolor: 23.
 Kodacolor cinemicrography: 269.
 Laboratory, equipping home: 176.
 Lens stops: 104.
 Lighting: 62, 224, 326, 265; 410; 455.
 Local color: 453.
 Magic carpet atmosphere: 61.
 Magic carpet, making a: 277.
 Microscopic accessory: 67, item.
 Miniature developing: 179.
 Mistakes of amateurs: 226.
 Movies under water: 144.
 Multiple exposure: 512.
 Nature photography: 504.
 Outdoor lighting: 62.
 Printer: 418, item.
 Projectors: 16, item; 67, item.
 Recording: 228.
 Reflectors: 374, item.
 Scenarios: 328; 364; 413.
 Self photography: 275.
 Snow scene filters: 374, item.
 Sound: 56, item; 450.
 Splicer and rewind: 67, item.
 Special effects: 100.
 Stealing the show: 325.
 Synthesis: 508.
 Table top photography: 410.
 Tinting: 18.
 Titling: 322; 414.
 Toning: 18.
 Trick photography: 281.
 Wipe offs: 460, item.

PAGE INDEX—AMATEUR

16...Wheels of Industry.
 18...Tinting and Toning 16mm. Films.
 19...When An Amateur Turns Professional.
 20...A "Professional" 16 mm. Camera from Eastman.
 22...Motiographing the Jig-Saw Puzzle.
 23...Kodacolor Comes Indoors.
 24...I Practice Correct Exposure.
 26...Here's How.
 28...Amateur News.
 59...I Like to Hunt—With a Camera.
 60...Shooting an Indian Sun Dance.
 61...Studying the Professional.
 62...Light Control—Inside and Out.
 63...Why Many Enlargements Are Disappointing.
 64...Here's How.
 68...Amateur News.
 100...When to Use Special Effects—And How.
 101...Correcting Exposure Faults in the Dark Room.
 102...Filming the National Air Races.
 103...What I Learned from a Professional.
 104...What is F.2, F.3.5, F.4?
 106...Making Tests With an 8mm. Camera.
 107...Here's How.

108...Amateur News.
 140...Fine Grain Developing for 16mm. Negative.
 142...An Amateur Makes an Industrial.
 143...B & H Special Semi-Professional 70D 16 mm. Camera.
 144...Making Movies Under Water.
 146...Here's How.
 176...Equipping the Home 16mm Laboratory.
 177...A Professional Discusses Continuity.
 178...Miniature Negative and Grain.
 180...Slow Motion in Athletics.
 181...My "Sierra Special Sixteen"
 182...Cinemicroscopy With 16 mm. Equipment.
 186...Amateur News.
 199...Patents.
 220...Wheels of Industry.
 222...Exposure Meters Become Professional.
 223...Amateur Movie Making in Europe.
 224...Professional Methods in Amateur Lighting.
 226...Ten Common Mistakes of the Amateur.
 227...16 mm. Camera Exposes Insurance Frauds.
 228...Recording Sound on 16 mm. Film.
 230...Amateur News.
 241...Photography of the Month.
 242...Economies in Sound Film.
 244...Voice and Personality in the Motion Pictures.
 247...Preselection of Takes.
 253...Patents.
 272...Wheels of Industry.
 275...Self-Photography With the 16 mm.
 276...Making a Magic Carpet.
 278...Preparing the Scenario.
 279...How to Preserve Your 16 mm. Films.
 280...What Is Normal?
 281...Mysteries of Trick Photography
 282...Amateur News.
 295...Patents.
 321...8 mm. Picture Ranks High in 1933 Competition.
 322...Mechanics of 16 mm. Titles.
 325...An Amateur Steals the Show.
 326...The One, Two, Three of Lighting.
 327...I Am At It Again.
 328...A Backyard Continuity.
 330...Amateur News.
 339...Patents.
 362...Winning With An 8 mm. Camera.
 363...Effects in Your Titles
 364...Introducing Baby.
 365...A B C of Set Lighting.
 366...Shooting Close-Ups Indian Style.
 367...Let's Make a Locomotion Picture.
 368...Experimenting with Kodacolor Cinemicrography.
 370...Amateur News.
 374...Here's How.
 385...Wheels of Industry.
 410...Table-Top Sequences.
 411...There Must Be a Reason for Every Light.
 412...How I Made "Life."
 413...Filming the Music Lesson.
 414...Making Better Titles.
 415...Film Your Business.
 416...Amateur News.
 417...Wheels of Industry.
 450...Sound for Home Movies.
 451...The Family Newsreel.
 452...How About the Eight?
 453...Looking for 'Local Color.'
 454..."Pardon My Pups."
 455...Breaking Lighting Laws.
 456...Backyard Movies.
 458...Walker's Filter-Factor Calculator.
 460...Here's How.
 504...Nature Photography With Cine-Kodak.
 505...Color and the Miniature Camera.
 506...The A. B. C. of Outdoor Lighting.
 507...Show It With Music.
 508...Cine Synthesis.
 509...Have You a Watchmaker in Your Home?
 510...Wheels of Industry.
 511...Backyard Movies.
 512...Multiple Exposure—Without Rewinding—For Amateur Cameras.
 521...Here's How.

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 Bader, Walter
 Bell, Jack C.
 Bennett, Guy M.
 Bennett, Monroe
 Bentley, Fred
 Biroc, Joe
 Blackstone, Cliff
 Bradley, Wilbur H.
 Chewning, Wallace
 Clark, Roy

Clemens, Geo. T.
 Cline, Wilfrid E.
 Cohen, Edward J.
 Collings, Russell D.
 Cooper, Harry H.
 Cortez, Stanley
 Davis, Harry
 Davis, Leland E.
 Dean, Faxon
 DeGrasse, Robert
 Diamond, Jas. R.
 Dunn, Linwood G.
 Eslick, LeRoy
 Fapp, Daniel L.
 Feindel, Jockey
 Fetters, C. Curtis
 Fitzgerald, Edward
 Freulich, Henry
 Galezio, Len
 Galligan, Thomas
 Garnett, Paul
 Gibbons, Jeff T.
 Gordon, James
 Gray, King D.
 Green, Kenneth
 Greenhalgh, Jack
 Guffey, Burnett
 Guthrie, Carl
 Hallenberger, Harry
 Harper, James B.
 Henderson, Edward
 Hoag, Robert
 Huggins, L. Owens
 Jennings, Lewis E.
 Kaifer, Fred E.
 Kershner, Glenn
 Kornman, Anthony
 Lane, Al L.
 Lanning, Reggie
 LaShelle, Joseph
 Laszlo, Ernest
 Lawton, Charles C., Jr.
 Linton, Lionel A.
 Lyons, Edgar H.
 Mayer, Fred
 Mazarotti, Harold J.
 Meade, Kyme
 Mellor, William C.
 Merland, Harry
 Metty, R. L.
 Mols, Pierre M.
 Newhard, Guy J.
 Newhard, Robert S.
 Nogle, George
 Novak, Joe
 Palmer, Robert
 Pierce, Otto
 Pittack, Robert
 Pyle, Edward
 Ramsey, Ray L.
 Rand, William
 Redman, Frank
 Ries, Ray
 Roberts, Josiah
 Salerno, Charles, Jr.
 Schoedsack, G. F.
 Schuerich, Victor
 Shipham, Bert
 Smith, William Cooper
 Snyder, Wm.
 Stafford, Earl
 Tappenbeck, Hatto
 Thackery, Ellis F.
 Thompson, Stuart
 Titus, Frank
 Travis, N. C.
 Unholz, George
 Vaughan, Roy V.
 Van Dyke, Herbert
 Van Enger, Willard
 Vogel, Paul Charles
 Vogel, Willard L.
 White, Ben
 Wild, Harry
 Williams, Al E.
 Williamson, James

Assistant Cinematographers

Abbott, L. B.
 Adams, Eddie
 Ahern, Lloyd
 Anderson, Eddie
 Baldwin, Harold

Bergholz, Emmett
 Bohny, Charles
 Bourne, George
 Bradford, William
 Brandenburg, Gentry
 Bridenbecker, Milton
 Brigham, Donald H.
 Bronner, Robert
 Burgess, Frank
 Burke, Charles
 Burks, Robert
 Carlos, Don
 Carter, Ellis W.
 Clothier, William H.
 Cohan, Ben
 Cohen, Sam
 Crawford, Lee
 Cronjager, Henry, Jr.
 Crouse, John
 Curtiss, Judd
 Daly, James
 Dalzell, Arch R.
 Davenport, Jean L.
 Davis, Mark
 Davol, Richard S.
 Dawes, Harry
 DeAngelis, Louis
 deCanstellaire, Paul
 Deverman, Dale
 Diskant, George
 Dodds, Wm.
 Doran, A. Richard
 Dorris, Joe
 Dowling, Thomas L.
 Dugas, Frank
 Eagan, J. P.
 Eckert, John
 Etra, Jack
 Finnerman, Perry
 Fredericks, Ellsworth
 Fischer, Herbert J.
 Flinsky, Ray
 Foxall, William
 Garvin, Edward
 Gaudio, Frank, Jr.
 Geissler, Charles R.
 Gertsman, Maury
 Glassberg, Irving
 Glouner, Martin
 Gough, Robert J.
 Graham, Stanley
 Greer, John
 Haas, Walter
 Hackett, James C.
 Haddow, Ledger
 Harlan, Russell
 Hayes, Towne D.
 Higgins, James Colman
 Hill, Paul
 Hoffman, Roswell
 Horsley, Davis S.
 Ivey, Jesse F.
 Jones, Edward C.
 Kauffman, R. King, Jr.
 Kearns, Edward
 Keller, Alfred S.
 Kelley, George F.
 Kelly, William
 Klein, Irving
 Kluznik, Matt
 Lane, Art
 Lockwood, Paul
 Love, Cecil
 Lykins, VOLLIE JOE
 Marble, Harry
 Marsh, Harry
 Martin, John
 Molina, Lewis
 Meade, Kenneth
 MacDonnell, Stanley
 McDonald, Nelson C.
 McEdward, Nelson C.
 McIntyre, Andy
 Noble, Roy
 Norton, Kay
 Orsatti, Alfred
 Parkins, Harry
 Riley, William
 Ramsey, H. Clark
 Rankin, Walter
 Reinhold, Wm. G.
 Roe, Guy
 Sanford, S. A.
 Schuch, William
 Scheving, Albert
 Sargent, Don
 Shorr, Lester
 Shipser, C.

Slifer, Clarence
 Sloane, James
 Smith, H. C.
 Southcott, Fleet
 Starbuck, Charles
 Stine, Clifford R.
 Straumer, E. Charles
 Strong, Glenn
 Strong, William M.
 Tolmie, Rod
 Tripp, Roy
 Ulm, William R.
 Van Trees, James, Jr.
 Van Warner, John Pierce
 Ward Lloyd
 Weiler, John
 Wellman, Harold
 Wendall, Jack E.
 Willard, Barth
 Whitley, William
 Worth, Lothrop

Still Photographers

Allan, Ted
 Alsop, George
 Anderson, Bert
 Bachrach, Ernie
 Bjerring, Frank
 Blanc, Harry
 Breaux, Joseph F.
 Bredell, Elwood
 Brown, Milton
 Coburn, Robert
 Cooper, John
 Croneweth, W. E.
 Ellis, John
 Estep, Junius D.
 Evansmith, Henry
 Farrell, David H.
 Fraker, W. A.
 Freulich, Roman
 Fryer, Elmer
 Grimes, William H.
 Hendrickson, Fred S.
 Hommel, Geo. P.
 Hopcraft, N. John
 Johnson, Roy L.
 Julian, Mac
 Kahle, Alexander
 Kling, Clifton
 Kornman, Gene
 Lippman, Irving
 List, J. Z.
 Lobben, C. Kenneth
 Longest, Gaston
 Longworth, Bert
 Lynch, Bert
 Manatt, S. C.
 Marigold, Mickey
 Martin, Shirley V.
 Miehle, John J.
 Osborn, Harry
 Richardson, G. E.
 Rowley, Les
 Sibbald, Merritt J.
 Six, Bert
 Tanner, Frank
 Van Pelt, Homer
 Welbourne, Chas. Scott

Associate Members

Mr. George Cave
 Mr. Emery Huse
 Dr. W. B. Rayton
 Mr. Fred Gage
 Dr. C. E. K. Mees
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*Membership by
 Invitation only.

Members Turn to A. S. C. Agency for Representation

BECAUSE of the wide and comprehensive representation given the cameraman member of the American Society of Cinematographers by its Agency, a large majority of the cameramen are turning to this agency for representation not only in the studios but also in their other business matters.

Realizing that the professional man has not equipped himself in all instances for the conflict with the business world, the agency has set up as one of its operating forces a department which looks after the business affairs of the member, such as investments, insurance and other such things that become a part of the activity of a man with the earning power of the average cinematographer.

The agency taking over these duties leaves the individual with a freer mind. He is not only represented in business matters, but also his legal affairs are looked after by the legal department of this agency.

Through the history of the motion picture business, the cinematographer has been the most important human unit. Without him there would be no picture. While the actor and the director have assumed great importance and have demanded a monetary return that runs into stupendous figures, yet pictures could be made without them, but pictures could not be made without the cinematographer.

Recognizing this basic fact, the A.S.C. Agency is striving through its personnel and

activities to bring the cinematographer to the recognition and position which his work deserves.

Also by reason of this agency a better deal can be worked out for the individual cameraman as the agency itself is in touch with, and familiar with all existing conditions. The motion picture executive is conceded to be one of the shrewdest business men extant; his method of handling business is marveled at by many outside of the industry. It is with this man that the professional cinematographer is asked to compete, and because he has not been equal to the task he has not reached the heights he deserved.

The actor and the director recognized this fact early and brought into being the personal representative and the agency. Through these forces the actor and the director have reached a position and been given a recognition in a few short years that they could not have attained by individual effort over a half hundred years.

It is a recognized fact in the history of the motion picture industry that individual representation has never brought the results for the artist that he could secure by entrusting his activities to those trained to cope with situations such as are brought up by the employment of talent in the motion picture business.

Recognizing these facts the cinematographer feels that the establishment of the A.S.C. agency establishes a new milestone in the better recognition of the cinematographer in the industry.



Top, taken without a filter. Bottom, same scene taken with a No. 1 Diffusion Filter.

Filters For Special Effects

By

George H. Scheibe

Filter Specialist

THE term "Photographic Filter" all too frequently is used—even by technicians—to designate merely color filters. While this interpretation is correct as far as it goes, it is incomplete, for it ignores the ever-growing range of Effect Filters. And yet, oddly enough, this latter class of filters (and they are filters in every sense of the word) are now used far more frequently than even the most popular ray screens or color filters!

Under the general heading of "Effect Filters" we find the many types of screens for producing diffused or soft-

focus effects; fog filters, for producing the effect of fog; Neutral Density filters; graduated color or Neutral Density filters for producing special filtered effects or transitions; special filters for controlling the projection "hot spot" in background-projection process cinematography; a variety of iris-vignetters; and even the familiar monotone viewing-glass, which is a true filter in spite of the fact that it is used only visually.

Without doubt the most universally used photographic filter today is the Diffusion Filter (or screen). Hardly a single scene is photographed today—either in the studio or on location—without the use of some type of diffusing screen. In fully half of these scenes, the diffusion is so delicate that it is noticeable only to the trained technician; yet it is the presence of this all-but-imperceptible diffusion which is responsible for the charm, naturalness, and "quality" of modern studio cinematography. To discover the reason for this, we must examine—if only briefly—the tremendous disparity between the human eye and the perfected lenses now used for photography and cinematography. According to the statements of many famous oculists, the human eye is at best a most imperfect instrument; it is doubtful if a single perfect pair of eyes has ever existed. Even those of us with theoretically normal vision do not perceive things with the microscopic sharpness of a modern anastigmat lens; there is always present a certain—and unusually subconscious—degree of natural diffusion. Our optical engineers, on the other hand, have so perfected their lenses that even the fastest objectives now in use render an object with a far greater degree of sharpness and detail than the human eye ever perceives in nature. Accordingly, the pictures made with these lenses are frequently jarring to our optic sensibilities; we see details—imperfections—the texture of skin and makeup, and so on—which detract from our enjoyment of the picture and its message. Accordingly, diffusion filters have been devised to delicately soften the image cast by the lens, obscuring these defects, and giving a satisfyingly natural picture without sacrifice of any of the essential characteristics of the lens—its speed, correction, and general quality. In studio practice, these filters smooth out facial wrinkles, banish the flaws in makeup, and make the picture generally more pleasing. Commercially, these diffusion screens are made in a number of grades, giving diffused effects ranging from the very slightest to the heaviest permissible softness. The basic number of the series—No. 1—gives a moderate degree of diffusion, as shown in the illustration. The No. 2 gives a heavier diffusion, and the No. 3 an extreme softness, suitable, as a rule, only for extreme close-ups. For many years, these three were ample for all needs; but of late, lighter and yet lighter screens have been demanded. Therefore the No. 1/2 appeared, giving a slight softening; then the No. 1/4, for very delicate effects—and most recently the No. 1/8, No. 1/16, No. 1/32, and even No. 1/64. Many famous cinematographers use one of these lighter screens for all scenes, applying heavier ones only for close-ups—and never working without a diffuser.

16mm users will find the lighter gradations extremely beneficial to their camerawork, though the magnification in projection, together with other considerations of optics, film, etc., preclude the use of anything heavier than a No. 1 diffuser. Users of "Leica" and "Contax" miniature cameras will find these diffusers very useful, too, in making their enlargements. Several users have told me that the use of a No. 1/64 Diffuser on the lens of the enlarger when making big enlargements tends to minimize the grain-effect so injurious in this work.

(Continued on Page 497)

Tricks by Optical Printing

By

Lynn Dunn, A.S.C.

Optical Printer Operator, RKO Camera Effects Dept.,
Vernon Walker, A.S.C., Chief.

IN LAST month's issue, I explained the subject of Optical Printing in general, and described the Optical Printing machine in use in the Camera Effects Department at the RKO Studio. This instrument, I believe, is the most efficient of its type in use today. It is required to do every type of normal and trick Optical Printing, including the making of "dupes," dissolves, fades, etc., and that most modern and varied of transitions, the "wipe-off." A "wipe-off" or "wipe-over" is a short transition from one time or place to another, used in lieu of the more conventional lap-dissolve. Wipes are best used when this type of transition is particularly suited to the action or tempo of the scenes involved.

Tricky wipe-overs seem to be growing more and more popular. We started something at RKO by appropriately scattering these effects in a short-subject called "So This Is Harris." These wipes met with such entire approval that they were called for in "Melody Cruise." "Flying Down to Rio" was the third RKO picture to require a large assortment of these effects. In all cases we were given a very free hand in the selection of the type of effect to be used. Every attempt was made by us to adapt the effect to the type of scenes involved. The full confidence of the Director, Editor and Producer, as shown by their giving us a free hand in the use and creation of these effects, was one of the biggest factors in the success achieved. In this connection, Messrs. Lou Brock and Mark Sandrich of RKO

deserve special mention for their foresight and for their confidence in these effects and our ability to devise them.

The accompanying illustrations show a few of the trick wipe-overs used in recent RKO pictures. Fig. 5 is a 'push-off' effect, the new scene sliding in and shoving the first one off the screen. Fig. 6 is a 'curtain wipe,' the first scene sliding up and revealing the new one. Its adaptability is apparent, as the new scene is the stage of a theatre. Both effects are done by accurately moving the printer-head, Fig. 6, using a matte in addition. Fig. 7 shows both halves of the new scene sliding in together over the old one. Adaptability is apparent here also, and the Sound Department added a finishing touch by recording the click of the glasses. Fig. 8 is another form of this type of wipe: in this one the first scene was split in half, and twisted downward off the screen, revealing the new scene. Figs. 9, 10 and 11 illustrate the film-matte wipe-off. This type of effect is made by means of positive and negative film mattes, blocking out the first scene and revealing the new one, successively synchronized on the same section of film. One's imagination can run free with this type of wipe, and need only be limited by the means at hand for animating the mattes. Note the suitability of the dripping type of film-matte as illustrated in Fig. 11.

Fig. 12 shows a roll-down type of wipe, the new scene unrolling over the old one. Fig. 13 is a revolving wipe, used to more or less represent a propeller. Fig. 14 is a page-turning effect, quite fitting for a considerable lapse of time, or an important change of location. Fig. 15 is a rather new effect called a "sawing wipe." The teeth of the "saw" not only move across from right to left, but travel downward across the screen, practically sawing the old scene away. This required a specially-made matte and mechanical travel for the matte-holder. Figs. 16 and 17 are quite mechanical appearing, but are effective when used in the proper place. They can be made with or without the black separation. We have special mattes made up for a dozen or more of this type of wipes. The turn-over effect, Fig. 18, is very novel, and has become quite popular. It

(Continued on Page 496)



Fig. 5

Fig. 6

Fig. 7



Fig. 8

Fig. 9

Fig. 10



Fig. 11

Fig. 12

Fig. 13

Fig. 14

Fig. 15

Fig. 16



Fig. 17

Fig. 18

Fig. 19

Fig. 20

Fig. 21

Fig. 22

Charles Lang Wins Academy and "Reporter" Awards

CHARLES BRYANT LANG, Jr., A.S.C., has been twice acclaimed by the Motion Picture Industry as the most outstanding Director of Photography of 1933, winning the Awards given by the Academy of Motion Picture Arts and Sciences and by the "Hollywood Reporter" for his artistry in photographing "A Farewell to Arms."

For almost the first time in the six-year history of the Academy Awards, the Award for Cinematography, in both the nomination of the finalists and the selection of the ultimate winner, fully coincides with the experienced opinion of the camera profession. Seldom has the approval of the cinematographic community pointed so unwaveringly at a single achievement. Without detracting an iota from the unquestioned excellence of the other nominees in this class—or from the many outstandingly photographed productions not so honored—Cinematographer Lang's achievement is without doubt the supreme photographic achievement of the year. That he should be the recipient of these high tributes, and in a year in which Cinematographic Art soared to new peaks, is a signal honor, deservedly bestowed upon a great artist. That the bestowal of the Awards should meet with such unquestioned approval among Mr. Lang's fellow-artists is an even greater tribute to his artistry and to the man himself.

When "A Farewell to Arms" was first reviewed in these pages, immediately before its release, the following comments foreshadowed the approval which attended Cinematographer Lang's achievement, and which culminated in the signal tributes so appropriately awarded this month: "Once in a long while comes a picture so perfectly photographed that it can stand as a milepost in the progress of the Art of Cinematography. 'A Farewell to Arms' is such a picture. It is superbly, inspiredly photographed by Charles Lang, A.S.C., who, by this achievement, should gain universal recognition as one of the few really great masters of the camera. . . . Primarily, 'A Farewell to Arms' is a study in the Art of lighting. Lang has reached amazing heights of artistry in this, nor has he descended to the obvious in any scene. His lighting of the players is perfect in its absolute naturalness; it shows them off to the best advantage,

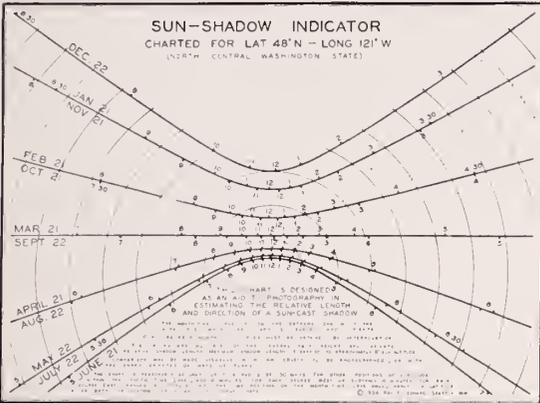
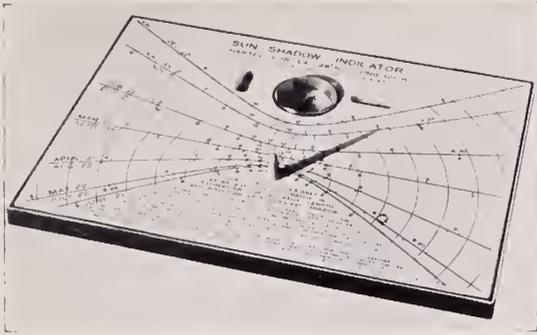
yet conceals every trace of artifice. His lighting of the sets is superb. Every shot is a masterpiece of intelligent pictorialism. The lightings enhance the richly atmospheric sets, and are moreover supremely intriguing in themselves. They merit the careful study of every student of this subtle art. . . . Many of the outstanding sequences of the film are dialogueless, relying entirely upon photography and pictorial action for their expression: they are flawless passages in the poetry of the cinema. Farciot Edouart's contribution in process photography is also more than ordinarily notable."

Cinematographer Lang's rise to prominence has been almost meteoric in its rapidity, yet withal marked by unusual stability. Less than seven years ago, when he first became a member of the American Society of Cinematographers, Charles Lang was an obscure Second Cinematographer. When, not long afterwards, he received his promotion to the rank of a full-fledged Director of Photography, he was assigned to the photography of obscure Westerns and programme-films, though for a major studio. But his rise continued; soon he was assigned to photograph the productions of Ruth Chatterton, at that time one of the studio's brightest luminaries. He photographed all of Miss Chatterton's Paramount releases, and thereafter, those of Tallulah Bankhead and Maurice Chevalier. Among his fellow cinematographers, Lang soon gained an enviable reputation, not only as an artist of the first rank, but as one of the most consistently artistic workers in the field. For several years a member of the Board of Governors of the A.S.C., Charles Lang's ability, sincerity and modesty have won him high personal recognition among his fellows. His character is, perhaps, best indicated by his response to Toastmaster Will Rogers in acknowledging the Academy's Award: "Thank you. I greatly appreciate this honor, but I feel that it is not mine alone, but that of my crew—Operative Cinematographer Robert Pittack, A.S.C., and Assistant Cinematographer Clifford Shirpser, A.S.C.—and of the Paramount Laboratory who processed the film so well."

In the Academy's balloting, the runners-up for Cinematographic Award were George Folsey, Jr., A.S.C., for "Reunion in Vienna"; and Karl Struss, A.S.C., for "The Sign of the Cross." In the selection of the "Hollywood Reporter's" Award, second place went to Lee Garmes, A.S.C., for "Zoo in Budapest," with Victor Milner, A.S.C., a very close third with "Song of Songs." Any of these productions would, in any other year, unquestionably have merited first honors. Indeed, 1933 was an extraordinary year in cinematography, for seldom if ever in the history of the Cinema have there been so many superbly-photographed productions released in so short a period.

Special Honorable Mention among the Technical Advantages of the year was awarded by the Academy Technicians' Committee to Fred W. Jackman, A.S.C., for his part in perfecting the cellulose process-screen.

Other Awards announced by the Academy include: Best Production, "Cavalcade"; Best Performance by an Actor, Charles Laughton, in "Henry VIII"; Best Performance by an Actress, Katharine Hepburn, in "Morning Glory"; Direction, Frank Lloyd, for "Cavalcade"; Best Original Story, Robert Lord, for "One-Way Passage"; Best Adaptation, Sarah Y. Mason and Victor Heerman, for "Little Women"; Art-Direction, William Darling, for "Cavalcade"; Best Recording, Franklin H. Hansen, head of Paramount Sound Dept., for "A Farewell to Arms." The short-subject Awards went to Walt Disney, for "Three Little Pigs"; Lou Brock, of RKO, for "So This Is Harris"; and Educational Pictures, for "Kakatoa." Special Certificates for Technical Merit were Awarded Electrical Research Products, Inc., for their "Wide-range" recording and reproducing system, and to RCA-Victor for the Photophone "High Fidelity" sound system. The Technical Honorable Mention, for the development and use of the Cellulose Process-screen, was given Fred W. Jackman, A.S.C., Sidney Saunders, and the Fox and Warner studios.



Sun Shadow Indicator

By

R. S. Leonard

WHAT path does the sun travel daily on its annual voyage from north to south and back again? Where will it be at some particular time of day—at some particular time of year? Such questions could probably be answered definitely by only a few, certainly not without access to astronomical data, and not without a great deal of time-consuming calculation. Yet definite knowledge of the sun's altitude and direction at any given time is most intimately concerned with all outdoor photography. Not only to permit adequate exposure, but to insure light of the direction and intensity necessary for proper rendering of the subject to be photographed.

Taking pictures of a great public power development at all times of the year made the need of such knowledge increasingly apparent. Still and motion pictures were taken of all construction phases, of railroad and transmission lines, of dams and lakes, of the scenic magnificence so intimately a part and background of the development; pictures of the tremendous 1200 square mile power reservoir that makes the project possible, an area of granite gorges and glacier capped peaks. The project lies in a country so rugged that many of the most spectacular locations are in sunlight only a part of the year, at times in places so difficult of access

that a second attempt was seldom possible—all this in a country of heavy rainfall and great cloud masses, of sudden weather changes and uncertain sunlight. Such difficulties prompted a search for some sort of a device for quickly forecasting the sun's position at a given time and place. Nothing seemed to be available, however, and after a certain amount of effort, the device in the illustration was produced. It has proved practicable in use and apparently quite accurate enough for its purpose.

The Sun Shadow Indicator is simple enough. Basically, it is merely a monthly charting of the path followed by the extreme shadow of a vertical post as the sun passes from east to west. The seven curves on the chart follow the shadow path of the day and month indicated on the respective curve. Intermediate days between these monthly curves are obtained with sufficient accuracy by interpolation. It would be more confusing than helpful to show very many of these curves, so only seven have been charted. The extreme curves of December and June mark the limit of sun travel north and south. Each of the other curves serves for either of two months because the sun naturally follows the same daily path at a given altitude, whether moving north or going south with the seasons. Because of the elliptical path traveled by the earth, however, the hourly time divisions for each month will not coincide. The curve of March 21st and September 22nd is a straight line because at that time the sun is over the equator.

The concentric circles are multiples of the post height and provide a ready means of estimating the length of the shadow in terms of the post height. For instance, in the illustration the shadow is in a direction that indicates three o'clock on or about June 21st, and the length of a sun cast shadow at that time is 4½ times the height of the object causing the shadow.

A magnetic compass is inset in the chart so that it may be properly oriented with the sun. Spirit levels are also included so that the chart may be held level and the correct length of the shadow indicated.

In use, the shadow indicator is leveled and turned until the compass needle is over the north point. It may be held in the hands, or placed on a tripod head or similar support. The sun need not be shining to obtain the shadow direction, but the presence of a magnetic deflection can be determined by a comparison of actual time with time indicated by shadow.

With the indicator properly leveled and oriented, a visual comparison is made between the post with its cast shadow and the object to be photographed. This visual comparison is the basis on which the practicability of the whole idea rests. In practice, the comparison method seems satisfactory, and it has been found that good results can be obtained with distant as well as close-up subjects.

The most desirable direction of light is then decided upon and the shadow length and the time of day at which it will occur is found on the chart. If proper shadow length and direction would not occur on that day, it is quite easy to determine if some other time of day would be more suitable. It has been found in practice that the indicator may be used in a ravine or in the shadow of obstructing objects such as mountains or buildings, and the time and duration of possible sunlight determined. Used in building interiors where photography may be involved with sun-lighting through windows, it will indicate the time, direction, and extent of sunlight penetration. Laid on building or construction plans, it is possible to determine with reasonable accuracy the proper time to photograph a subject without need of preliminary inspection by the photographer.

(Continued on Page 494)

SEVERAL basic improvements are to be noted for the year 1933, but their general adoption has been in almost every case deferred until more propitious economic conditions return. The majority of advances have been in details of equipment and practice—improvement of that already at hand, rather than the acquisition of anything radically new. None the less, much progress can be chronicled for the year 1933.

Cinematographic Methods

In virtually all of the studios, one camera per set has become standardized, with added cameras being used only rarely. At the same time, production schedules have been, in several instances, materially reduced. A feature-length, programme picture which but a few years ago would be allowed a shooting schedule of thirty days or more is now generally scheduled for eighteen days or less (12-15 days in one major studio)—and not infrequently completed considerably under the schedule. This has naturally brought about a somewhat greater efficiency in operation, though at the excessive price of absurdly long working hours, unduly great physical and nervous strain on the personnel, and the slighting of many important elements of really fine cinematography. It is noteworthy that the films held to be the most successful have generally been those allowed longer, more reasonable schedules, avoiding excessive overwork.

Relatively few changes in actual photographic methods have been observed, the bulk of advancement being detail improvements in equipment, etc.

Influence of Foreign Elements

Technically, the influence of foreign elements during 1933 proved negligible, although two releases ("Be Mine Tonight" and "The Private Life of Henry VIII") have influenced the trend of production to some extent.

The Dunning Process Co., of Hollywood, introduced a European method of "Matte-ing" films, to remove scratches on valuable negatives.

Raw Materials

Virtually unchanged. The standard negative material is the SuperSensitive Panchromatic type, non-halation backed, and largely of Eastman and DuPont manufacture. Similar emulsions, slightly slower, but of unusual fine-grain characteristics, have been introduced by both firms for the making of transparency background-plates. Infra-red-sensitive film has also been made available; this was used by Elmer G. Dyer, A.S.C., in making what have been held to be the finest aerial night-effect scenes made commercially, in M-G-M's "Night Flight."

The use of tinted-base positive stock has made some gains in the past year, especially in "Zoo in Budapest" and "I Am Suzanne," photographed by Lee Garmes, A.S.C., and in some of the films photographed by Victor Milner, A.S.C., and Hal Rosson, A.S.C.

Sound-track or "recording" positive emulsions, coated on 16mm stock, have been made available to the amateur trade, giving a moderately fast, semi-chromatic film at a greatly reduced price. This is largely of DuPont manufacture, but marketed by several laboratories, who handle the reversal processing of their film, under the trade-names "Pellex," "Sun-Ray," "Rod-Al," etc.

Cameras

Both Mitchell and Bell & Howell have introduced silent cameras, which have been tested, and used to some extent on productions. Though quite successful, economic factors have retarded their general acceptance. The French-made Debie "SuperParvo" silent camera has been shown in America, while both the Debie and Eclair silent designs have been used quite extensively in Europe.

Several improvements in blimping have been introduced; notably the Fried design, which consists of a standard Bell & Howell or Mitchell camera, suitably silenced, and rebuilt as an integral part of a small, lightweight blimp; and the RKO type, described elsewhere in this issue. The Educa-

tional-Fearless blimp has been made commercially available.

In the amateur field, Eric M. Berndt, of New York City, has designed and marketed a custom-built, professional-type 16mm camera, embodying virtually all the features of a studio camera, and adapted for sound-recording, by either single or double system.

The Eastman Kodak Co. brought out the Cine-Kodak Special, a virtually professional camera for advanced 16mm workers. It is capable of hand or motor drive, at any speed from single-frame to 64 frames per second, forward or reverse; and fitted with direct focusing, a two-lens turret, matting facilities, dissolving shutter, and an interesting magazine arrangement, somewhat reminiscent of the Akeley principle, for 50, 100 or 200-ft. lengths of film.

Bell & Howell introduced a semi-professional Eyemo and Filmo, featuring a range-finder, optional hand or electric motor drive, and detachable, external 200-ft. magazines.

Victor has added a (hand) reverse-crank to their DeLuxe "Model 5" 16mm camera, and, with the continuance of the "Model 3" type, made notable advances in the low-price class.

The magazine (or "charger") type of amateur cine camera has gained in popularity with the success of the "Simplex" and the introduction of the new "121" magazine-type Filmo. The magazine plan has incidentally minimized one of the commercial evils of the 16mm film trade—the wastage of "short ends"—lengths of 40-50 ft., which can now be used as loads for the magazines.

The 8mm standard has made great progress during the year, two types of equipment being available in this standard (Eastman and Stewart-Warner), with a considerable variety of equipment and accessories.

Camera Accessories

An outstanding development in the line of professional accessories is the introduction, by Harrison and Harrison, of a positive-type view-finder matched to 24mm lenses. The same firm has also introduced a professional type, positive-lens view-finder for amateur use.

There has been a notable increase in the use, by professionals and amateurs alike, of photoelectric exposure-meters. Several new instruments of this type, including the Weston, have been marketed.

Several studios—notably MGM, RKO and others—have developed finders which are mechanically connected with the focusing adjustment of the camera lens, automatically correcting for parallax. Some designs focus the finder-lens synchronously with the camera-lens; often this adjustment is provided with compensating elements which keep the finder accurate regardless of the focal-length of the camera-lens used.

The Bell & Howell "Rotambulator," adapted from a design by John Arnold, President A.S.C., has come into general use in several studios in place of tripods, dollies or light cranes.

The Fox Studio introduced the "Velocilator," a very fine small crane for general use. It is being manufactured under license by the Fearless Camera Co.

General Service Studios have developed a fine large crane, one of the two largest in the industry, and interestingly designed. One man can operate it, as the counter-

Cinematic

Progress During 1933

A Technical Review

weights are sliding rather than fixed, and assure very accurate balance. It is designed to be transported as a trailer.

Lenses

Professional lens-speeds have remained fairly constant, varying between $f:2.7$ and $f:2.3$. The Astro "Tachon" lens, $f:0.95$, has been shown within the year, and tested by members of the A.S.C. Research Committee, in both the professional and amateur mountings. The visual and chemical foci are rather divergent, so it has not been possible, as yet, to calibrate these lenses with sufficient accuracy to take advantage of their undeniable speed and good optical quality.

The German camera firm, Askania, G.m.b.H., has introduced a mirror-lens, a telephoto on the principle of the reflecting telescope.

The Bell & Howell "Varo" variable-focus or "Zoom" lens has been used considerably on production.

Lighting

Incandescent lighting has remained in the ascendant, although the carbon-arc remains supreme for certain light-effects, and for natural-color cinematography.

The General Electric Co. has developed large bulbs of the Photoflood, high-intensity type, for studio use. These are known as the "Movieflood," and are similar to the usual 1,000 Watt, PS-52 bulbs, but deliver approximately 100 per cent more light, though with a rather shorter life, averaging 15-18 hours. The chromatic composition of the light from these bulbs is considerably improved, with an increase of 140 per cent in the actinic (blue-violet) region, and an almost corresponding reduction in the infrared or heat emanation, which is of no photographic value. These units are excellent for monochrome cinematography, having notably improved "carrying power." They were, however, designed primarily for natural-color cinematography.

The National Carbon Co., in conjunction with Mole-Richardson, Inc., of Hollywood, have developed new Super-Panchromatic carbons for arc-lighting both natural-color and monochrome cinematography, and new lighting-units of greatly improved efficiency for their use.

Kliegl Bros., of New York, have also introduced several improved incandescent lighting units, now undergoing tests.

In the amateur realm, the regular Photoflood bulb, together with new, extremely low-priced lighting units for use therewith, have greatly increased the interest in indoor movies and stills.

A new professional diffusing screen, for studio lights, has been introduced by B. M. Bodde, of Hollywood, who claims for his device the softness of a "silk" with the translucency of an oiled gelatine diffuser. In addition the new diffuser is said to be heat-proof and waterproof.

Trick or Process Cinematography

The transparency, or projected-background process has virtually eliminated the color-separation transparency methods of producing composite shots. Several interesting developments in this connection have occurred, including the

introduction of several types of cellulose-acetate screens. Earlier in the year the Sidney Saunders cellulose screen was announced, and most recently the Bodde type, which is fire-proof, and partially polarizes the projection beam. It is said to correct the projection "hot-spot" markedly, and to minimize grain.

These screens, together with improved design of the optical units of background-projectors, have permitted the use of vastly larger screens. There have been some experiments with filters, fitted to the projector, for controlling the hot-spot. Several portable background-projectors, including that of George Teague, of Hollywood, have been placed in operation, greatly increasing the flexibility of the process.

Dr. L. M. Dieterich, A.S.C., invented a new color-separation composite process, embodying different principles than those heretofore used.

Several films released by RKO have had unusual displays of trick transitions, made on the Optical Printer by Vernon Walker, A.S.C., and Lynn Dunn, A.S.C. Among these films are "So This Is Harris," "Melody Cruise" and "Flying Down to Rio."

Natural-Color Cinematography

Technicolor's three-color process has been used for over a year in making Walt Disney's "Silly Symphony" cartoons, and has caused a marked trend to color in animated cartoons. The three-color Technicolor has also been used on feature productions, for sequences from "The Cat and the Fiddle" (MGM) and "Rothschild" (20th Century) with good effect. The process, while still in the development stage, shows considerable promise, especially as the lighting technique is mastered.

Cinecolor has announced several improvements in processing methods for two-color, bipack processes.

The Dunning Process Co., of Hollywood, has successfully reduced a number of 35mm two-color subjects to 16mm, using duplitized 16mm positive stock. Negatives of all types—Technicolor, Multicolor, Magnacolor, Cinecolor, and even Prizma and Kinemacolor—have been utilized.

Stereoscopic Cinematography

A good deal of experimentation has been quietly carried on in this direction, both independently and under the wing of various studios. Little, however, has been announced regarding these experiments, though it has been rumored that at least one of these systems is shortly to be tried out on a feature production.

Television

As outlined elsewhere in this issue, a good deal of experimentation in Television has taken place, with results that are technically gratifying, but which indicate that commercial television is as yet rather far in the future.

Film Standards

Wide film, a subject of much consideration a few years ago, has apparently vanished from view. Were economic conditions more favorable, it might well commend itself for process-background use, however, since the equipment for it still exists.

At present, there are in America three recognized film standards: the professional standard, 35mm; and two amateur standards, 16mm, also used in industrial and educational use, and 8mm, a purely amateur standard, created by slitting specially perforated 16mm film lengthwise (after development), and projecting as a narrow strip with but a single set of perforations. Great economy is possible by this method: judged on a basis of equivalent screen time, a saving of $66 \frac{2}{3}$ per cent over 16mm is noted, and approximately $91 \frac{2}{3}$ per cent over 35mm.

In Europe, in addition to the familiar 35mm and 16mm standards (8mm is only now being introduced in such regions as Great Britain) there are two other standards. The Pathe-Rural, of France, intended primarily for village cinemas and industrial work, though lately made available to some amateurs, uses a film essentially similar to 16mm.

(Continued on Page 494)

Featherweight Blimp Has Many Innovations

By

Henry William Gerrard, A.S.C.

FOR the past month, I have been privileged to use a new and really modern camera-equipment in the photographing of my latest RKO production, "Of Human Bondage."

Essentially, the new device consists of a standard Mitchell camera, rebuilt as an integral part of an unusually light soundproof housing, and designed in such a way that the case need be opened only for loading. All normal operational procedure—focusing, adjustment of lens and shutter, etc.—may be carried on entirely from the outside. The finder system, while in many ways similar to accepted current practice, in which the finder is automatically corrected for parallax, has been developed to a high degree of perfection. The new outfit weighs but 116 lbs. loaded and ready for use. It may be used, if necessary, on an ordinary silent-picture tripod, and carried about the studio as easily as a silent-picture camera.

The camera used is a standard Mitchell, equipped with a silenced speed movement. The forepart of the camera, including the turret, lens-mounts, etc., is eliminated, and only the actual camera-box and the base upon which it slides are used. This is fitted into the Blimp in a semi-permanent mounting, with an accurately made front plate—an integral part of the blimp—replacing the portions of the original camera which have been removed. The rest of the blimp consists of a hardwood frame, built up from an insulated metal base-plate, lined with the usual sound-absorbent materials, and covered with leather. This casing is shaped to conform to the contours of the camera; the upper quarter opens for insertion of the film-magazines, and the panel opposite the camera-door, on the left-hand side, opens for threading. A door, fitted with an inspection-window, is provided beside the takeup pulley, and another at the rear of the motor.

At the rear, windows are provided through which the footage-meter and the shutter-aperture indicator may be observed. The regular Mitchell focusing-tube connects with an eyepiece extended through the back of the blimp case, as is the throw-over lever. Two buttons beneath the eyepiece control the blue and "pan" viewing filters in this focusing system, while to the right of the ocular are similar buttons which control the shutter setting, etc., and permit making fades in the camera. A spirit-level is built into the housing, and all dials, etc., are illuminated.

In front of the case is mounted a rebuilt standard matte-box. The bellows has been eliminated in favor of a short tube, which fits directly into the lens-mount. The matte-



New RKO Featherweight Blimp, opened. The finder-tube is folded down to allow opening of door; directly above note focusing control and dial.

box supporting arms are mounted upon a bracket which is in turn hinged to the camera-housing, so that by the operation of a simple release, the entire assembly may be swung to one side, out of the way.

Undoubtedly the greatest advances in the design are found in the lens-mounting and the finder system, which are interlocked. The turret, as has been mentioned, is eliminated in favor of a single lens mount. The lenses are mounted in special barrels, which fit interchangeably into this mount. They are so designed that they cannot possibly be inserted incorrectly. A system of cams is provided so that a single set of focus-calibrations is accurate with all lenses, and the automatic adjustments of the finder, which correct for focus and parallax, are also accurate for any lens.

The finder, which is mounted, as usual, beside the camera, on the left-hand side of the case, comprises two units: the finder proper, and a dial engraved with the focusing calibrations. This dial is placed directly above the finder, and is equipped with a light, enabling the calibrations to be read more easily, and an adjustable mirror, so that the indicator may be read from behind the camera.

By means of a large knob, located directly below the indicating dial, the finder is automatically focused and corrected for parallax in one operation; the same operation automatically focusing the camera-lens. By means of a specially designed system of cams, this operation is accurate regardless of the focal length of the lens being used. The finder tube is hinged midway of its length, and folds downward, giving ample room for the opening of the camera and blimp doors for threading.

In actual operation, this new-day optical system works as follows: By means of the single knob controlling the camera-lens and finder, the picture may be focused in the usual manner, on the regular ground glass focusing screen of the Mitchell focusing system; or, alternatively (and often with far greater accuracy and satisfaction) the camera may simply be centered on any desired object in the picture, by observation through the focusing-tube. Then attention is transferred to the finder: by means of the focusing knob, the finder is simultaneously swung and focused so that the desired object is centered in the finder; when this is done,

(Continued on Page 496)

For Three Years

THE LEADER

EASTMAN Super-sensitive "Pan" led the way into the amazing field of ultra-speed motion picture photography. That was three years ago. At no time since then has this Eastman film faltered in its leadership. Producers and cameramen today find that it is as closely linked as ever with the outstanding box-office triumphs...with the finest and foremost in cinematography. Eastman Kodak Co., Rochester, N. Y. (J. E. Brulatour, Inc., Distributors, New York, Chicago, Hollywood.)

EASTMAN *Super-sensitive*
Panchromatic Negative

Sun Shadow Indicator

(Continued from Page 489)

The indicator may also be used on geographic maps to compare sunlight direction with geographic features.

The effectiveness of exterior architectural detail and design is usually dependent upon its relation to predominant sunlight direction. Residence design is very much concerned with sun exposure and sunlighting of interiors. Factory and office buildings must be based on the maximum utilization of sunlight. The Shadow Indicator should prove a time-saver in determining the sun's position at definite or at average times throughout the year, and in work of this nature could be used as a simple chart, without compass or levels.

The device has one very decided disadvantage, however: it must be used within a reasonable distance of the position for which it was charted, although with care and the proper allowance for time and distance, the chart in the illustration could be used for the entire state of Washington. Areas where a considerable amount of outdoor photography is carried out should justify the production of a chart for that district.

The device has been invaluable in the particular use for which it was designed. Here are a few recent instances. The camera position for one picture was several hundred feet above a lake, facing south, and with a background of snow-covered mountains. The sun was moving across the sky, almost into the lens, and the snow-covered mountain side facing the camera was in shadow. The immediate problem was to determine if the sun would rise high enough to illuminate the snow fields and keep out of the lens. A quick reference to the Shadow Indicator gave the sunset position and showed that the time of year was too early to expect sunlight on the snowfields, and so the picture was taken without loss of time. A suitable time for a picture to be taken later was also determined. At another time, the camera position was on a hillside facing north and looking directly into a canyon, which at that time was in shadow. Reference to the Indicator showed that the canyon would be cleared of shadow in an hour, so the set-up was made. In still another case, a dam was to be photographed from a point below, and maximum brilliance of the water tumbling over the spillways demanded as nearly a horizontal sunlight as possible. It was doubtful if late sunlight would illuminate both spillway water and gorge, but the Indicator gave the time of day and year when both conditions would exist.

The following is an instance of almost invaluable aid; a position was to be determined for a permanent motion picture camera mounting for progress records of the construction of a great dam. These shots were later to be assembled to show the complete construction in a

A.S.C. To Hold Golf Tournament

The First Annual A.S.C. Cameramen's Golf Tournament will be held at the Hollywood Country Club on Sunday, April 8. All cameramen are eligible to enter the tourney, which consists of 18 holes of Medal Play. A large number of prizes and trophies are promised, including a perpetual trophy emblematic of the Cinematographers Golfing Championship.

The Tournament Committee includes Elmer G. Dyer, Chairman; Karl Struss, Allen Seigler, Ernest Haller, George Folssey, Richard DaVol, Norbert Brodine, Bernard McGill, Joseph Valentine and Fred Gage.

The Trophy Committee consists of President Arnold, of the A.S.C., Edward O. Blackburn, Wesley Smith, George Schneiderman, Gaetano Gaudio, Virgil Miller, Edward Cronjager, Charles Stumar and J. G. Van Trees, Sr.

Entry blanks will be available at the Society's offices, 1220 Guaranty Building and in all studio camera departments. They should be filled out and filed as early as possible, either with the studio's Camera Executive or at the offices of the Society. The Tournament Committee urge that all entrants state their average score, with whom they prefer to play, and the preferred starting-time. In so far as is possible, the foursomes and starting times will be arranged in accordance with these expressed preferences.

Play will start at 8:00 A.M., with the foursomes starting at ten-minute intervals thereafter. The Green Fee is \$1.75, which includes lunch and shower and locker privileges. Entrants may practice on the course at any time previous to the tournament; the fee for this is one dollar.

short space of time—a very difficult task at best. Average sunlight direction, penetration of sunlight to the gorge and dam foundations, and desirable light direction for photography were all obtained by reference to the Indicator.

Undoubtedly these cases are common problems and it is hoped that the Sun Shadow Indicator may help others in their solution. In outdoor motion picture photography, where sets must be constructed some time in advance of actual picture taking, where camera and equipment set-ups must be planned or made in advance, or where the choice of outdoor locations is definitely related to sunlight, the device may be of assistance.

Cinematic Progress in 1933

(Continued from Page 491)

but of a width of 17.5mm. Another French system, also introduced by Messrs. Pathe, and for exclusively amateur use, is the "Pathex" 9.5mm standard, distinguished by a most economical utilization of the film-area; the perforations are single, and in the centre of the film, between the frames. This standard is said to be even more popular than 16mm throughout Europe. It partakes of the economies of the 8mm system.

Sound

During the past year the Western Electric "Wide Range" and the RCA-Victor "Highest Fidelity" systems of recording and reproduction have come into general use. They give a considerably wider response range in both recording and reproduction, with better quality and more natural sound.

Western Electric has developed a new light-valve, with one ribbon more highly damped than the other, giving a more uniform response, and a clearer record.

In the independent sound-equipment field, hitherto dominated entirely by glow-lamp equipment, several light-valve recorders (including the Fearless) have appeared.

Sound-Films, Standard and Substandard

The split-film method of sound recording is being widely used. It is essentially similar to the amateur 8mm principle, involving the use of normal 35mm sound-track positive film for the record, with tracks made first along one edge, then the other. After development, this is slit longitudinally, and the accepted takes are segregated for printing.

In other studios (notably RKO) a system of preselection is employed. Only the accepted takes are developed. The rest of the film is either reversed, and used anew for recording, or reclaimed, if this is impractical.

Dr. J. G. Capstaff, of the Eastman Kodak Co., recently patented a method of producing tinted-base positive stock in which the sound-track area remains clear. This is done by removing from this area the material of the film-base to the depth of the dye-effect, subsequently filling the groove with a protective, insoluble varnish. So far as is known, this method has not been introduced commercially.

16mm sound-on-film has become rather definitely standardized in America to the RCA-Victor dimensions; standard 16mm film, perforated on one side only, with the opposite area used to carry the sound-track.

In Europe, on the other hand, several substandard sound-on-film dimensions are used. The Pathe-Rural (17.5mm) system is, except for film-width, identical with the RCA-Victor 16mm standard. The British Thompson-Huston Co. (B.T.H.) and Tobis, of Germany, both

employ a standard which is virtually a complete overall reduction of existing 35mm sound-on-film: standard 16mm film, perforated on both sides, with the sound-track between the left-hand row of perforations and the narrowed picture-area. Will Day, in England, has suggested the possibility of putting a sound-track on 9.5mm film, using a narrowed picture, and a track whose striations are at an angle of 60 degrees to the longitudinal axis of film and track.

No great degree of outward progress has been made in direct recording of 16mm sound-films. One equipment—the custom-made Berndt outfit already mentioned—is available, and uses either glow-lamp, light-valve, or oscillograph recording, on the RCA-Victor standard track. The bulk of substandard sound-on-film, both here and abroad, is recorded on 35mm film, and reduced by re-recording.

Re-Recording or Dubbing

The most interesting developments in this line, aside from the methods and equipment used here and abroad for re-recording from 35mm to 16mm or 17.5mm, is the Reagan-Day method of re-recording or synchronizing foreign-language dialog. As recently described in the *AMERICAN CINEMATOGRAPHER*, this process involves the use of special close-ups, in which the actors speak coded lines, using English words, but giv-

ing lip-movements synchronizing with the required foreign-language dialog. Thereafter, properly synchronizing foreign-language sound-tracks are made, and synchronized with the picture by means of an ingenious synchronizing machine developed for the process.

Sound on Disc

This, the form of the original Vitaphone, to say nothing of the earlier, unsuccessful experiments such as the Powers Cameraphone of 1912 and the original Edison Talking Kinetoscope of 1895, has lapsed into desuetude. It is virtually unused in professional practice, despite the introduction, by Western Electric, of an improved recording system using Vertical Cut records. It is little used, even, in substandard practice. A good deal of equipment for amateur disc recording is available in England, however, where many amateurs seem yet to be experimenting with the method.

Projection

No outstanding improvements in professional equipment or methods have been noted; in fact, quite the reverse, as the depression has impelled many exhibitors to economize excessively in their projection-booths, reducing the amount of light used, the crews, etc., and overlooking many needed repairs. It has been stated that this condition is costing distributors in the Los Angeles territory

alone over \$1,000 per week in replacements of damaged prints, and that a print which should normally have a life of 15 to 20 consecutive engagements now have a life of less than five such runs.

In the amateur realm, there has of late been a very considerable increase in the power of the projection lamps used in 16mm projectors. At the introduction of 16mm, eleven years ago, the average lamp was but 150-200 Watts, with the largest only 250 Watt. A year ago, roughly, 350 and 400 Watt units were introduced. Within the past year, 500 and even 750 Watt lamps, with forced ventilation, etc., to protect the film, have come into use, an increase of over 300 per cent. This power permits projection upon even theatre-size screens (15-18 feet wide) with truly professional results.

Several manufacturers—notably Bell & Howell and Victor—have introduced excellent 16mm sound-on-film projectors, using the RCA-Victor standard film, and easily adapted to projecting silent film, as well.

At least two European firms (Bolex-Paillard and Siemens) have introduced projectors using 16mm, 9.5mm, and 8mm interchangeably.

Laboratories

There has been noted a considerable improvement in the quality of the out-

The new 48-speed Eyemo

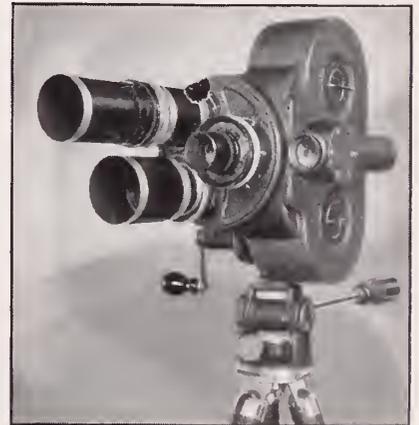
gives the highest speed available in a portable 35 mm. camera

The new 8- to 48-speed Eyemo 35 mm. hand camera, developed to permit taking pictures at twice sound speed, is now available on order.

This convenient, versatile camera has already proved its value to Martin Johnson, who is using it for filming big game from the air. It will be a boon to any cinematographer who has to produce semi-slow motion scenes under circumstances which make the use of a studio camera difficult or impossible. Its speed range, 8 to 48 frames per second, gives it general utility.

Known as Eyemo 71-CD, the new model has a three-lens turret head mounting the Cooke 47 mm. F 2.5 lens, standard equipment, and any two extra lenses selected from the Cooke line, ranging in focal length from 24 mm. to 20", and in speeds as fast as F 2. There is a hand crank for optional use, and a 12- or 110-volt electric motor may be employed. The governor gives accurate control of any desired speed, whether spring motor, hand crank, or electric motor supplies the power. Model 71-CD, like 71-C, may be adapted to use external 200- or 400-foot magazines.

Your present Eyemo 71-C can be converted to operate at 48-speed.



BELL & HOWELL

Bell & Howell Company, 1848 Larchmont Ave., Chicago; 11 West 42nd St., New York; 716 North La Brea Ave., Hollywood; 320 Regent St., London (B & H Co., Ltd.) Established 1907.

put of several important studio and commercial laboratories in Hollywood.

The Dunning Process Co. and the laboratory of the DuPont Film Mfg. Co.'s factory have both standardized on a modified paraphenylene-diamine developer for fine-grade development of 16mm negative, with excellent results.

Art Direction

The year has been marked by an influx of art-directors from the stage, including Willy Pogany, the late Joseph Urban, Robert Edmond Jones, etc., and by the invention, by Henri Coulon, of an interesting machine for scientifically matching the colors for costumes, settings, etc.

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Trick Optical Printing

(Continued from Page 487)

was used effectively to introduce the characters in "Flying Down to Rio." Fig. 19 is another adaptation of the same matte used for Fig. 17. Figures 20 and 21 show a simple but effective use of the common straight-edge matte. This effect is easily made by wiping-in in a different direction than that of the wipe-out. Although rather mechanical, the result is, however, quite smooth and flowing. In "Hips, Hips, Hooray," various forms of this type of wipe were used. The most commented-on type of effect we have made recently is the so-called "card wipe," Fig. 21, used in "Flying Down to Rio." This was developed for a series of scenic shots of Rio de Janeiro, in an attempt to get over the idea of viewing a series of picture-postcards. A special device was designed for these effects, and it was necessary to do a great deal of careful planning before making the shots.

Fig. 22 is an example of how Optical Printing can save many dollars for the studio. In filming "Ace of Aces," Richard Dix's crashed plane was supposed to burst into flames just as he climbed out of it and reached the ground. It so happened that the plane did not flare up until Dix had crawled along the ground and out of the picture. The scene was up for a retake, naturally involving quite an expenditure, when we thought we would try a little 'doctoring' on the printer—to see if we could save the scene. We made a test, dissolving to a split-screen around Dix at the moment he touched the ground. In this split, we dissolved the action of the plane ahead about twenty feet, to the point where it burst into flames, while Dix's action continued on normally. The experiment was successful, and our 'doctored' shot was cut into the picture, saving an expensive retake. At another time, in "Flaming Gold," an objectionable name was noticed on an oil truck moving into an important scene. The Optical Printer was called on to "retouch" this scene. By means of a fine grease-pencil mark on a glass placed in front of the printer aperture, the name was blurred enough to prevent recognition. This glass was slid along frame by frame, to match the movement of the truck. Jobs of this type present themselves regularly.

Many odd and interesting problems are presented to the Trick Department of any studio. Some are extremely difficult, and tax the ingenuity of the Department's personnel to the utmost. During the five years of my experience with the RKO Trick Department, it has been a pleasure for me to work on the problems to which I have been assigned, due to the full cooperation of all its members, and the entire confidence that Vernon Walker,

A.S.C., the Department's Head, has in his associates. That trust, together with his method of giving full credit where credit is due, has built around him a smooth-running and efficient department. His own professional ability, too, has won him not alone the homage of others, but the sincere respect of his co-workers in his department. The quality of Optical Printing, variety of special effects, and efficient mechanical design and operation of the printer are by no means a one-man achievement: a world of credit is due Cecil Love, A.S.C., my assistant, and Bill Leeds, the designer of the printer and its accessories. The mechanical developments on the printer and the high standard of Optical Printing it turns out are certainly not the products of one brain, and to these men rightfully goes a large share of the credit for the high standard of work turned out by the RKO Camera Effects Department.

What the future holds for Optical Printing is hard to say, but as studio executives become more familiar with its artistic and money-saving possibilities, as outlined herein, I feel assured that they will take more and more interest in this branch of trick photography. Inevitably, Optical Printing and Optical Printer Specialists will gain higher and more general recognition than they now enjoy.

Featherweight Blimp Has Many Innovations

(Continued from Page 492)

the camera-lens is also focused upon that object, with microscopic precision, and an accurate reading is also seen on the focusing dial above the finder.

Changing of lenses is simple: the focusing control is brought to the "infinity" position, the matte-box swung aside, the lens is given a quarter-turn, and removed. Similarly, no lens may be inserted unless the focusing mechanism is in this infinity position; and lenses may only be inserted right-side-up. The lens mounts are so designed that they automatically select the proper cams to coordinate the focusing mechanism with the focal length of the lens being used.

The new device was completely designed and built in the RKO studio camera machine-shop. Credit for the design is given to Harry Cunningham, Head of the Camera Machine-shop, who worked in close cooperation with William Eglington, Head of the RKO Camera Department, and Richard S. DeVol, A.S.C., his assistant.

Glennon to Fox for "Grand Canary"

• Bert Glennon, A.S.C., has been assigned to direct the photography of the Fox film, "Grand Canary."

Filters For Special Effects

(Continued from Page 486)

Second only to the family of diffusers is the group of Fog Filters. These produce natural fog-effects under any condition. The No. 1/4 stimulates atmospheric haze or mist; the No. 1/2, a very light fog; the No. 1, a light fog; the No. 2, a medium fog; the No. 3, a heavy fog; and the No. 4, a real 'London fog.' The No. 5, a graduated fog-filter, is often used for cinematographic work, especially street scenes.

These filters do not increase the exposure, and (especially the first three), they may be used at night. In fact, the first of these filters which I made, nearly twenty years ago, gave a night fog effect when a natural fog failed to make any photographable impression!

These fog filters are also excellent for use in photographing backgrounds for Art-titles.

The Neutral Density filters, for subduing glare and strong contrasts, are too well known to require more than mention. They may also be obtained in graduated types, which are very useful. Several miniature experts use these graduated Neutral Density filters on all their miniature shots.

Ordinary graduated filters, graduating from either clear or very lightly-tinted glass at one end to a heavy tint at the other, are equally familiar. Made graduating from one color to another, as from yellow to orange, or from orange to red, they are highly useful in making night and moonlight shots. Several cinematographers have had special filters made, graduated from the green of the 56-B or the X below to a 25-A above: these produce startling effects in the desert, with a highly-corrected sky and a soft foreground.

I have made special filters of this type for the production of some interesting special effects. In the Fox picture "Happy Days," a few years ago, a sequence required that a group of minstrels should change suddenly from normal white men to blackface makeup. This was done by using a bluish-grey makeup, and a long, graduated filter, clear at one end, and a fairly heavy red at the other. Shooting through the clear end, the makeup photographed white; pulling the filter down until the lens was covered by the red end, the blue makeup slowly changed to black. A similar filter enabled another cinematographer to quickly transform an old man into a youth: the aging lines were drawn in blue, which, through the red filter, photographed dark; pulling the filter out until the lens was behind the clear area, the blue lines faded out, and the man became young.

Lastly, the monotone filter—or viewing-glass—is a filter for the eye, not for the camera. It is used in judging photographic light-values, showing highlight, shadow, and colors in terms of black-



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and-white and halftone. They are available for both Pan, SuperPan and Ortho emulsions. It is often possible to estimate filter-effects by slipping a filter in front of this viewing-glass, and thereby getting an approximate idea of the degree of color-correction you will get with that filter, under prevailing conditions.

New Lamp Diffuser

• The announcement of a new studio lamp diffuser by the Organic Reclamation Corporation of Hollywood holds considerable interest for the cinematographer in view of the fact that this announcement is accompanied by a test conducted by them by a member of the American Society of Cinematographers.

This diffuser is claimed to give the same degree of softness as silk with very little loss of light. The following readings were secured on a Weston Exposure meter for the various types of diffusers: employing a 1000 watt lamp with readings taken in each instance at 8 feet:

Without Diffuser.....	320
Oiled Gelatine.....	200
Cello Glass.....	100
Silk	70
Organic Diffuser.....	250

These readings would indicate an economy of light, with a maximum of diffusion for the Organic Diffuser. The announcement states the diffusers are made in all sizes.

Jackman to South Seas

• Fred W. Jackman, former President of the American Society of Cinematographers, and Director of Scientific Research for Warner Bros.-First National, has sailed on the "Tatsuta Maru" for a four-months' cruise of the South Seas. Jackman, Dean of Hollywood Trick Camera-men, signed a new long-term contract with Warner Bros. before leaving, and will combine business with pleasure on the trip, photographing special background scenes for the studio throughout the voyage. His itinerary embraces Japan, China, the Philippines, Indo-China, Java, Bali, New Guinea and the Solomon Islands, New Zealand, and Australia. He is accompanied by Mrs. Jackman and his son, Fred H. Jackman, Jr., A.S.C., and his wife, and Joe Jackman, another son.

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AMATEUR MOVIE SECTION

Contents . . .

NATURE Photography
by Walter Blanchard504

COLOR and the Miniature Camera
by Clarence Slifer, A.S.S.....505

A. B. C. of Outdoor Lighting
by Arthur Campbell506

SHOW It With Music
by Wm. Stull, A.S.C.....507

CINE Synthesis
by Wm. J. Grace.....508

HAVE You a Watchmaker at Home?
by J. D. Reed.....509

WHEELS of Industry.....510

BACKYARD Movies.....511

TRICKS and Gadgets.....512

HERE'S How521

• **PROFESSIONAL Criticism of the Amateur picture is a part of the service offered by the AMERICAN CINEMATOGRAPHER. Many are not aware of this. Hundreds of pictures have been reviewed this past year by members of the American Society of Cinematographers for the Amateur.**

Next Month . . .

- A Professional Looks At 8mm. Arthur Miller, A.S.C., who has taken the 8mm under his wing, will tell you the things that can be done with this little camera
- Backyard Movies will continue to be given to you. . . . The type of stories anyone can shoot in their backyards, right in their own neighborhood.
- Some common sense technical articles will be offered, things within the range of the 16mm and 8mm camera.



Cine-Kodak and "Focal Frame" in action. The butterfly will fill the picture.

Nature Photography With Cine-Kodak

By

Walter Blanchard

(Abstract of a communication from J. W. McFarlane, of the Kodak Research Laboratory, Rochester, N. Y.)

THE principal restrictions as to subject-matter for 16mm movies are now the cost of the required equipment, and the ease with which that equipment can be used. The amateur does not, as a rule, buy expensive accessories, nor can he spend much time on his hobby; and most important of all, he will not be bothered with complicated equipment. It is therefore evident that to make successful the photography by amateurs of subjects beyond the scope of existing amateur cine cameras, the additional equipment must be either inexpensive or easy to build; it must require no setting up; it must be easy to use, and yield good results in unskilled hands. The most desirable, perhaps, would be the adaptation of existing accessories to new uses which would extend the capabilities of the camera, without additional outlay or difficulty.

The most important problem in applying the Cine-Kodak to nature photography is focusing on small objects. The Cine-Kodak is at present equipped to focus on objects from infinity to two feet. It is not calibrated for shorter distances, due to the fact that the depth of focus decreases rapidly as the plane focused on approaches the camera, and it becomes impractical to estimate the subject-distance accurately enough to insure sharp focus. Moreover, the finder systems available at the present time are not valid for very short subject distances, because of the displacement of the finder axis from the camera lens axis. Overcoming these afflictions will permit the application of the Cine-Kodak to nature photography. Classified according to focusing distance and field size, there are four subject classes in nature photography:

1. Normal objects at normal distances, which can be photographed without additional equipment.
2. Small objects, normally examined at about ten inches. The majority of subjects fall in this class.
3. Small objects, which cannot be closely approached, for example, birds. This class can sometimes be photographed with telephoto lenses.
4. Very small objects, normally examined through a magnifying-glass.

The second and fourth classes—normally beyond the range of amateur cine cameras—can be photographed successfully by means of an attachment comprising a wire frame which defines the subject-area and plane, together with a supplementary lens which refocuses the camera upon the desired plane. The frame serves both as a finder and a focusing device of high precision, and since it is outside the picture area, it does not show in the picture. The accessory known as the Cine-Kodak Titler can be used for this purpose. The easel which takes the title card forms the frame, and does not show in the picture. The focus comes exactly at the frame, and the field size is $2\frac{1}{8} \times 2\frac{3}{4}$ inches. This is, however, rather small for most subjects. Titling stands of similar principle, though of different manufacture, may be used, too, either with the Cine-Kodak or with other 16mm and 8mm cameras.

Such a device may very easily be made by the amateur, however, with a wooden base, a simple wire frame, and an ordinary spectacle lens. It will serve not alone for nature photography, but for making many types of extreme close-ups for industrial or educational films and photoplays, and

(Continued on Page 515)

Close-up of a frog, made with Cine-Kodak and "Focal Frame."



Table II

Data for 16 mm. cameras with 20 mm. lenses, and 8 mm. cameras with 12.5 mm. lenses

Photographing Distance d		Field size Dia		Displacement s		Supplementary lens L
cm.	Inches	cm	Inches	cm	Inches	
100	39	30x40	12x16	15	6	1.0 dioptre)
50	19-1/2	15x20	6x8	7.5	3	2.0 "
33	13	10x13.3	4x5-1/4	5.0	2	3.0 ") spectacle
29	11-1/4	8.6x11.4	3-3/8x4 1/2	5.0	2	3.5 ") lenses
25	10	7.5x10	3x4	3.5	1-1/2	4.0 ")
20	8	6x8	2-3/8x3-1/8	2.5	1	5.0 ")
15		4.5x6.0		0		100 mm focal length) Cam-
10		3.0x4.0		0		100 " " ") ers
7.5		2.25x3.0		0		75 " " ") mag-
5.0		1.5x2.0		0		50 " " ") tig-
2.5		0.75x1.0		0		25 " " ") nets



Color and the Miniature Camera

By

Clarence Slifer, A.S.C.

WITH their customary progressiveness and enthusiasm, those interested in the miniature camera have turned to color photography as the next field to conquer, with this most versatile photographic instrument. Strangely enough, miniature negatives were used in color photography before miniature cameras became popular. In 1923, a very ingenious color camera was placed upon the market. This camera was known as the Raylo camera. It made color pictures by the three-color separation principle. Each negative in the separation measured 1 by 1½ inches, or identically the size of the present Leica and Contax negatives. From these miniature color separation negatives, enlarged color prints were successfully made in any desired quantities.

As there are a number of color processes that may be used with the miniature camera, it is the purpose of this article to acquaint you with some of the most prominent and successful ones. Perhaps the oldest, successful color

process is the Autochrome process. This is strictly a transparency process, the resulting pictures being viewed either by transmitted light or by projection. Recently the Autochrome emulsion has been coated upon a film base and is now known as Filmcolor. It is also supplied on 35mm perforated film, this film being suitable for use in the Leica and Contax cameras.

The principle by which this film makes pictures in natural colors is very interesting. The only special equipment required to use this color film is a special lens filter. This compensates for the difference between the visual value of certain light rays and their actinic effect upon the sensitive film coating. Although Filmcolor is a single film, it is made up of two distinct coatings: the color screen and the emulsion. The color screen is made of microscopic, dyed starch grains. This screen in reality is a mosaic of myriads of tiny filters: red, green, and blue and in perfect balance. There are approximately 6,000,000 of these filters to a Leica frame. This trichromatic mixture of starch grains is spread upon a celluloid film base. Over this color grain coating is applied a protecting varnish. Then upon this, is coated a thin, highly sensitive panchromatic emulsion.

This color film is loaded in the camera with the celluloid side towards the lens (the reversal of normal black and white procedure). This permits the mosaic color screen to act as a filter for the panchromatic film. It will be seen, that these minute filters will pass some color rays wholly, or partially, or stop completely, depending upon the color of the light ray and upon the color of the grain or grains that it falls upon. In this transmitted ratio they affect the panchromatic emulsion. This negative emulsion during the course of developing and processing, is reversed, thereby becoming a positive. Now, when this positive is viewed by transmitted light, it permits the light to pass through the color screen in the exact and original ratio, thus giving a picture in natural colors.

With fast lenses (f:2.3, f:2, etc.) snapshots are possible in bright sunlight. Duplicate transparencies may also be made. It is presumed that with the Leica transparen-

(Continued on Page 517)

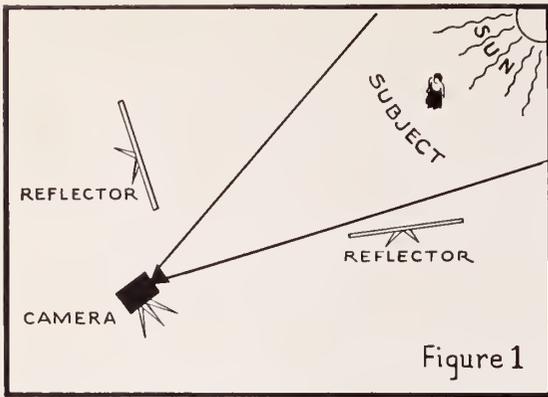


Figure 1

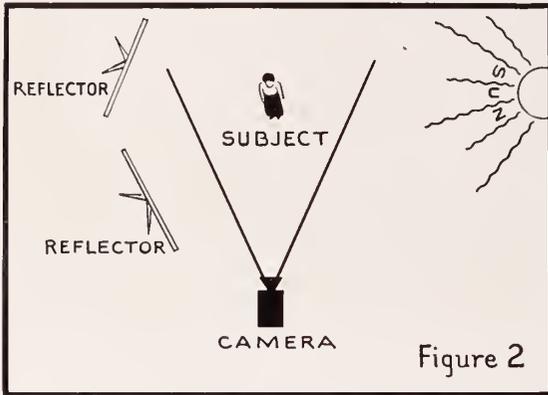


Figure 2

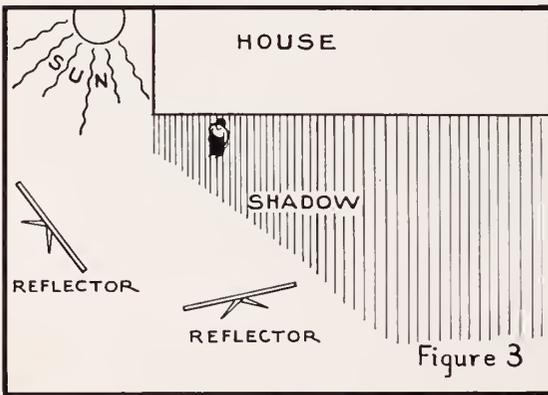


Figure 3

The A-B-C of Outdoor Lighting

By

Arthur Campbell
Cinematographer

LIGHTING, to many people, simply means the use of artificial illumination for making pictures indoors. When you set up your camera outside, they reason, the sun does the lighting for you—all that is left for the

photographer is to set his lens and turn his crank; the lighting takes care of itself. Nothing could be more wrong than this conception of lighting! If light obeys certain laws indoors and the photographer, by applying those laws, can make his pictures better, why should he not similarly improve his pictures by applying the same laws of lighting to exterior photography?

True, there is but one basic source of light outdoors—the sun. But—as every small boy learns by playing with mirrors and tinfoil—sunlight can be reflected. It can be thrown into shadows, moved about from one angle to another with exactly the same assurance—and the same effects—that we get indoors by using several sources of light. And if good lighting will improve interiors, it will surely do the same for exteriors.

When we first started this discussion of lighting, several months ago, we found that the average amateur lit his interior scenes too flatly—simply set up a light or two in front of the subject, to give an even illumination from the front, and fired away. Well, the same thing happens when he makes an exterior: most of us began our photographic experience with little “Brownie” cameras—and we still remember that the “Brownie” instruction-book called for a flat front-light, with the sun behind the camera. We’ve carried the same idea over into our movie-making. But the home-movie camera—16mm, 8mm, or 9.5mm—is blessed with faster lenses, and uses faster film than did our boyhood “Brownies.” Therefore, we can forget the old rule about keeping the sun behind us, and branch out into lightings that really give us good pictures.

Some of the advanced amateurs have already reached step No. 1 in outdoor lighting. They have moved the sun around from behind the camera to one side or the other, giving a more pleasing lighting, professionally known as “cross-lighting.” That is all to the good—but they haven’t put anything into the picture to offset the harsh shadows thrown by this type of lighting. We find that the sunlit side of the face is strongly lit, and the opposite side is strongly shadowed. But if we can reflect some light into those shadows, leaving that side shaded, but still with enough light reaching it to give a nice luminous shadow, we have a really pleasing, natural light-effect.

How are these reflectors to be made? Really, it’s simple. Almost anything that will throw back some of the light that falls on it will do—in a pinch. I’ve known of professional cameramen who, in an emergency, used ordinary bedsheets for reflectors! But the best reflector for amateur use is one made of a piece of ordinary composition board, with one side coated with either gold or silver foil. For a long time, silver-coated reflectors were used exclusively; but since the introduction of Panchromatic film, gold has become more popular. Therefore, I would advise the use of gold-surfaced reflectors. If you wish, you can protect the reflector with a wooden moulding along the edge; and a hinged wooden leg, by which the reflector may be braced, to stand at any desired angle, is extremely useful. And of course, if you are a particularly good carpenter, you can make your reflectors book-shaped, so that they will fold when not in use, protecting the reflecting surface. Folding reflectors, by the way, can be made smaller, and so, handier to carry.

Now for using them! Sketch No. 1 illustrates back-lighting. The subject stands with his (or her!) back to the sun—notice how nicely the sunlight, coming from this angle, will outline the contours of the body and the hair. Now, place a couple of reflectors on either side of the camera, to reflect the light on the face of the subject.

(Continued on Page 514)

Show It With Music

By
William Stull, A.S.C.

BEFORE the movies learned how to talk, one of the greatest aids to the de luxe presentation of professional motion pictures was the musical accompaniment. Until the advent of the Vitaphone, all of the great film theatres maintained large, symphonic orchestras, expert organists, and highly skilled arrangers and thematic-score writers—all for the purpose of being able to give each scene of each picture the best and most fitting musical background. For the right music, rightly played and rightly used, can be of tremendous value to any film: it will create a sympathetic emotional response in an audience, heighten the value of any scene—and sometimes improve the response to a film that might otherwise be coldly received.

The same method is well worth adapting to the requirements of amateur showings. Of course, actual orchestras and organs are out of the question, and most of us are but poor performers on any instrument—but there is always the faithful phonograph, which brings us the finest of music, to use when and how we will. Moreover, it can bring the makers of travel films the national music of any land—the real music of the South Seas; the weird cadences of a Balinese "Gamelan" orchestra; the dissonances of genuine Chinese, Egyptian, or Arabian music, which, rightly used, can add immeasurably to the atmosphere of any travel reel.

The mechanical adaptation of the gramophone to the purpose of accompanying home movies was discussed last month; it will be remembered that while the ordinary, electric-reproducing phonograph will serve acceptably, the best results would follow the use of a non-synchronous, theatre-type machine with two turntables, a fader, and—if possible—indicating needles attached to the pickup arms, so that one may accurately choose any definite part of a record, starting and stopping at exactly the desired place.

Regardless of the physical equipment used, the most important thing, obviously, is to have the right records—the most fitting music, perfectly played and recorded. Fortunately, each scene or sequence in a picture will fall under some arbitrary classification as to mood and action; so, having music suited to these various moods, one can rest assured of having music suited to almost any requirement. Working from this basis, a large collection is by no means necessary—a skeleton collection of fifteen or sixteen records is enough for a start—and, as time goes on, the library may be increased, giving greater variety in theme-arranging, and building up a collection of recorded music which will be, quite apart from its cinematic utility, a source of lasting pleasure.

From the outset, several courses are possible. First of all, one may decide to concentrate on either orchestral or organ accompaniments; this is, of course, purely a matter of taste. It would, however, be wiser to concentrate on one

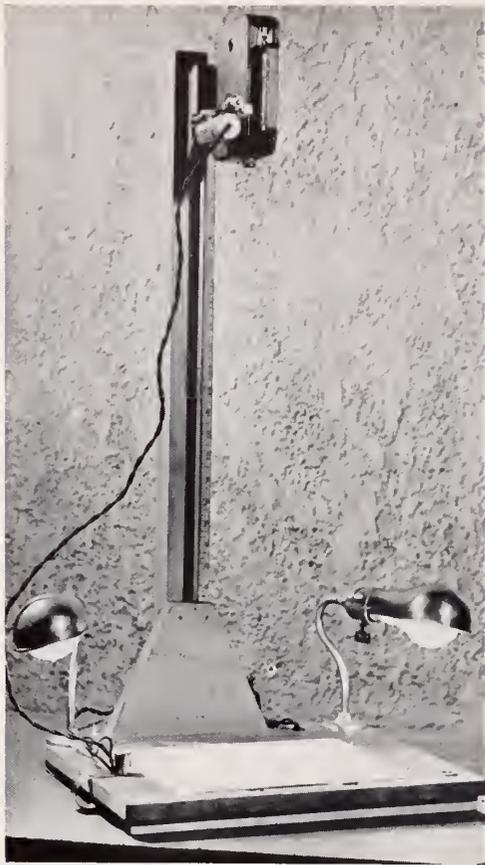


or the other exclusively, until one was ready to more or less duplicate the collection, eventually having similar music by both orchestra and organ for every mood or situation. A certain number of band recordings will often prove useful, as will some types of instrumental solos, such as violin, cello, and string bass. Vocal selections should obviously be avoided. The backbone of any scoring library should be the orchestra and the organ.

For such purposes as this, foreign-made recordings are often more suitable than the domestic product. In the first place, the majority of domestic record firms have lately been concentrating on dance-music, which is seldom suitable to film accompaniments. Foreign orchestras and producers, on the other hand, have continued to record not alone the more familiar classic and semi-classic concert music, but have released many delightful recordings of selections virtually unknown here—and therefore often more suitable than the more hackneyed pieces commonly heard. England and Germany are the best sources of such records. For organ records, one must indisputably go to England; for not only do the British firms have a greater variety of organ selections, but their records are recorded by a far greater variety of artists. For strictly national music—such as Chinese, Egyptian, Javanese, etc., not to mention the more familiar Scandinavian folk-music, and the like—the foreign catalogues offer the traveller tremendous resources. Two American firms—RCA-Victor and Columbia—have extensive foreign branches, and can supply either direct or through their importation service, a vast amount of interesting music of this type.

It may also be mentioned that European records are, as a rule, recorded to a somewhat lower volume-level than is common here, and with less tonal distortion than our American records, which are inclined to artificially accentuate the bass register; there is otherwise very little choice between the two, as to quality. Several firms in this country carry extensive stocks of foreign records, and import anything on special order, handling all matters of shipping, customs, etc. Such importation requires about three or four months, as a rule; and imported records cost approximately one-third

(Continued on Page 520)



Title
Stand
For
8mm or
16mm use.

Cine Synthesis

By

Wm. J. Grace

(Author's note: In the preparation of this and subsequent articles on 8 and 16mm work, it has been found practical and expedient to illustrate by pictures and descriptions actual devices and equipment developed by myself along these lines. It is hoped that my readers will accept the information found in these articles for what they are worth, and that it will not be looked upon as subtle advertising for my own products.)

SYNTHESIS means the building up, piece by piece, of component parts into a whole. Cine synthesis means building up a motion picture frame by frame instead of at the normal speed at which movies are usually taken. Since frame by frame work encompasses so large a field the general principles upon which single frame movies are made will be discussed and then various aspects of the art will be taken up one by one.

When an amateur thinks of single frame work, the first thing which pops into his head is animated cartoon work. Immediately, he visualizes great quantities of special equipment which he feels are beyond him financially. Fortunately, however, single frame work is no more out of the reach of the amateur than any other type of movie work.

He must bear in mind that he must learn to crawl and walk before he attempts to run. Until he learns the principles underlying single frame work, the amateur will do well to undertake only the simplest form of the work, namely, the animated title.

Animation, you know, means merely to apparently imbue an inanimate object with life. If a movie title is animated, the words and letters may be made to move about on the screen as if they were living beings—oddly shaped bugs trained to spell titles.

Since this article concerns itself solely with 8 and 16mm amateur work, we will assume that the projection speed of 16 frames per second is to be observed. Also, in this and other articles on amateur cine work, we are going to base all our calculations on frames per second and total number of frames. This is to eliminate any confusion which is bound to arise in speaking of feet of 8mm film and feet of 16mm film. The frame and second are universal yardsticks for cine measurement, regardless of film width or picture size.

In determining the proper timing for animated movies, the amateur will do well to emulate the effects used by the professional. We are taught from childhood to study the writings of the experienced—does it not follow that from the experience of those who earn their living making animated movies the amateur can learn much? The amateur who really wants to learn the secrets of animation timing has at hand some very good examples of almost every effect he might want to employ in the work seen on the screen of any theatre.

Since it is difficult and impractical to read a watch in a darkened theatre, an easy way to tell time or count seconds is to say slowly and distinctly beneath your breath—"one hundred and one, one hundred and two, one hundred and three—." It is really surprising how closely seconds may be mentally ticked off by this scheme. Try it with your watch before you.

Perhaps at some time you have seen on the professional screen a title which started out with the letters all jumbled up, scampered about on the screen for two seconds, and then marched into positions which spelled the title. We'll assume you want to use this on the picture of the World's Fair you made last Summer.

Set up the camera on a vertical support and, after determining proper focus and exposure, lay all the letters appearing in THE WORLD'S FAIR on the title area. You might use small cardboard or metal letters, or you might buy a package of alphabet soup characters (they come in packages containing at least 10,000 letters for a dime)—any letter which can be moved around. Use wooden letters if you wish. Paint the letters to contrast with the paper background of the title, or select a paper or photograph background which contrasts with the letters.

Now, determine how long the title is to run. A good plan is to allow the letters to "jumble" for about two seconds—a longer period may bore the audience and a shorter one may confuse them. Allow another second for the letters to assume their position to spell the title, then allow two seconds more for the completed title to remain on the screen to be read. This timing is merely a suggestion. Perhaps you might want to slow it up or make it in a faster tempo—your own experience will dictate your own timing.

Our timing requires that the letters scamper about haphazardly for two seconds. This means 2 times 16, or 32 frames must be exposed. Expose one frame at a time, moving each of the letters a little at a time between each exposure; do not try to move them too far at one time or

(Continued on Page 519)



Have You A Watchmaker In Your Home ?

By
J. Dickinson Reed

ONE of the basic comedy situations is that in which innocence outrages dignity. Things of this sort happen with disturbing regularity in every home where there are children: at the time, they don't always seem funny; but afterward, when ruffled tempers have calmed, such incidents usually become cherished memories, the foundation of cycles of anecdotes about the cute ways of "Our Baby."

So why not make a home-movie of such an occurrence? For instance, the time when Junior tried to fix Daddy's watch. . . . Of course, putting a valuable watch in such a perilous situation would call for too great a devotion to one's Art—but a dollar Ingersoll will do just as well, without straining the budget. It is the only "prop" necessary for making this little photoplay, which can be staged in any

home, with things that are to be found in every household. Here it is:

THE WATCHMAKER Cast of Characters

Junior.....Hasn't voted yet—but what a mechanic!
Father.....Slings a wicked wrench
Rover.....Specialist in second-hand bones

Scene 1. FADE IN. Long-shot of car, outside the family garage. The hood is raised, and from underneath the car, a pair of feet stick out.

Scene 2. Close shot of the feet.

Scene 3. Under the car. (Use a reflector!) Father is seen busily at work, repairing the car. As he unscrews a bolt, the wrench slips, and his wrist strikes the crank-case. He stops, feels of his wrist, then decides that his wrist-watch will be safer if he takes it off. He starts to remove it.

Scene 4. Close shot of running-board of car. Father's hand comes out from underneath, groping around, and finally deposits the wrist-watch on the running-board. FADE OUT.

Scene 5. FADE IN. Medium long-shot of the back door. Junior comes out, followed by Rover. Junior has two doughnuts in his hands; he gives one to the dog, and wanders along, munching his doughnut.

Scene 6. Long-shot of back porch, showing driveway. Junior enters, followed by Rover. He stops a minute by his tricycle, but it doesn't interest him; he wanders on, in an aimless zig-zag, coming toward the camera. He is plainly bored.

Scene 7. Under the car. Father is still working. (The angle for this is the reverse of Scene 3—i.e., shoot from Father's head). On the other side of the car, we see Junior's feet approach, and stop.

Scene 8. Close shot of Junior—shot through the car. He surveys the array of tools, etc., on the running-board. He begins to show a little interest. Have his head turn from camera left to right.

Scene 9. Close-up of the running-board. It is covered with a litter of tools, parts, etc. Pan from right to left; stop with the watch centered.

Scene 10. Close-up of Junior. A Big-head shot. He sees the watch, and is very much interested.

Scene 11. Close-up of the watch. Make this short—about three feet.

Scene 12. Close-up of Junior, as Scene 10. He makes up his mind to do something.

Scene 13. Close-up of the watch, Junior's hand comes in and picks it up.

Scene 14. Long-shot. Junior, carrying the watch, walks away from the car.

Scene 15. Close shot of Junior, sitting in the grass, examining the watch. He looks at it—holds it to his ear—shakes it—and listens again. He looks down, camera left, and speaks.

TITLE: "SOMETHING'S WRONG, ROVER,
LET'S FIX IT!"

Scene 16. Close-up of Rover; he barks once.

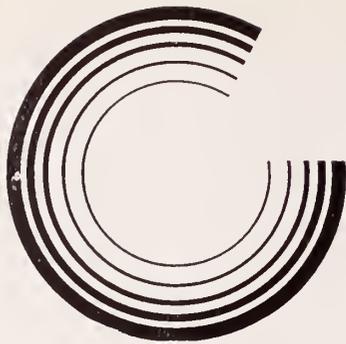
Scene 17. Long shot. Junior runs over to the car, selects a hammer and a chisel, and runs back. This can be a pan shot, with the camera following Junior.

Scene 18. Close shot. Junior places the watch on a large stone, and tries to open it with the chisel. Rover sits beside, watching intently.

Scene 19. Close-up of Junior. He is intent on his work—his face is all screwed up, his tongue between his teeth, etc.

Scene 20. Close-up of Rover. He is intently watching Junior's work. Make these two scenes very short.

(Continued on Page 518)



WHEELS OF INDUSTRY

Victor Sound Library

• The announcement of Victor Animatograph Corporation, Davenport, Iowa, that the well-known ERPI Education Films, including those made at the University of Chicago, are being released in 16mm Sound-on-Film will undoubtedly prove of interest to visual-minded educators for the reason that the availability of 16mm Sound Films such as these will have a decided influence on the rapidity with which the transition from silent to sound projection will be effected in the educational field.

The production of the 16mm sound-on-film prints of these films is being handled by the recently established Film Division of the Victor Animatograph Corporation at 242 West 55th Street, New York City. Prints will be offered for outright purchase by Victor, and it is understood that a number of sources such as Visual Instruction Departments of State Universities will offer rental service.

New Leica Lens

• According to announcement from E. Leitz, Inc., the long promised 50mm Summar f.2 lens in collapsible mount for Leica camera is now ready. This lens is said to embody several outstanding characteristics, among which might be mentioned its color correction and crispness, even at its widest aperture. It is claimed this lens does not suffer from aberrations which are usually associated with speed lenses, among which softness at large apertures is a disturbing factor.

Madison Mart Opens

• Under the firm name of Madison Mart, Inc., P. A. Lins, E. F. C. Herr and Wm. A. Kunze, formerly with Herbert & Huesgen Company, have opened the Madison Mart at 403 Madison Avenue, New York City, for the purpose of dealing in Cine and still photography equipment.

New Amateur Lights

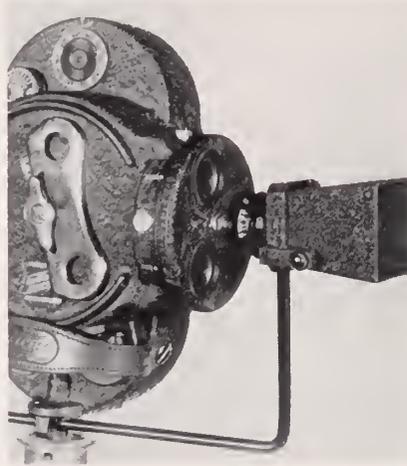
• According to an announcement from Wm. J. Grace of Dallas, Texas, he is marketing a new light unit which will accommodate from three to four lights. A fine feature of this unit is the fact that he has also designed a switch which will give either dim or bright lights. This means a great saving in both current and photo-flood bulbs as the dim switch can

be thrown over while the lights are being lined up and the bulbs may be burned at their highest efficiency only during the actual photographing process. Another fine feature is the "spill ring" which is available with this outfit. This concentrates the light more within the photographic range. It is a feature which the professional studio has used regularly.

Harrison Sunshade

• So built as to fit on either still camera or 16mm camera, Harrison and Harrison of Hollywood announce a new sunshade to take either 1¼ or 1½ in. filters.

This sunshade fastens by means of a bent rod, as seen in the illustration, to



the filter holder and then to the camera, fastening in the tripod-screw-hole. The bolt with which this is fastened is drilled so that it will take the regular tripod-head bolt. It is adjustable both sideways and forward and backward.

New Rental Library

• The Visual Instruction Supply Corporation is a new entrant into the Film Rental Library field. The corporation announces the institution of a National 16mm Film Rental Service created especially to serve the school and church field.

This service is available anywhere in the United States and Canada. Address all inquiries regarding this service to Visual Instruction Supply Corporation, 1757 Broadway, Brooklyn, New York.

New 16mm Film

• An announcement that is of exceptional interest to the dealer as well as to the

16mm user is the one put out this month by Agfa Ansco of their 16mm Plenachrome Fine-grain film. This will sell for \$4.50 for 100 ft. and \$2.75 for 50 ft. This new film will have the popular Plenachrome emulsion which has been used successfully by this firm on their still film negatives for so long. The Agfa Ansco Company claim extremely fine grain and more than usual latitude for this film. While it is not panchromatic, it is sensitive to all colors except spectral red. It is fully orthochromatic. They claim it is more brilliant than Panchromatic and they state in their announcement that it has the Agfa anti-halation coating. Its speed in daylight is approximately that of regular Reversible Panchromatic.

Chicago Victor Office

• The Victor Animatograph Corporation is opening an office at 188 W. Randolph St., Chicago, under the management of Don B. Oliver. This office will act as a display for all Victor equipment and will have projection for silent and sound pictures. A service man from the factory will also be installed in this office to assist Oliver.

16mm Sound Library

• Among the first to announce a 16mm Sound on Film Library is Willoughby in their recent circular which lists six cartoons, five Aesop Fables, six Travelogs, ten Musicals, three Music Classics and four Miscellaneous subjects.

According to the announcement these subjects will rent for \$1.50 a reel, with each reel approximately 400 ft. in length.

B & H 16mm Titles

• For those 16mm film users who haven't the time or inclination to make their own titles, Bell & Howell is introducing what is styled "Title Craft" service.

The pictorial titles, if of ten words or less, are 75c each, plus 4c for each word over ten. Titles on plain or on the textured backgrounds shown in the book are 45c, if of ten words or less, plus 4c for each word over ten. The quoted prices include filming, developing, and delivery to the customer of the finished title film strips ready to splice into his films. Main titles in suitably varied type sizes are supplied at no extra charge.



BACKYARD MOVIES

"Diary of 1934"

So often we amateur movie enthusiasts discover rather suddenly a dearth of ideas as well as an actual shortage of cash for the ever-important item of film. It is a very simple matter, however, to cure both of these ills. The obvious answer to the shortage of money is to budget it, allowing yourself a definite amount to buy film throughout the year; but if this is to work out successfully, you should budget your ideas, too. It seems to me that the beginner can do nothing better than to plan his year in advance, with the idea in mind that at the end of twelve months he will have four hundred feet of film representing the highlights of the year—a vivid diary of the most important happenings. Like most diaries, it should prove of interest to all who are privileged to view it.

Moreover, a film diary is a marvellous way of utilizing "orphan film"—all those disconnected shots of people and places every movie-maker accumulates during the course of a year. Strung together in more or less chronological order, with clever titles, such otherwise wasted film can easily be made into a most interesting reel, excellently suggesting WHAT you did, WHERE you did it, and WHO you met during the year. Try it on those stray shots you have left over from last year's shooting! It is sure to work out so successfully that you'll want to try making a definitely planned film diary of this year's events. Here's how to do it.

Think of the pattern of the whole year—how it affects you personally—and plan your film accordingly. There are certain definite activities and events that stand out: certain fairly fixed holidays, vacations, etc.; then there are certain equally definite family celebrations—birthdays, wedding anniversaries, and so on; then there are special, unforeseen (but important) events—visits from old friends, schoolmates and the like; and lastly, there are definite "news events," both family and local—weddings, graduations, family reunions; fires, floods, wrecks, and visits from prominent people. All of them stand out in your memory (some, of course, more than others)—and so they should by all means be represented in your film diary.

Movie Film Free

Otis Wade of Los Angeles gives us a practical idea for the use of the 8mm or 16mm camera. Here is an idea that everyone will find practical—especially for those shots that were taken at random. Wade, of course, gets the roll of Panchromatic film. Read his suggestion over—see how simple it is, but how practical. Then try your hand at winning a roll of film free. Send your suggestions to the Editor.

The first event might center around New Year's Day, and how you began the year. Next there will probably be an outing some fine Spring week-end—and don't forget that the ladies always like to show off their new Easter bonnets! Often you'll have an interesting outing around the Fourth of July or Memorial Day. Film it! For your summer vacation, you may go camping, or make a motor-tour; or perhaps you'll spend the vacation at the beach or in the mountains. In the Fall, the men of the family are likely to go hunting—and the camera should go with them. Halloween and Thanksgiving are both, as a rule, observed with some celebrations—especially if there are children in the home; and both offer interesting film material. And of course Christmas Day (or perhaps New Year's Eve) will end your reel. In between these subjects, you can naturally put all of the intimate, personal events that don't fall under any arbitrary classification.

The "news" subjects—unexpected visits from old friends, weddings, graduations, or outstanding local events, can either be cut into the reel in their chronological order, or grouped at the end of the reel in their chronological order, or grouped at the end of the reel. It might not be a bad idea, also, to have at the end of the reel about fifty feet of close-ups of your best friends—something like the "personalities in the news" section of newsreels. These, of course, can be made at any time during the year.

So much for the ideas!

Now for the film! As a rule, it will only be necessary to get one roll of SuperSensitive "Pan"—this for the interiors on Christmas and New Year's Eve. For the rest, you can get very good results on the cheaper grades of film—even Ortho and the cheap "Semichromatic" types; provided, of course, that

the daylight is always good. If you allow about \$18 for the 400 ft., your budget will only have to call for an expenditure of \$1.50 per month for film. Often, 50-ft. rolls will be more satisfactory than 100 ft. lengths, as you can get your pictures developed sooner, avoiding any possibility of film left in the camera deteriorating.

The titles need only be of the simplest "date-and-place" sort—brief and to the point; a means of identification in later years. Titles introducing groups, however, should list the names of everyone shown, lest some be forgotten later on. Most of these titles can be made on short ends of film left on the roll after you have finished your scheduled scenes.

The idea just outlined is a film diary in its simplest form. It can be expanded to almost any degree you may find advisable; but bear in mind always the fact that it will be more interesting if there are perhaps fewer subjects, each of which is well planned and well photographed than if there are more subjects, but haphazardly planned and poorly photographed. Such an idea can naturally be expanded to include much more than the suggested 400 ft.; but it is not advisable to attempt to make it shorter, as it would become too sketchy. To get the best results from the idea, with the minimum expenditure, study the technique of the newsreel; plan and photograph each subject with the idea of making each shot tell as much as possible—getting the "meat" of the subject quickly, then passing on to the next. To expand, you can either show more details of each subject, or cover more subjects—including things which are interesting, but not, perhaps, of the absolutely highest importance, such as current events not so directly connected with your own activities. Always, however, remember that the essential interest of any diary is the personal element—its recording of what happened to the diary's author and his intimate circle.

If you wish, too, you can add titles more intricate than the simple ones suggested. Double-exposure, with a calendar background, for the main title; hands tearing off calendar-leaves for the titles introducing the various events. Titles that wipe or fade on and off—you can easily imagine dozens of such ideas which, while they may take more footage, and be harder to make, will nevertheless add to the effect of the picture.

(Continued on Page 516)

Multiple Exposures—Without Rewinding—For Amateur Cameras

It is not very hard for a professional cinematographer to suggest all sorts of practical camera-tricks to the amateur—if he will exercise his memory. After all, most of today's professionals can remember the days when the best of professional cameras were less adaptable than are today's amateur cameras—even the simplest 8mm ones. It is really surprising how much can be done with a modern amateur movie camera, without any added trouble or expense.

Knowing that all home-movie makers have at least a secret hankering to make their films different from those of their fellow cineastes, we herewith suggest a pair of simple tricks which can be made with any amateur movie camera. Like a stage 'magician's' act, "it's done with mirrors!"

Trick No. 1 is explained by sketch No. 1. It gives an interesting triple-exposure effect—without the necessity of rewinding, or matching mattes. Place two mirrors at the exact angles indicated by the sketch, placing them on a solid table. Frame your picture according to the outline indicated by the dotted-line. Use whatever action you want—and there you are! Yes—that's all there is to it! But it doesn't look so simple on the screen.

Trick No. 2 is explained by the other sketch. It's just as simple—and even more effective. Another triple-exposure effect that can be made at one "take." Your actor can sit down and play a game of bridge with himself, for he will be plainly visible in the picture three times, and from three different angles. This trick is especially well-adapted to use

in a plot of some kind. And still there's no rewinding. You simply place two mirrors at the angles indicated, place the subject with his back to the camera, and his hands on the table, and shoot. Your camera must be hidden behind a black screen or curtain, with only a tiny hole cut through for the lens—and you'll get the best results if you are careful not to let any stray light strike the mirrors directly.

Yet another trick, which may be done with the same two mirrors, multiplies a single man into a whole row—a single soldier into a regiment. Place the subject between two parallel mirrors, and shoot past the nearer one, so you get an actual side-view of the man, his reflection from the first mirror, and the re-reflection of his image in the second. If the angles are right, you can get the effect of a long line of identical people, though, of course, the details of costume are alternately reversed.

Try these simple stunts—and see how many questions your fellow enthusiasts ask you when you screen the pictures!

Making Your Own Reels

• A suggestion comes to us from J. R. Nixon of Illinois of how to make your own 400 ft. 16mm reels.

The idea came to him as an emergency expedient. He cut from an old 400 ft. film can the cover and bottom, leaving enough metal so as to flange it over to avoid rough edge. Then he took one flange off of a 100 ft. reel such as comes to you with the return of your film from the laboratory. He cut a round hole bigger than the one in the original 100 ft. reel. Then he cut small holes where the flanges come through from the hub. He then cold soldered the 100 ft. flange on this big flange made from the can and placed it back on the hub. He used a knife, he tells us, to cut these holes in the aluminum. Trying to chisel this out makes the metal bend.

He also says he cut a wedge over the threading slit so as to make threading easy. He suggests that a lot of holes be bored in the metal if it is to be used permanently so as to permit the moisture from the humidifier can to reach the film.

His final suggestion is the use of cardboard instead of the metal cans for purely permanent 400 ft. reels.

Effects With Projector

• Lester Johnson of Maywood, Illinois, felt his pictures would have been improved in many cases if he had as much foresight as he had hindsight after viewing his efforts.

An idea struck him one day. Why not matt off some of the objectionable



SKETCH No. 1

stuff in the projector! The first thing he tried this on was a horse race. He made a mat to fit over the aperture of the projector right in back of the lens. He made this first one in the shape of a binocular and the effect was that you were viewing the race through field glasses. When he pulled this mat out while the projector was running it gave the effect of a wipe-off.

So he experimented further with key-holes, diamond shapes and other shapes that the picture, scene or occasion called for.

Johnson says it works fine. He does not give details of the slide he constructed for his gate. Possibly it would be best to experiment by just holding one of these mats up to the gate before making any alterations.

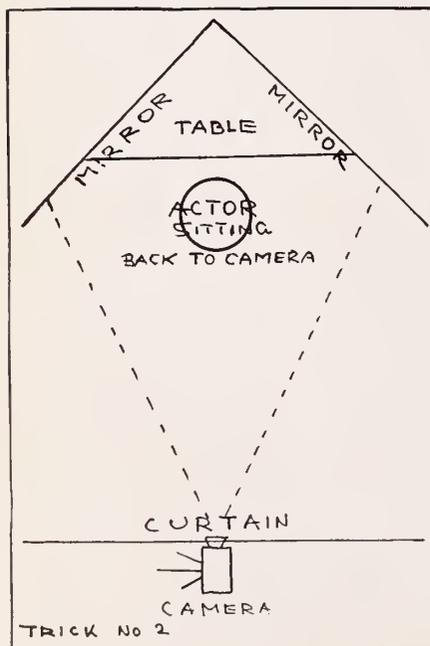
Filter Holder For 8 or 16mm

Again Raymond Harvey comes forth with a gadget that is not only simple but practical. It's a filter holder that can be adapted to the 8mm and to some of the 16mm lenses.

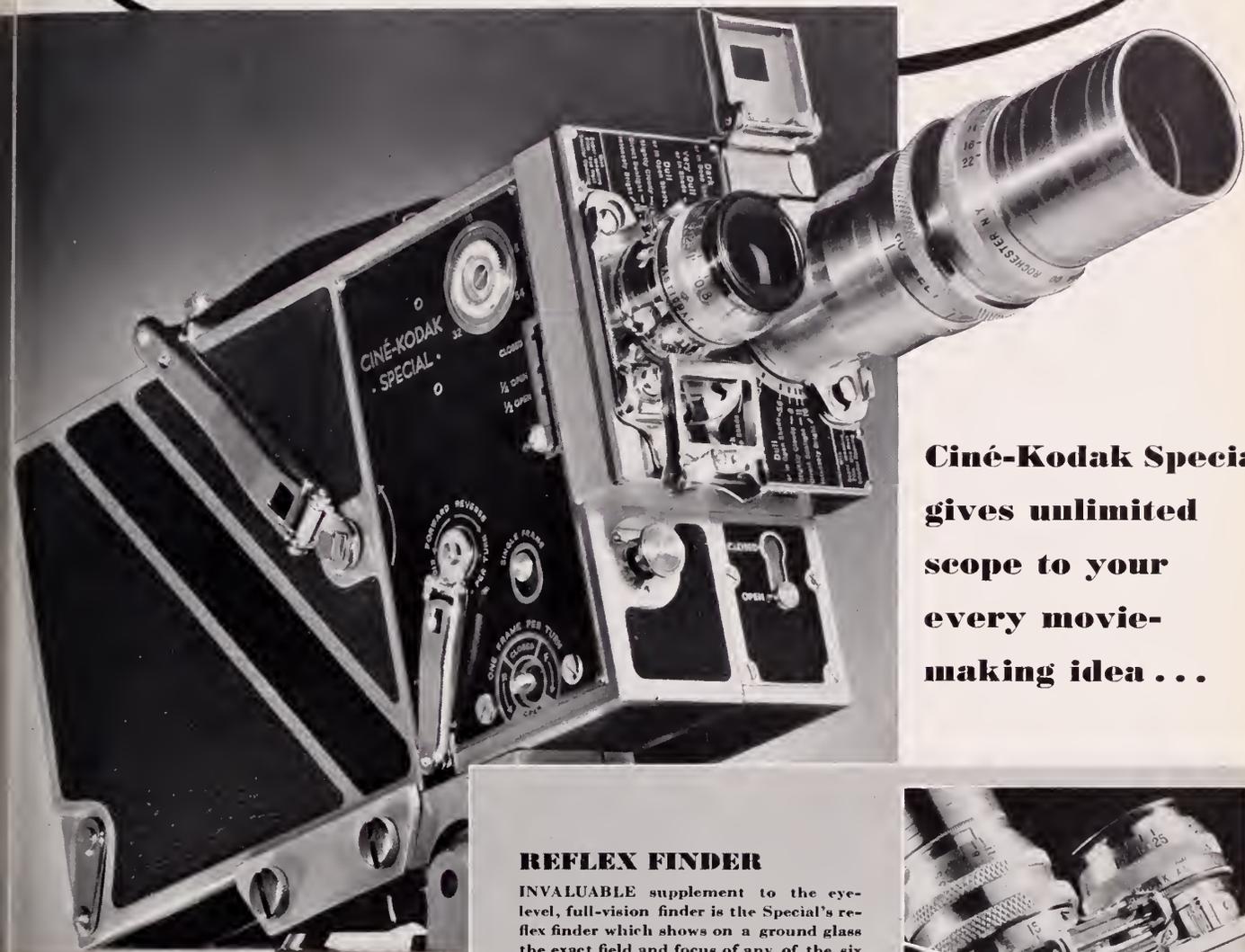
The basis of this holder is the type of strainer you buy at the 5 and 10 cent store for the kitchen faucet. If you will take your lens with you you may possibly find one of these strainers that will fit exactly. However, if it doesn't it is a simple matter to shim up with tape or cardboard to make it fit the circumference of the lens.

You then secure some of the thin wafer glasses used with microscopes. These will cost about 25c a dozen. You take the screen out of the strainer. Secure some gelatine filters cut to the size of the wafer glass—place a glass on each side of the filter, place in the strainer, replace the washer and your filter holder is ready.

If you want to build a sunshade on this holder, you can pick up one of the black composition drinking cups in the 5 and 10, cut a hole in it the size of your faucet strainer, using a pocket knife. Solder it on with liquid solder and you now have the filter holder shaded.



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The A-B-C- of Outdoor Lighting

(Continued from Page 506)

Have one of them farther away than the other, so you won't get an absolutely flat light, but—just as in a well-lit interior—one side will be a little less brilliantly lighted than the other. Don't have your reflectors either too close, or too shiny, lest you get too hard a light. And watch your exposure! There is usually more danger of overexposure than of underexposure. And be sure to have a good, deep sunshade on your lens, and to see that the direct rays of the sun don't strike the glass elements of the lens. If all of this is carefully done, you'll have a very beautiful light effect.

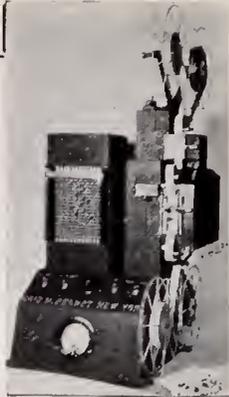
Figure 2 shows a cross-lighting. Place the subject so that the direct sunlight comes either from the right or the left, so that the sun strikes hard on one side. Then place a reflector on the opposite side, to throw a beam back into the shadow-side of the face. This is good in itself; but you can improve it with a second reflector. Place this as far behind the subject as is possible (and be sure it is out of the picture!) Catch the sunlight, and throw it onto the hair of the subject from behind—from the back of the head. Thus you will have a cross-light and backlight combined—a very nearly ideal outdoor lighting.

Suppose, however, that you are working in some deep shade—say on a porch, or in the shadow of a building. Reflectors will stand you in good stead here, too, in the form of what we call "pick-up" light. Reflectors—used either singly or in a series—will bring in sunlight to exactly where you want it. Simply catch the sun with your reflector, and play with it, throwing the beam here and there until it goes where you want it—exactly as a little boy plays with a mirror. Even one reflector will help in many cases; and, if necessary, you can follow professional practice, and throw the sunlight from one reflector to another, until it puts a spot of light where it is most needed. Fig. 3 will give you a good idea of how to do this.

Once you get accustomed to using reflectors, you will find that it is surprisingly easy to handle them accurately—and, like most professional cinematographers, you'll find that they will so greatly improve your work that it is hard to get on without them.

Here is another hint for exterior scenes. Often a long-shot looks very bare and empty, with nothing in the foreground, or nothing to "frame" the composition. Shots made through a branch with leaves or flowers are always attractive—so if there isn't any such branch actually available in your set-up, why not get one, and use it anyway? Carry a small branch with you, and then have somebody hold it in front of the camera while you shoot through or un-

16MM.
35MM.



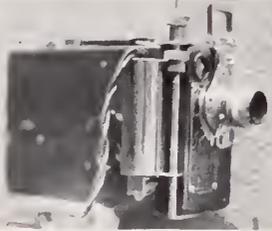
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der it. You'll get the same result as though the branch grew there!

Similarly, if you are forced to pose your subject against a brightly-lit wall, you can call on your little branch again: have it held or placed in such a way that the sun casts its shadow upon the wall—and your composition becomes much more pleasing.

It is simply through attention to such little details as these that professional cinematography has become so consistently pleasing—has become truly artistic. Do the same thing yourself: you'll be surprised how easy it is to improve your pictures, making the result more artistic—and incidentally awakening the envy of your co-amateurs!

Nature Photography With Cine-Kodak

(Continued from Page 504)

(with slight modifications) for making titles, as well.

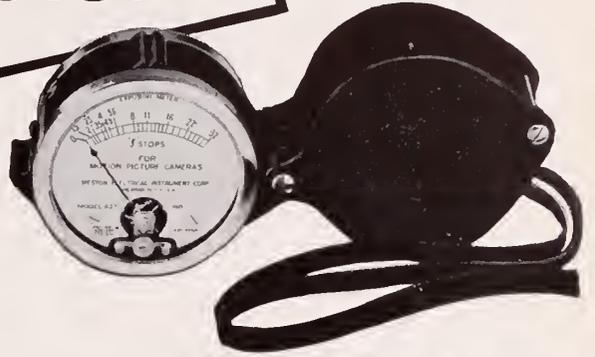
The question of magnification should be made clear. Ten inches is regarded as the conventional viewing distance at which magnification is unity. If we view an object at two inches, by the use of a magnifying lens, of course, the magnification is 10/2 or X5, and the lens meant for the purpose is designated as an X5 magnifier. Likewise, a one-inch viewing distance gives a magnification of X10. If the Cine-Kodak is fitted with a one-inch supplementary lens, the overall angular magnification is X10, even though the image on the film is the same size as the object. The usual 25mm Cine-Kodak lens (12.5mm for 8mm cameras) is assumed in this discussion.

As already mentioned, the Cine-Kodak lens is not designed to focus on objects closer than two feet. The supplementary lens is not only the simplest method of focusing for shorter distances, but it also has a decided advantage, since the indicated "F" aperture of the camera lens is still valid, even for very short distances. Thus, the same aperture setting is used for the photography of small objects as for distant objects, and Kodacolor photography is quite practical, provided the supplementary lens is large enough to avoid cutting off the marginal rays.

When the camera is focused for infinity, the focal length of the supplementary lens required is equal to the distance of the supplementary lens from the object to be photographed. This is independent of the focal length of the camera lens. The supplementary lens may be regarded as creating a virtual image of the object at infinity, for which the camera lens is focused. For object distances down to 8 inches, simple spectacle lenses of the Bausch & Lomb "Celex" double-convex type have proved satisfactory, even with Cine-Kodak lens-apertures of f:1.9. The theoretically preferable type is the plano-convex, with the plane side facing the object. For

NO NEED FOR
guesswork

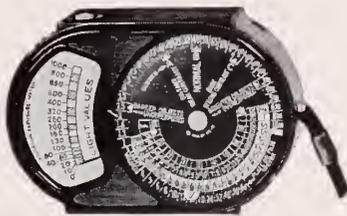
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subject distances shorter than 8 inches, a camera lens of the required focal length should be used as a supplementary lens, and should be mounted with its back facing the object. Either cine or still-camera lenses of any focal length may be used; anastigmats are, of course, preferable.

The details of construction for such a frame are clearly shown in the illustration. Wooden construction is simpler, and quite satisfactory. The proper supplementary lens can be mounted easily with cellulose cement in the wooden upright, using a stepped circular hole made by an expansion bit. This lens is

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If you intend to enter this contest please send copy on this page so that we might send you official entry blank.

Please send me one of your official entry blanks. I intend to enter a (16mm. 8mm 9½mm) picture in your 1934 contest. I understand my entry must be in your office not later than October 31, 1934.

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6331 Hollywood Boulevard Hollywood, California

mounted close to the camera lens, and so that its center is on the camera lens axis. A decentering error of 1/16 inch is not objectionable. The wire frame is not placed exactly at the plane of sharp focus, because it has been found impossible to surround all objects with the frame. It is therefore set 1¼ inches closer to the camera. Experience has shown that the estimation of the field position and limits offers no difficulty with this arrangement.

The frame is made of wire, ⅛ inch in diameter, and exceeds the field limit by about ¼ inch on all sides. The frame is bent so that its geometrical center is on the camera lens axis. If one side of the frame appears in preliminary pictures, the frame may be shifted or bent as required.

In order to attach the camera to the device, a hole is drilled in the wooden base permitting a ¼ inch machine screw to engage with the tripod bushing on the camera. This hole is so placed that the camera rests against two wooden guide blocks, to assure replacing it exactly. The blocks are placed as shown to permit easy winding and loading.

If desired, the supplementary lens mount may be hinged at the base, to be swung out of the way for distant photography, with which the frame does not interfere.

The fourth class of subject in nature photography—things examined through a magnifying-glass—can be photographed by means of a similar device, using, as mentioned above, camera lenses of 25mm or greater focus for supplementary lenses. The construction of this attachment is beyond most amateurs, but the required mounting may be easily made by any machinist. Especially when using cameras equipped with the f:1.9 Kodak Anastigmat lenses, the mount for the supplementary lens may be made in the form of a filter-cell, and the device fitted to the lens exactly the same way as the standard filters are fitted. The wire frame, of spring steel wire, is adjusted so that the image of a distant object, created by the supplementary lens alone, falls in the plane of the frame. A final adjustment is made with the attachment on the camera, photographing a pin in and near the plane of the frame, and adjusting the frame according to the result. Care must be taken to keep the subject in the frame, since the depth of focus is quite small.

Backyard Movies

(Continued on Page 511)

and give you added pleasure in the making.

But remember: such a film should not be so much a display of film-technique of any sort as it should be a human document. This is where the genius (if any) of the photographer steps in!

OTIS WADE.

Los Angeles, Calif.

Color and the Miniature Camera

(Continued from Page 505)

cies, slightly larger duplicates could be made by projection.

The next successful color process for the miniature camera to be considered is the 'two color' or DuPak process. By this process, transparencies or color prints can be made in any desired quantities. This process is also known as the Ives Polychrome Process. It is very satisfactory, not complicated, and yields surprisingly good results. It may be termed a 'two color' process with 'three color' results. There are two ways of making the 'two color' separation negatives. The first way is by the successive exposure method. Two exposures are made successively, one through the red 'A' filter and other through the green 'B' filter of the standard 'A-B-C' tri-color filter set. Such exposures are quite practical on subjects where there is no expected movement or light changes. Panchromatic film must be used.

The second method is by using DuPont DuPak film. This method permits the making of snapshots. The speed of the DuPak film is equivalent to that of DuPont Ortho film. By this bipack method, two films are loaded into the camera at the same time. They are placed emulsion to emulsion. The front film has an ortho emulsion with a red filter coating on top of it (this filter coating is removed after developing). The back film, in the bipack, is panchromatic. These two films are naturally exposed simultaneously, thus giving 'two color' separation negatives.

Color prints are made by making cyan-blue toned bromide prints from the red filtered negative (the back negative of the bipack). Upon these bromide prints and in proper register is cemented a dichroic red-to-yellow positive film made from the green filtered negative (front negative of the bipack). The combination of the print and film give the desired colors. In a somewhat similar manner, transparencies may be made, a blue toned film replacing the blue toned bromide print. Transparencies may also be made on Belcolor Two Color Print Film. This is a greatly simplified means of making 'two color' transparencies. Technicolor (exception of the cartoon process) and Multicolor are 'two color' processes.

Another process that is adaptable to the miniature camera is the 'three color' separation process. These color separation negatives are made by photographing the subject through the standard 'A-B-C' tri-color filter set. It is obvious that the successive exposures made with these filters, must be of still objects or otherwise a color fringe will result. While this process is the ideal means of securing natural color photographs, the novice in color photography is not advised to try this process until he



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has some experience with the less complex principle similar to 16mm Kodacolor. The plex color processes. Perhaps, the easiest method of employing the 'three color' process is to make transparencies from the separation negatives on Tricolor Belcolor Film. Prints and transparencies may also be made by Tricolor Carbro, Three Color Trichrome, Dyebro Color Process, and by the Pinatype Process.

Recently, in England, the Agfa Company in conjunction with the Leica organization announced a new color process. So far, it is strictly a projection

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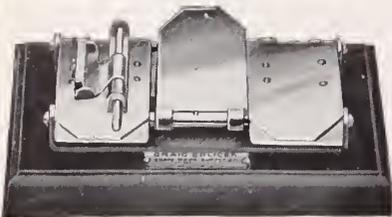
process, employing a lenticulated film advantage of the large Leica frame over the 16mm frame in a process like this one is apparent.

The film comes in 18 exposure, daylight loading spools. Special tricolor fil-



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ters are used for taking and projecting the film. A specially mounted f:1.9 Hektor lens is used for both photographing and projecting. With the color filter in place, the f:1.9 lens has an equivalent speed of an f:6.3 lens on superpan film. Pictures may be projected up to 3 or 4 feet. It will be a little while before this process will be available in this country.

Also, from England, comes information of the new Gasparcolour process. This process is based upon new color principles; as many as 40 British patents having been granted to it. It is of a revolutionary nature in that color prints are made as easily as are black and white prints. This process has not made its appearance upon the market as yet. When it does, it is hoped that it will bear out the enthusiastic claims of those who have seen prints made by this process.

Without a doubt great strides will be made in color photography within the next few years. You may well expect that these new developments will be applicable to the lucrative, miniature camera field.

For those who wish more comprehensive information on the processes described in this article, you may refer to the following sources:

FILMCOLOR, The R. J. Fitzsimons Corp., 75 Fifth Ave., New York City.

DUPONT DUPAK and the IVES POLYCHROME PROCESS, DuPont Film Mfg. Corp., 35 West 45th St., New York City; The Camera Magazine, Philadelphia, Jan. '33 issue and subsequent issues; Wm. H. Derr, 2253 N. Franklin Ave., Philadelphia, Penn.

TRICOLOR CARBRO, THREE COLOR TRICHROME, DYE BRO, TWO and THREE COLOR BELCOLOR PRINT FILM,

George Murphy, 57 East 9th St., New York City.

PINATYPE PROCESS, H. A. Metz and Co., 122 Hudson St., New York City.

GASPARCOLOUR PROCESS, The British Journal of Photography, Aug. 4, Oct. 6, Nov. 3, 1933.

Have You a Watchmaker in Your Home?

(Continued on Page 509)

Scene 21. Medium-shot. Having no luck with the chisel, Junior sets it down and tries the hammer.

Scene 22. Close-up of Junior (Big-head). He registers intense enjoyment.

Scene 23. Close-up of watch, with hammer beating down upon it. If you wish, you can make this more effective by making a series of short flashes—about six inches per flash—of this action, taken from different angles.

Scene 24. Close shot of watch. After a hammer-stroke, the back cover flies off, and a spring, etc., shoot out.

Scene 25. Medium close shot of Junior. He starts back in surprise, and topples over.

Scene 26. Close-up of Rover, barking excitedly.

Scene 27. Long-shot. Pan camera from Junior over to Father and the car.

Scene 28. Close shot of car. Father crawls out, covered with grease, but satisfied. He walks over to a hydrant and washes the grease from his hands.

Scene 29. Medium long-shot. Father returns to the car, rolling down his sleeves. His face is still dirty, but he smiles contentedly.

Scene 30. Close shot, beside car. Father walks into the picture, and reaches down for his watch—it isn't there; surprised, he hunts for it.

Scene 31. Close-up of Rover—still barking.

Scene 32. Close-up of Father. He hears, and it dawns on him that there may be some connection with the missing watch.

Scene 33. Medium long-shot of Junior. His back is to the camera, and the hammer in his right hand rises and falls regularly.

Scene 34. Close shot of Father. He starts to run toward Junior, coming straight into the camera.

Scene 35. Over Junior's shoulder; close shot of the wrecked watch. Suddenly Father's hand shoots down and snatches the watch.

Scene 36. Close shot (head and shoulders) of Father, holding the watch up, and speaking—angrily and fluently.

TITLE: "ZQXXzzzz&%jjjpQ!!!!???!z!"

Run this for about six inches, and then slide over it a card bearing—in big letters:

C E N S O R E D !

Scene 37. Medium-shot of Junior and Rover. Junior looks frightened, puts his

hands over his ears, and tries to slip away quietly.

Scene 38. Long-shot. Father is in the foreground, holding his watch and still talking. In the background, Junior and Rover tiptoe away around the corner of the garage. Junior still has his hands over his ears.

FADE OUT.

THE END.

Cine Synthesis

(Continued from Page 508)

the screen results will be jerky. When you have made 32 frames of the letters "jumbled," take 16 exposures of the letters as they move toward the positions they will assume in spelling the title. After the letters spell the title, flick the camera button 32 exposures more and the title is made.

A word now about flicking the camera button to make single exposures. Most amateur cameras are spring-driven, with a lever or button to allow the mechanism to function when depressed. On some cameras the spring which holds the release button in the non-operating position is rather stiff; in others the action is not quite so strong. It will be found that the stronger the spring on this release lever the more difficult it is to flick the release lever quickly enough to allow the camera to expose only one frame because of the phenomena of muscular reaction. For this reason, I would advise you to make for yourself, or purchase ready-made, an electrical solenoid device to operate the camera release lever. Then, an electrical pushbutton having a very soft spring can be touched and released very quickly by the operator's finger.

Some amateur cameras are equipped with an auxiliary button which allows the camera to expose one frame at a time automatically. I have known of some amateurs who own a camera of this type to use the electrical control in preference to the single frame button on the camera—perhaps because the pushbutton could be placed at a more convenient point. At any rate, bear in mind that for the best results, make your animated movies with some system which you may depend upon to expose just one frame at a time.

The titling frame or rack which an amateur selects for making animated titles or other animated movies is perhaps best made in such a manner that the title board is in a horizontal plane. Especially is this design convenient if the amateur plans to make animated cartoons. The size of the title area should be large enough so that fine line work is not necessary and yet not so large that the

As we have suggested, the only important "prop" you will need for this picture is the watch—a dollar wrist-watch. For the last few scenes, the more completely wrecked it is, the better the effect. The tools, etc., can be found in every home, and you can improvise the "parts" called for in Scene 9 from the junk that accumulates around any garage. If necessary, the titles can be eliminated, but the film will naturally be better if you use them.

materials become expensive. A title area of about 7 by 9½ inches should be about right. On the surface carrying the title itself some method should be devised for definitely locating the title with respect to the camera. Then, by using a sketch board having similar locating facilities, perfect registration will result.

By all means make the titling frame of strong substantial materials and design it "heavy." A flimsy frame will allow the relation between title and camera to change during the filming, and the screen result of the animated movie will be irritatingly jerky.

In building your animating titler allow provisions for accurately adjusting the distance between the camera and the title. While most amateur cine lenses will not focus more closely than 24 inches, this provision will undoubtedly prove convenient and farsighted in the event that at some time in the future the amateur will decide to equip his lenses with spacing shims so that closer work can be filmed. The titler shown in the picture accompanying this article can be calibrated for almost every amateur cine camera and the same frame used for any or all such cameras. Incidentally, "moving camera" shots of titles or cartoons are quickly and simply made by moving the camera up or down definite intervals while making the single frame exposures.

Titles or cartoons may be drawn on paper or some transparent material. While a bit more expensive initially, transparent materials for this purpose are to be preferred. Perhaps the least expensive material is 0.005 inch thick, and the safest is made of cellulose acetate, the same material which is the base of amateur safety film. Cellulose nitrate is more inflammable, and for the sake of safety, I would not advise its use. Acetate stock is only slightly more expensive than nitrate base stock, so why take chances.

The acetate base sheet will be found to lend itself admirably to the making of titles as well as cartoons because they may be washed clean of the ink and used repeatedly, a water-dampened rag

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9 in. F/5.6 Eyemo	125.00	39.50
3 in. F/2.9 Filmo	100.00	39.50
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2 in. F/2.9 De Vry	..	95.00	29.50
1 in. F/3.5 U.F. Filmo		31.00	12.50
1½ in. F/1.5 Filmo	..	85.00	32.50
6 in. F/4.5 Filmo	110.00	27.50
6 in. F/3.5 Filmo	140.00	39.50
12 in. F/5.6 Filmo	165.00	79.50
35 mm. De Vry F3.5, case, very good condition 52.00			

Lenses in De Vry mount are for the 35 mm. camera. Lenses in Filmo mount will also fit other 16 mm. cameras such as Victor, Ensign, Cine Anso, etc.

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will remove all traces of drawing ink or showcard colors. If difficulty is experienced in applying the ink or showcard color to the sheet, it is probably because of grease on the sheet; a cloth or bit of cotton saturated with ordinary rubbing alcohol will remove this grease. The title may be drawn or printed with a brush or Speedball pen; if you use a pen make sure that the point has no burrs or sharp corners to scratch the acetate sheet?

As to the film which the amateur may use for making titles or animated movies, 8mm enthusiasts at the present time have only regular panchromatic reversal. In the 16mm field, four different types of film are available, each of which will be found to have its own niche. If only occasional titles are made, they may be made on the unused ends of regular panchromatic or superpan reversal with which the camera may be loaded. If the amateur has a number of titles and wants to have them screen black where his title is drawn black, and vice versa, the less expensive orthochromatic reversal films on the market are quite good. At slightly less cost than this, if the amateur does

not mind the making of titles reverse in color rendition to that desired on the screen, he may make his titles on positive stock and develop it himself. This film will perhaps give blacker blacks than any other, if such a condition is desired. And finally, Kodacolor may be used to make colored titles and animations.

In this article it has been the object of the writer to describe methods and apparatus for the making of titles and animation. In the next article, CINETRICKS, unusual effects obtainable in animation and titles will be discussed, as well as cine tricks which may be made in the field.

In closing, it has occurred to the writer that dimensioned drawings of the titler shown and described here would be desirable to my readers. With this in mind, a quantity of prints have been made of a drawing I have prepared, showing the construction and assembly details of the titler. The sheet, 22 by 34 inches, is available at cost. Merely send fifty cents for the plan and it will be sent immediately. Address either the American Cinematographer or myself.

Show It With Music !

(Continued from Page 507)

more than corresponding domestic ones. They are, however, well worth the extra cost and trouble, for they add variety, and help one to avoid the more hackneyed selections usually available.

It would be almost impossible to give, in the limited space here available, a complete list of recorded music suitable for scoring home movies; but a brief outline of the more important thematic classifications, and appropriate selections, follows:

Battles, Riots, Excitement—

"Ruy Blas Overture" (Mendelsohn).
"Ride of the Valyries" (Wagner).
"Flying Dutchman Overture" (Wagner).

Ballet—

(Also adaptable to much general action of a light nature)
"Dance of the Hours" (Ponchielli).
"Faust Ballet Music" (Gounod).
"Ballet Music from 'Hamlet'" (Thomas).

Fantasy from "Coppelia Ballet" (Delibes).

"A La Gavotte" and "A La Minuet" (Herman Finck).

Carnivals, Joy, Etc.—

"Carneval Overture" (Dvorak).
"Bank Holiday" from the "Cockney Suite" (Ketelbey).

Death Scenes—

"Largo," from the "New World Symphony" (Dvorak).
"Chanson Triste" (Tchaikowsky).

"Death of Ase" from "Peer Gynt Suite, No. 1" (Greig).

Dramatic Scenes—

"Les Preludes" ("Symphonic Poem No. 3") (Liszt).

Fantasies from "La Traviata" (Verdi).

Fires, Gales, Etc.—

"Fire Music from Siegfried" (Wagner).

Love Scenes—

These scenes require music which is predominantly in the string section of the orchestra; or violin or 'cello solos.

"Simple Aveu" (Thome).

"A Little Love, A Little Kiss" (Ross-Silesu).

"Coeur Brise" (Gillet).

"Londonderry Air" (Traditional Irish).

"Serenade" (Tosselli).

"Zigeunerweisen" (Sab-Sarasate).

"Gern Hab' Ich die Frauen Gekusst" (Lehar).

Oriental, Eastern, Etc.—

(When bona-fide Eastern music is not wanted, but when some definitely atmospheric music is needed).

"In A Chinese Temple Garden" (Ketelbey).

"In A Persian Market" (Ketelbey).

"In the Mystic Land of Egypt" (Ketelbey).

"Japanese Sunset" (Deppen).

"Chinese Lullaby" (Bowers).

"Japanese Lantern Dance" (Yoshimoto).

"Indian Love Lyrics" (Woodford-Finden).

HERE'S HOW

by A. S. C. Members

FILTERS IN FOG. "What is the most suitable filter for shooting in a fairly thick mist or fog, but with the sun fairly bright at the same time? If there were no fog at all, about f:8 with SuperPan film at sound speed would be correct exposure. Has any allowance to be made for the fog, or should only the filter-factor be taken into account?"
R.C.R., Calcutta, India.

In a heavy fog, no filter will be of any appreciable benefit. If the fog is light, you may derive some benefit by using either an Aero 2 or a "G" filter (preferably the latter) as they have pronounced haze-cutting qualities. When photographing through a fog, the usual rule of exposure applies—"Expose for the shadows, and the highlights will take care of themselves." In this instance, expose for whatever details you can see and wish to show; if you are using a filter, you must naturally allow for the filter-factor. Often, by the way, a light fog will prove deceptive, offering more obstruction to the eye than to lens and film.—Ned Van Buren, A.S.C.

TANK DEVELOPER....."I require a good tank developing formula, such as is used in the studios, taking about 15 minutes to develop at about 65 degrees F."
R.C.R., Calcutta, India.

The most universally-approved negative developer for Motion Picture use is the Eastman "D-76" formula, which we give here in amounts suitable for 1 gallon, and for studio tanks of 120 gallons or more:

D-76

Elon,	120 grains	2 lbs.
Sod. Sulphite	13¼ oz.	100 lbs.
Hydroquinone	290 grains	5 lbs.
Borax	120 grains	2 lbs.
Water to.....	1 gal.	120 gals.

Average development time for motion picture type negatives on Panchromatic or SuperPan films: 9 minutes at 65 degrees F. At half strength the same contrast would be obtained in about 15 minutes at the same temperature. We would advise you to experiment, so that you may determine the right dilution and developing-time to produce exactly the type of negative you wish. Used full strength, for instance, with development carried to 15 minutes, would give you a negative of much greater density and contrast than is general among the Hollywood studios. Differences in the water-supply also have some noticeable

bearing upon the action of the solutions.—Emery Huse, A.S.C.

MISSING SCENES IN 8mm ROLLS. "In several of the more recent rolls of 8mm film that I have shot, I have found that several scenes—usually at the beginning, middle, and end of the roll—were missing. How does this happen?"—M.M.M., Boston.

In all probability, you have photographed these scenes on the opaque film leader supplied for threading your camera. The Eastman Kodak people inform us that at each end of each roll of 8mm film, about 4 feet of leader is spliced. This is generally fogged in the loading, so it is removed before developing the roll. We suggest, therefore, that if you will run off two or three feet of film each time you thread your camera (that is, when starting a roll, and after reversing the spools midway through the roll) you will avoid any loss such as you suggest.—Arthur C. Miller, A.S.C.

CHARIOTS AND SHOOTING. "How was the chariot-race film made in "Roman Scandals," with Eddie Cantor at the 'wheel'? And how are the very realistic scenes made which apparently represent the shooting through the glass of enclosed automobiles—generally without even feigned injury to the occupants? If you will answer these queries, you will place an appreciative subscriber under further obligations."—P.W.A.F., Detroit.

A few of the close shots of Eddie Cantor driving the chariot were made direct, with the camera—fitted with a telephoto lens—mounted on a camera car which kept pace with the chariot. The majority of scenes, however, were made by the trick method variously called the "Transparency" or "Projected Background" process. In this, a film representing any desired background is projected (from behind) upon a large translucent screen placed behind the actor. The projector and camera are electrically synchronized, so that the two shutters open and close together, and the projected background picture is photographed as an actual, moving background to the real action in the foreground. In this particular instance, the background was a film showing the road as it would be seen if one was looking straight back from the chariot, with the other chariot approaching from behind. Mr. Cantor was then placed in front of the process-screen, in a chariot, and went

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The Motion Picture CAMERA Magazine

THIS ISSUE

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New Light Camera Crane

A.S.C. Golf Tournament

Color Control

. . . and Other Features

MAY 1924

PRICE 25c

Published in Hollywood

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American Society of Cinematographers



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Volume XV MAY, 1934 Number 1



What to Read

A.S.C. Golf Tournament Success.....	8
ARNOLD Again Heads A.S.C.....	9
UTILITY Features New Light Crane by Arthur Edeson, A.S.C.....	10
COLOR Control for Color Film by Henri Coulon, B.A.....	11
TELEVISION, Its Progress by R. V. Newcomb.....	13
USING Infra-Red in the Air by Elmer G. Dyer, A.S.C.....	14
RIDDLE Me This by A.S.C. Members.....	15
TREND of the Times.....	16

Next Month

• New things and methods found in the Hollywood Studios will be reported with several articles by members of the American Society of Cinematographers touching upon the present day technique of motion picture making.

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A. S. C. Golf Tournament Huge Success



Cecil Myers,
First Low Cross, 77



John Fulton,
Third Low, 78.

We did not secure a picture for Fourth Low which was won by Al Lebowitz.

THE First Annual A.S.C. Golf Tournament was played at the Hollywood Country Club, Sunday, April 8. Over two hundred players took part, and the affair was pronounced the most successful cameramen's golf tourney ever held. Cecil Myers, with a 77, carried off the Low Cross honors, closely followed by Al Lebovitz, Bert Six, and John Fulton, while Willard Vogel led the rear-guard for the dubious High Cross honors with a score of 192. Between these extremes were over a hundred prize and trophy-winners, grouped in six flights, according to their golfing ability. The prizes were awarded at a special Open Meeting of the Society, held the following night, at which time the incoming officers were formally installed. A list of the winners, their prizes and the donors follows. The American Society of Cinematographers herewith extends to these generous friends its sincere appreciation for their generosity in donating these trophies and prizes.

SPECIAL TROPHIES

CECIL MYERS, Low Cross Trophy, donated by Max Factor Make-up Studios.
BERT SIX, 2d Low Cross Trophy, donated by Fox Studio.
JOHN FULTON, 3d Low Cross Trophy, donated by J. J. Gain.
AL LEBOVITZ, 4th Low Cross Trophy, donated by W. S. Van Dyke.
EDDIE COHEN, Special A.S.C. Prize, a Diamond Ring, donated by Mae West.

FIRST FLIGHT

BERT GLENNON, Telechron Clock, donated by William LeBaron.
ROY JOHNSON, Weston Photometer, donated by Edward G. Robinson.
LEONARD SMITH, Set Matched Kroydon Irons, donated by O. H. Briggs.
ERNEST LASZLO, Set Matched Hagen Woods, donated by B. P. Schulberg.
SHERMAN CLARK, Set Matched Wilson Irons, donated by Norma Shearer.
GEORGE ROBINSON, Leather Hand-trunk, donated by Smith & Aller.
REGGIE LANNING, Atwater-Kent All-wave Radio,
donated by Hollis F. Moyse.
GORDON JENNINGS, Leather Golf Bag, donated by C. D. White.
ROBERT PITTACK, 8mm Camera, Projector and Screen,
donated by Eastman Kodak Co.

GAETANO GAUDIO, Leather Kit Bag, donated by Dick Powell.
GUY M. BENNETT, Set Matched Wilson Irons, donated by Harry Beaumont.
ELLSWORTH FREDRICKS, Smoker's Set, donated by Bill Ring.

SECOND FLIGHT

DAN FAPP, Set Matched Wilson Irons, donated by J. E. Brulattour Co.
WARREN LYNCH, Set Matched Irons, donated by Larry Weingarten.
FRANK GAUDIO, Cocktail Shaker, donated by Norman Taurog.
RICHARD TOWERS, Patterson All-wave Radio,
donated by Warner Studio Sound Department.
WESLEY ANDERSON, Leather Golf Bag, donated by Ruby Keeler.
KARL STRUSS, Filmo 16mm Camera, donated by Bell & Howell Co.
AL SEIGLER, Leather Kit Bag, donated by Consolidated Laboratory.
ELWOOD BREDELL, Set Matched Bristol Clubs, donated by Sam Wood;
also Gold Wrist Watch, for closest to fifth hole,
donated by W. J. German.

WILLIAM WHITLEY, Telechron Clock, donated by Joe Nolan.
AL GREENE, Case Gin, donated by Ed Kennedy.
JACK SMITH, Merchandising Order, donated by Paul Sloane.
HAL ROSSON, Poker Set, donated by David Selznick.

THIRD FLIGHT

JAMES MANNATT, Hand Trunk, donated by Guy Lombardo and his Band.
JAMES WONG HOWE, Set Hagen Matched Irons, donated by Bing Crosby.
BENJAMIN KLINE, Mitchell Variable Diffuser,
donated by Mitchell Camera Co.
HARRY MARBLE, Fada All-wave Radio, donated by Cecil B. DeMille.
BEN COHAN, Set Wilson Matched Woods, donated by Jack Conway.
RAY RIES, Set Matched Woods, donated by Bernard Hyman.
JAMES C. HIGGINS, Leather Golf Bag, donated by Al Santell.
KENNETH GREEN, Merchandise Order, donated by Roy Davidge Laboratory.
ART LLOYD, Set Matched Woods, donated by George Archainbaud.
IRVING GLASSBURG, Whiskey Barrel Set, donated by Marion Davies.
FRANK REDMAN, Special f:6.3 Kodak, donated by Paramount Laboratory.
BARNEY MCGILL, Leather Jacket, donated by Muller Bros.
RUSSELL COLLINGS, Leather Kit Bag, donated by Al Kaufman.
HERBERT J. FISCHER, Knox Hat, donated by Sidney's, Inc.
NORBERT BRODINE, Merchandise Order, donated by William A. Seiter.



Bert Six,
Second Low Cross, 78



E. Cohen, winner of Mae West diamond ring, given as a special prize at installation of officers meeting with all players available.

John Arnold Heads A. S. C. For Fourth Term

AT THE Annual Election of Officers of the American Society of Cinematographers, John Arnold was unanimously re-elected President for his fourth successive term of office. Victor Milner was re-elected as First Vice-President, John W. Boyle was elected Second Vice-President, Elmer G. Dyer was re-elected Third Vice-President, George Schneiderman was re-elected Treasurer (also for his fourth year) and Frank B. Good was elected Secretary. In accordance with a recent change in the Society's Constitution and By-Laws, the terms of office of members of the Board of Governors has been extended from one year to three, with a group of five being replaced annually. At the recent election, five Governors resigned, being replaced by Daniel B. Clark, Arthur Edeson, George Folsey, Frank B. Good and Vernon L. Walker. The Board of Governors for the coming year therefore includes President Arnold, Daniel B. Clark, Elmer G. Dyer, Arthur Edeson, George Folsey, Alfred Gilks, Frank B. Good, Fred W. Jackman, Ray June, Charles B. Lang, Jr., Victor Milner, George Schneiderman, James C. Van Trees, Sr., and Vernon L. Walker.

Under President Arnold's able leadership, the American Society of Cinematographers has advanced to a stronger position than ever before. The Society has weathered what is probably the most chaotic year in the history of the Motion Picture Industry—a year that has seen a nationwide bank-holiday, a world economic depression which has shaken every industry; widespread labor strife, including an abortive strike of film-technicians; and the sweeping changes brought about by the writing and enforcement of the NRA Code for the Industry. Through it all, the A.S.C. has maintained its progress, despite upheavals which have riven the industry and shattered many of the industry's leadership, the Society has opened its membership to Operative and Assistant Cinematographers and Still Photographers, with the result that today virtually



John Arnold,
President, A.S.C.

every cinematographer of recognized standing in the industry is a member of the American Society of Cinematographers. Moved by circumstances beyond the control of individuals, the Society has assumed the responsibility of overseeing the economic welfare of Cinematographers. The first step in this direction was the conclusion of a long-term contract between the Society and the Producers, guaranteeing certain fair and equitable conditions to be observed between the photographers and their employers; in many instances, the conditions specified have been important improvements over anything previously existing. Moreover, an entirely new spirit of cooperation has been manifested by both parties.

The second step in the Society's program for the benefit of its members is the creation of the ASC-Agency, a subsidiary of the American Society of Cinematographers designed to fill the long-felt need for a complete personal-representation or management service for Cinematographers. This organization, under the direction of Mr. Allen M. Watt, the Executive Manager of the Society, is organized to supply a complete business and personal management service to such members of the A.S.C. as may desire it. The professional management phases of the Agency's activities include, aside from the negotiation of contracts for employment, the handling of publicity and exploitation, legal advice, etc. The personal management phases include legal advice, all forms of tax-accounting, insurance and investment advice, personal business administra-

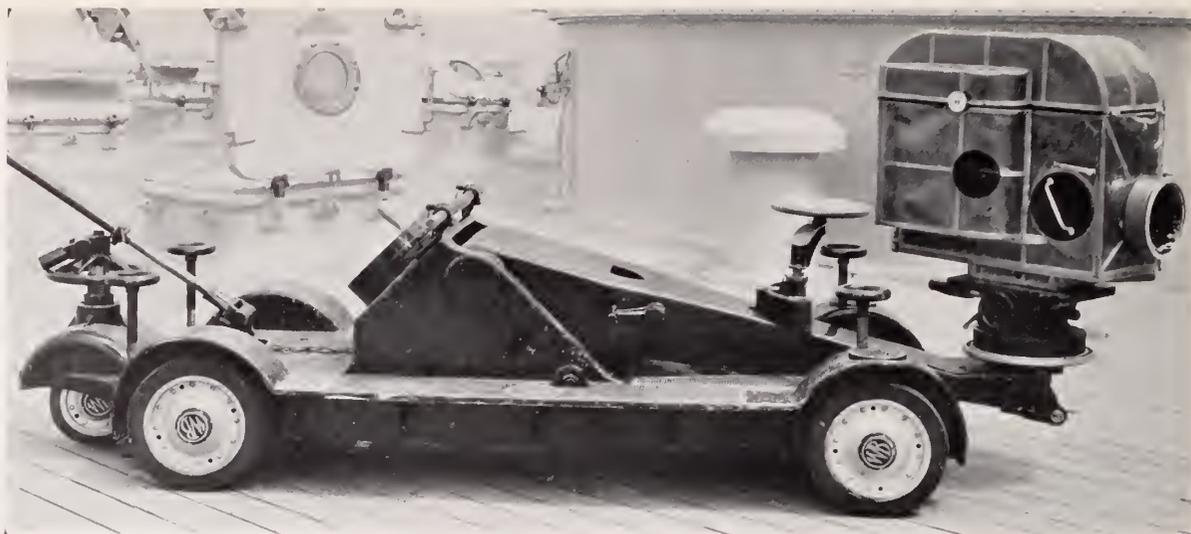


Photo by Clifton L. Kling, A.S.C.

Utility Features New Light Crane

by

Arthur Edson, A.S.C.

DEVELOPMENTS in both camera equipment and camera technique within the past few years have made imperative the parallel development of an entirely new type of camera-supporting devices, for both static and mobile shots. The economic exigencies of modern production, moreover, have clearly set forth the added requirement that, with the exception of the extremely large cranes or booms needed for certain spectacular scenes on large sets, a single device should be adaptable for use in static, traveling and routine crane shots. Various studios, as well as independent manufacturers, have within the past eighteen months developed devices conceived to meet these demands, with the result that in the majority of the major studios, tripods and "rolling-tripods" are giving way to the new-type camera carriages.

The most recent of these new devices is a light crane or camera carriage designed and built at the Warner Bros. Studio, and which I am now using very successfully on my current production, "Hey Sailor!" It is of the crane type, sufficiently light and compact to be used on any set or location, yet giving a range of adjustment more than adequate to meet the requirements of all but the most spectacular scenes. While essentially not unlike certain similar devices already in extensive use, it includes many refinements of design and operation which, in my opinion, place it well in the forefront of modern development.

The new crane was designed by Albert Tondreau, Head of the Warner Bros. Studio Machine-shop, and constructed entirely in the Studio's shops, under the direct supervision of the designer, and Frank Murphy, Head of the Warner Bros. Electrical Department, of which the shop is a branch. Charles Glouner, Camera Executive, and several of the outstanding Cinematographers on the Studio's staff served in an advisory capacity in perfecting the design. Such cooperation afforded very nearly ideal circumstances for such a development, uniting as it did the best of engineering, constructional and operational experience.

The new camera carriage is of the crane type, with the camera supported at the end of a short crane-arm which elevates it to any desired height. Horizontal adjustment is secured through a friction type pan-and-tilt head upon which the camera and blimp are mounted, and by the steerable wheeled undercarriage of the crane's chassis.

This chassis is of the conventional type, though with rather more running-board or platform space for the accommodation of the camera crew, etc., than is customary. The chassis is mounted on four small wheels, fitted with solid-rubber tires. All four wheels are steerable, being interconnected and controlled from the tow-bar. For normal use, the two rear wheels may be locked, by means of a lever below the left running-board, which slides the steering link interconnecting the front and rear wheels into a neutral, or inoperative, position, but leaving the front wheels steerable. A larger fifth wheel is placed at the front of the chassis, mounted so that it may be lowered, raising the normal front wheels from the floor. When this fifth wheel is used, the turning radius of the carriage is shortened materially, to the extent that the carriage can be pivoted through a complete circle with the rear wheels the axis. Steering with this fifth wheel is accomplished by attaching the tow-bar to a separate steering and towing stub; the tow-bar may be moved from one connection to the other in a few seconds, by loosening a single clamp. For static shots, four screw-jacks placed by the four wheels, will lift the crane entirely off from the wheels "tying it down" very effectively.

The crane-arm, which is non-rotating, is placed conventionally, with its fulcrum somewhat forward of the vehicle's center. It is raised or lowered by operating a large hand-

(Continued on Page 22)

HIGHLIGHTS

Improved color-film processes foreshadow increased use of color.

Art-directors should be trained color-technicians.

Wide range of colors can be used without irritating effects if color-intensities are properly blended.

600 colors mixed to known intensities . . . by scientific intermixing and reducing approximately 18,000 colors can be secured.

Scientific control of coloring in sets and costumes can create important psychological response without restriction of colors.

Costume colors can be blended to suit personality and role of players.

Color Control for Color Film

by

Henri Coulon, B. A.

IN a previous article, the writer discussed newly designed color science equipment and its application to black and white films in looking toward improved tonal balance.

Regarding the production of films in color, it seems certain that this year will bring an entirely new concept of color photography and on every hand we now see producers acknowledging color as the next logical step in the evolution of the motion picture.

The advent of men like Robert Edmond Jones and Russell Patterson portends a greatly increased interest in the artistic use of color by the industry. To quote Mr. Patterson: "Today is color conscious."

It is only a question of time until the majority of pictures will be shown in color—production of films in color has been restricted in the past for several reasons with two main indictments:

Theoretically, many producers have held that audiences do not want color, feeling that the accustomed black and gray rendition affords greater scope for each member of the audience to interpret the dramatic mood and tonal effect according to his or her individual taste and reaction.

Secondly, it has been found that color in films has been more trying and fatiguing to the eyes than the shadow gray—this was and is perfectly true but only because the colorings of all motion pictures which give this trying effect are out of balance.

When we consider that to a large extent, regardless of the artistic merit of a picture, its worth as a production and a precedent is measured almost entirely by "box office," and when we look back over the majority of colored films and see what the fan received for his money—we cannot altogether blame the producer for not wanting to convert his productions into color.

However, people do want films in color and would welcome a production using color in a pleasing manner—where producers often fear of making a picture too "arty" and devoid of much appeal to that famous twelve year old mind to which we are told so many scenarios are sealed, they should realize that although action and plot must oftentimes be held within limits to appeal to, and be understood by the vast majority of people—color has a universal appeal and its vocabulary of expression is understood by everyone. Along with music, color holds fascination and interest for everyone and each interprets color according to his or her own psychic reaction.

With colored films, there has been a tendency to overdo with spots of unrelated colors in order to make a visual flash—this is neither art or good judgment and will not prevail when the correct use of color is understood.

There is no reason why chromatic films may not be as effective and artistically correct as the achromatic, black and white picture—judicious use of color intensities will enable producers to avoid previous misconceptions of color

photography and bring forth pictures in which color will be the artistically valuable ally and not, as previously, the handicap.

Of importance, technically, is the knowledge that all colors and color tones are produced by a separation of light vibration forces or by handicapping one light vibration force with another—visual and photographic art in color needs a recognized scale the same as music.

Herein, the color picture has the opportunity not only to attain improved chromatic rendering but to point the way for the most intelligent concept of the use of color for other arts to follow.

By correctly relating color to mood, action and plot, and by using less color, vast improvements may be accomplished. Color, in itself, has vast potential advantages for the screen and through its proper use can be as dynamic and effective in conveying the message of the picture as sound or music.

The situation calls for trained color technicians with ability to not only understand the control and determination of color intensities but with appreciation of all the important psychological factors involving the correct use of color.

By bringing into use new, copyrighted color science equipment mentioned last month, for establishing color radiation terminating and controlling color intensities, the writer plans factors for the individual and a method of scientifically determining and controlling color intensities, the writer plans not only to aid in balancing color in settings and backgrounds but to also work out for the individual player, the correct color intensities best suited to emphasize her personality while at the same time indicating the colors most appropriate psychologically to the player and the role.

To those familiar with the construction of the human eye it becomes evident that to achieve balance, the deflected light vibrations from objects must be in vibratory balance if the effect is to be pleasing and harmonious to the eye. By establishing scientifically, the correct color intensities for the individual player, for costumes and for settings, the whole ensemble can be brought into visual balance—no one color harsh or displeasing to the eye.

In the case of musical pictures, balanced color combinations for chorus ensembles can be determined. All manner

(Continued on Page 19)



This picture was transmitted from standard motion picture film. It is a 60-line picture received on cathode ray receiver over television station W9XC, Purdue University, Lafayette, Indiana.

Television

These requirements will raise a question to the reader: What is the present experimental equipment doing? The mechanical or scanning disc transmitter on an average has been scanning 40 to 80 lines at speeds of 20 to 15 pictures per second. The electrical or cathode transmitter on an average has been scanning 120 to 180 lines at speeds of 24 to 20 pictures per second. The size of the picture received at the present time varies from 3½ to 5 inches or 5 to 7 inches. The future size will probably be a picture 10 by 12 inches. It is now possible to enlarge up to a picture of 4 by 5 feet, but it is highly probable that the visor on a receiving set will stay in the less than one foot class on account of the desirable size of housing unit or cabinet.

Receiving sets are being made with both sight and sound in the same cabinet—the visor or sight at the top and the loud speaker or sound at the bottom. The operator tunes in on one dial for the vision and on another dial for the sound. Recent patents have made it possible to receive both vision and sound impulses for the set over the same aerial or antenna. If the operator uses his old radio set to obtain the sound part of the program and buys a new separate vision set to obtain the picture, then it would be necessary to employ two aerials or antennae, one for sound and one for vision.

In order to more clearly show the progress made in television, and also explain some of the existing limitations, a brief discussion of fundamental television principals will be necessary.

Television transmission and reception involves the following fundamental processes: (1) The breaking up of the field of view into an orderly arrangement of picture elements, (2) The conversion of the light impulses thus obtained into electric current, (3) Their transmission through space, (4) The pickup by a receiver and restoration to electric current, (5) The reversion of electric current to light impulses, (6) The rearrangement of picture elements to correctly form original view.

Science has not yet been able to transmit a picture in its entirety as a single electrical impulse. It is therefore necessary that the picture or subject for transmission be broken down into a succession of very small areas or picture elements.

The smaller the areas taken the more pleasing are the results. This may be likened to printing half tones for paper illustrations, the more dots per given area the better the picture.

Scanning is the term applied to the process of breaking up a picture into a grooved succession of picture elements.

THE purpose of this article is to chronicle the present status of television with due regard to its problems as well as its successes.

Early in December, 1933, there were 27 experimental vision (television) broadcasting stations in the United States as licensed by the Federal Radio Commission.

Experimental licenses have been granted these stations with definite restrictions. The stations must be engaged in fundamental research and show evidence that they are contributing substantially towards its progress. Each station must maintain complete records of its operation concerning hours, frequencies, power and types of emissions. Under no circumstances will advertising or any form of commercial broadcasting be permitted over these experimental vision stations.

No experimental frequency is assigned exclusively to any station. Whenever interference is experienced the licenses are required to arrange for a satisfactory allotment of time.

To date, no commercial vision (television) broadcasting station has been granted a license by the Federal Radio Commission. Before granting any commercial licenses the Commission feels that certain standards must be adopted by the visual broadcasting industry. It is believed that the very high frequencies make it possible to transmit a better quality picture, therefore equipment to broadcast the future commercial television program will probably transmit on a high frequency band at a rate of 24 pictures per second with 300 line scanning.

Its Progress and Possibilities

by

R. V. Newcomb

Technical Engineer
Television Picture Productions

Scanning is accomplished mechanically by means of a rotating disc with a series of holes cut in spiral arrangement, or accomplished electrically by means of a cathode-ray tube where the picture is scanned by releasing electrons from a hot cathode through a tiny pinhole in the anode.

In case of the scanning disc, a 40 line picture would mean that the disc would have 40 holes in it, each hole scanning one line or row of picture elements horizontally across the field. An 80 line picture would require a disc with 80 holes. Each rotation of the disc would scan one picture.

The speed of the scanning disc must be sufficiently rapid to secure the effect of smooth motion without flicker. This would mean not less than 15 complete pictures per second and preferably not less than 20 pictures per second.

To scan at the rate of 20 pictures per second would mean a disc speed of 1200 revolutions per second. Light of considerable intensity is necessary to penetrate sufficiently through such a small hole, moving at such a great speed. Therefore we find some limitations in the matter of speed for the mechanical method of scanning.

In research work with a cathode-ray tube it was found that the tiny beam of light could be bent or deflected by a magnetic force. Since a stream of electrons has very little inertia if considered from the standpoint of a material body, this beam of light can be moved or bent at a high rate of speed by changing the magnetic controlling forces. Speed, therefore, in this case is not a limiting factor. Cathode-ray limitations concern sensitivity of the fluorescent material and length of life of the tube.

Having broken down the picture or field of view into an orderly arrangement of light impulses, it is next necessary to change these light impulses into electric current variations. For instance a picture element of dark hue would produce a weaker signal than one of a light hue. This change from light impulse to current is accomplished by a light sensitive device or photo electric cell.

By directing the light reflected through the holes of a scanning disc, or electrically controlled beam in case of cathode-ray tube, to the light sensitive device a progressive electrical intensity record is secured of the subject matter to be transmitted.

The photo electric cell is to television what the microphone is to sound.

The electric current thus generated is called a picture signal. These picture signals are then amplified to a sufficient magnitude for transmitting through space. Proper synchronization of scanning arrangement is a most important matter in television transmitting.

The receiver, properly adjusted to frequency of transmission then picks up the picture signal through the usual amplifier and detector circuits.

The neon glow tube or a cathode-ray tube are then used to revert the picture signal back to original light impulses. The neon glow tube is usually a red light and cathode-ray tube a green light. A neon glow tube giving a black and white picture which may prove to be quite a step in picture brilliancy is now being experimented with.

The receiving scanning disc or magnetization of receiving cathode-ray tube must be operated in absolute synchrony with the transmitting scanning disc or magnetization of transmitting cathode-ray tube.

The eye then sees through the visor as a complete image, the series of varying light impulses received as a picture signal.

There are two methods for televising a subject or view, (1) by picking up through a camera lens the actual scene or group of persons; this is known as the DIRECT PICK-UP. (2) The televising of motion picture film which may be called a FILM TRANSCRIPTION.

Both methods have their important place in the future of television broadcasting.

Entertainment value, rather than mere novelty, will be required of television programs if the public are to become interested. Good programs are expensive, therefore it would appear that the advertiser or sponsor must, in some way or another, help get things started. We must remember, however, that the Federal Radio Commission will not grant commercial licenses to any broadcasting unit until television research engineers perfect equipment that will assure the public a good clear picture.

Any person not acquainted with television research who today expects to see a perfect picture upon the visor is quite likely to be disappointed. Reproduction of small detail is not perfect and distortion is by no means a rare occurrence.

However, anyone who has been following television research for some time, feels most happy over the outlook. To them the pictures now received on the visor look great.

There is healthy enthusiasm among research personnel. They are working hard to clear up what they call minor matters. Legal battles over patent structures are fast becoming adjusted and licenses are being granted manufacturers for the construction of both transmitters and receivers.

Things are beginning to "look up."



Infra-red in the air. The aluminized surface of the airplane will be rendered in the same tone regardless of the filters used.

Using Infra-Red In The Air

by

Elmer G. Dyer, A.S.C.

FOR many years, it has been my ambition to make filtered night-effect shots in the air. The pictorial and dramatic possibilities of aerial night scenes are unlimited, as anyone who has flown at night will realize. Unfortunately, however, two obstacles lay in my path: existing panchromatic emulsions, excellent though they were, would not give me the exact effects I visualized. Secondly, the majority of producers and directors with whom I worked could not muster sufficient faith in such scenes to justify the experiment. For a long time it seemed as though my hopes could not be fulfilled.

With the development of infra-red sensitive emulsions for still photography, I took new hope, even though such emulsions were coated only upon plates. Discussions of the subject with Capt. A. W. Stevens, the Army's famous aerial photographer, confirmed my hopes that infra-red cinematography would eventually prove the vehicle for making really effective aerial night-scenes.

When at last a motion picture film coated with a modified infra-red sensitive emulsion (the DuPont Film Company's "Infra-D") was announced, I was among the first to test it. It was perfect for my purpose!

Soon after, an opportunity to use this technique on actual production came. Metro-Goldwyn-Mayer decided to produce the spectacular novel "Night Flight," in which much of the action would take place in the air, at night. Clarence Brown, famous alike as a director and as an aviator, would direct, and I was signed to have charge of the Aerial Cinematography. We made tests of aerial night scenes with every type of regular and SuperSensitive panchromatic film, and every possible filter. None suited either Mr. Brown or myself—something was lacking, even in the best of them. I had told Mr. Brown of my confidence in infra-red sensitive film for making such scenes, and between us, we persuaded the studio heads to authorize us to make tests with Infra-D. No plane was available for these tests, but test shots made from high buildings, and in the snow-covered mountains, clearly showed that at last we had a film which would give us the real effect of night in the air. We ordered a supply of film—and commenced without further ado upon the actual production.

We found that Infra-D film is capable of an almost infinite variety of effects. Used with no filter, or with only the lighter ones normally employed, it is an excellent SuperSensitive Panchromatic film, though slightly less fast than regular Superpan. But as you use heavier filters, its advantages and special characteristics become more and more apparent. When you reach the true infra-red filters—those from the Wratten No. 70 on—you enter a new realm. Using these filters, Infra-D film will give you the extreme correction necessary for night-effects, giving supremely pictorial results. Moreover, it will "see" things invisible to the human eye. Its haze-cutting properties are uncanny. I recall at least one instance in which this was so noticeable as to be a positive disadvantage; we were making a scene which showed the mailplane, apparently lost above the clouds—out of sight of the land. We were flying at an altitude of 20,000 feet, high above the clouds. Our

(Continued on Page 20)



RIDDLE

ME THIS

The Riddle: What, in your opinion, can be done to improve the technical and artistic quality of panning and traveling shots? What are the most-needed improvements in equipments and methods?

THOMAS J. GALLIGAN, A.S.C.

As far as the equipment for panning and traveling shots goes, undoubtedly the greatest improvement that could come would be the development of a really silent camera—one that could be satisfactorily used at all times without a blimp. This would materially reduce the physical mass which must be moved in any such shots, and give us greater freedom and accuracy. Pending this development, there is a great need for a really well-balanced blimp. In the majority of designs now in use, the balance is poor; in most cases, the blimp is topheavy. Moreover, in many shots we find it necessary to mount a "Lupe" or some similar lighting unit directly above the camera, attaching the lamp directly to the blimp itself. This almost invariably further disturbs the balance, making the blimp "nose-heavy"—and thus much harder to manipulate accurately. Either the design of the blimp should be worked out with this specifically in mind, or some system of counterweights, to counterbalance the added mass of the lamp, should be provided.

Another important mechanical factor is the tripod-head. From my own experience, I favor a combined friction and geared movement, allowing the Operative Cinematographer to pan and tilt with the gears on all slower moves, since by this method one can be sure of the very smoothest movement; and, when fast movement is required, to disengage either set of gears, and pan or tilt as with a free-head, with adjustable friction; in either case, having the gears to use in case movement in two planes is necessary, with only one movement fast. In this way, for instance, one can make a quick pan, at the same time following the subject up or down with the gears—imperceptibly and accurately. If, in such a case, you do not finish your movement with exactly the right composition, you can—thanks to the geared action—slowly and imperceptibly line up, without disturbing the audience.

The actual making of the shot naturally calls for a high order of mechanical and artistic ability on the part of the Operative Cinematographer; but, still more important, it calls for complete and understanding cooperation between the Operative and the First Cinematographer. The First Cinematographer must be able to trust his Operative implicitly; and the Operative, on his part, must not only have the ability to do his work well, but he must have the courage to bring to the First Cinematographer's attention any smallest imperfection in the shot, which might make it irritating to the audience. He should not be ashamed to ask for a retake if he feels he can really better the shot. He should not be afraid to insist on proper preparation and rehearsal of such shots, or to be sure that, in traveling-shots, a proper track is laid for the perambulator or crane. This matter of tracking is vitally important, despite the fact that it is often sighted in the rush of production. Recently, I experiment-

ed with one of the most perfect perambulators now in use; I split an ordinary match, and laid one of the halves on the track; when the shot was screened, the slight irregularity caused by running one wheel over this half match proved sufficient to make a noticeable 'jump' in the picture.

But above all, the Operative Cinematographer's part in making these shots calls for diplomacy. He must be a practical psychologist, knowing just how to cooperate most perfectly with First Cinematographer and Director, and how to secure the most perfect cooperation from them, to the end that the mechanical phases of each scene may be as nearly perfect as possible.

VICTOR SCHEURICH, A.S.C.

There are two phases to be considered: the personal and the mechanical elements. Once a pan shot—or a traveling-shot, for that matter—has been decided upon, it is up to the Operative Cinematographer to execute it. He must have good coordination, and an eye for composition; he must know how to provide a good composition at the start and finish of such scenes, and at any halts during the movement. He must be able to time the swing smoothly, and make it seem natural.

The mechanical element enters here: for while a man can become accustomed to the use of any equipment, he can only do his best work when he has the best of equipment with which to work. There is all too often a tendency on the part of many studios to concentrate too much on what goes on in front of the camera, figuring that the

(Continued on Page 19)

(This question has been asked a group of the Second Cinematographer members of the A.S.C. to the end of obtaining the opinion of the men who actually make these shots—the Operative Cinematographers.—Ed.)





TREND of THE TIMES

Worm Destroys Films

• The Kino Amateur magazine reports a discovery made by the Chemical-Biological research laboratories of the "Recono"-Berlin according to which a very small sized worm is responsible for the cause of shrinkage and brittleness of aging film.

This worm working in large colonies lives on camphor, thus causing the base to become brittle and shrink.

The Recono, the article states, has found not only a method of protecting fresh films from these worms by impregnating the surface of the film with a solution which hermetically seals the surface but has also worked out a process of renovating old attacked films by replacing the camphor and simultaneously destroying the worms.

Details concerning these methods are not disclosed.

Fourth Dimension?

• A fake promoter in Spain was recently convicted for swindling investors on what might be considered a most incredible proposition. He claimed to have a device that would supply smell to motion pictures (as though some of them don't smell bad enough already!) The spectator while admiring a beautiful sea scene would naturally smell the sea. Close-up of actresses would be accompanied by a sweet scent.

We stand up to a point of "odor"; this subject is too strong for our belief.

Universal Focus

• According to a communication from Germany an optical engineer of that country claims to have perfected a new type lens for 35mm cameras that will keep all objects beyond six feet sharply in focus. No more follow focus if this proves to be true.

Amateur Color Process

• Dr. Paul Knoche in the "Camera" for September, 1933, reports a new invention capable to render transparencies and paper prints in natural colors by a simple method. This process is called "Gaspar Color" after its inventor, Dr. Bela Gaspar.

The negative film consists of a base carrying three emulsion layers. The up-

per layer is highly green sensitive and dyed with yellow dye. The next lower layer is red sensitive and dyed magenta. The lowest layer is infra red sensitive and dyed bluish-green.

After exposure the negative is developed and fixed in a normal way.

Now follows the most important part of the invention which concerns a method of chemically destroying all dyes except on places where silver has been deposited.

Finally the picture is placed in a reducer which destroys the silver, leaving a brilliant positive in natural colors.

It is claimed that the whole process can be completed within fifteen minutes.

No detailed information is given in regard to the chemicals used.

Sound with X-Ray

• A member of the Institute of Physical and Chemical Research of Japan has a new system of sound recording which employs the X-ray in place of neon gas for the conversion of the electric current coming from the microphone into light waves to be photographed on the film emulsion. It is claimed by the use of X-ray the mechanical sound of voice is improved, operation becomes simple and power consumption is reduced.

The Selenophone

• An Austrian firm is marketing a rather novel 16mm sound recording unit. The recording is done on a small strip of sensitized paper, thus simplifying the various operations of developing. The paper sound track, it is claimed, can be projected two hours after the recording.

Third Dimension

• According to "Cinepose," a French magazine, Louis Lumiere, well known French Motion Picture pioneer, has perfected a new third dimensional cinematographic process. A lecture on this process will be given at the French Academy of Science in the near future.

Snow Effect

• According to reports from German studios the technicians of that country have evolved a new method of securing snow effects for picture use. They use a slow burning powder which throws off a flakey

ash resembling a snow flake. This ash rises in the air and floats, giving the illusion of snow falling. This has the advantage of not melting due to the heat of the lights on the set. They do not give the formula of this powder.

Film for Language Teaching

• A brief article in the French Photo Revue tells us that a Professor Fry of the Institute of Languages of Amsterdam is employing sound film to teach foreign languages. According to reports, Prof. Fry is very enthusiastic over this method of teaching elocution.

Direct Positive Print

• The Camera, a German magazine, tells us about a new direct positive process which enables photographers to make a positive enlargement on paper or any other base from any positive motion picture film. It is called the D. P. emulsion. It claims an exceptionally fine grain and 8x10 enlargements can be made very easily from any small size still or positive image.

Pictures in English Churches

• According to an English publication a new society for production of religious films has been formed in London. The aim is to furnish every church with a complete projection equipment for the showing of a film of biblical interest after the sermon. An experimental installation in a church at Lambett Road in London proved that through this new attraction the church was crowded to capacity. The Rev. Triplad stated that formerly only a very few attended services.

Infra Red For Copying

• The British Journal of Photography reports that Infra Red plates have been recently used with fine success in copying old and faded documents and photographs.

French Studios

• Recent reports in La Cinematographie Francaise credits France with 18 fully equipped Sound Studios for motion picture production. Fifteen are in or near Paris, while the other three are located on the Riviera.

IMPORTANT

to any picture

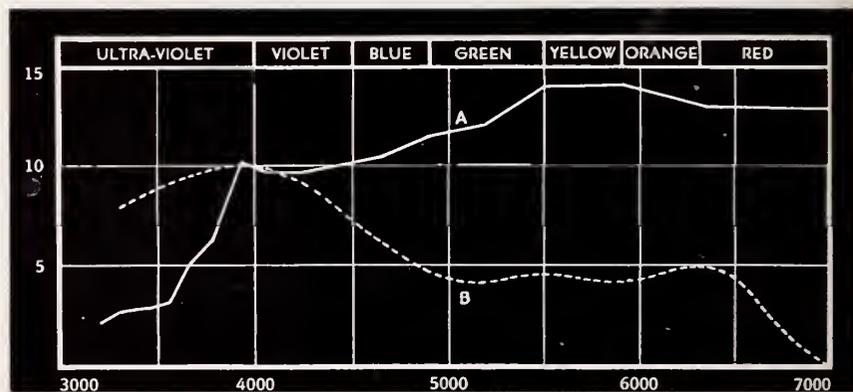
ANY picture, made on *any* film, may prove a hit. But the fact remains that the majority of the big motion picture triumphs are being filmed on Eastman Super-sensitive "Pan" Negative with gray backing. In other words, this film seems to be an important factor in any picture's chances of outstanding success. That fact is vitally important to every cameraman and producer. Eastman Kodak Co., Rochester, N. Y. (J. E. Brulatour, Inc., Distributors.)

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COOL LIGHT At equal photographic intensity, the new studio carbon arc projects far less heat onto the stage than any other source of illumination used in the studio.



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Color Control For Color-Films

(Continued from Page 11)

of color photography can be improved since by balancing the vibratory intensities of the colors used in direct relation to the mass and other factors, visual harmony will be attained and the result will be effectively pleasing to audiences.

No restriction will be felt in selection of colors, as it is primarily the correct intensity that is indicated, and once established it is then a simple matter to blend any color desired to that intensity scientifically removing all idea of personal theory or conjecture and placing the use of color on a solid, concrete basis.

In settings and backgrounds, all areas would be assigned related color intensities in correct tonal balance according to their proportion so that the combined visual effect of the completed scene would be in visual balance acting in harmony upon the visual apparatus of the observer.

For the player, and particularly the important characters, these new aids to the proper use of color would offer opportunities for building up distinction and effectiveness to an extent not heretofore possible—bringing out beauty and perfection in eyes, hair and skin tones that never before registered. Color science has now found that for each individual there is a definite color intensity range best suited to emphasize that individual's personality to the greatest extent.

The results from the psychological angle are practically unlimited, dependent only upon the ability and experience of those responsible for the artistic success of the picture. By modifying color and controlling what color is used in correct relation to other factors of mood, action and plot, the ultimate in colored pictures would bring audiences films of a beauty and appeal not dreamt of before—technically harmonious and in visual balance.

Creation of individual color tones for costumes for players in correct relation to their own coloring not only will result in emphasizing to a much greater extent the players' personalities and effectiveness of characterization, but will also add increased impetus to the present great scope of influence of studio designers and stylists on world fashions and trends by leading way to recognition of the value of correct color intensities for individuals.

Applying color balance and correct psychological use of color to motion pictures, considering surface and atmospheric color, contrast and analogy, lyrical color in relation to drama and mood, bringing the individual into proper relation to the other factors—all these point the way to making color in films vastly important and a truly significant force in the continued progress of the motion picture industry.



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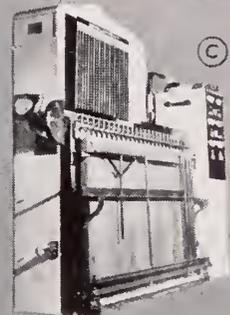
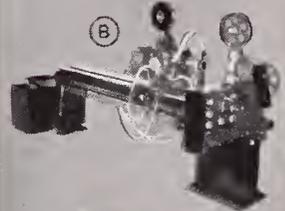
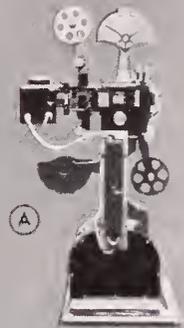
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- c Small Developing Machine



RIDDLE ME THIS

(Continued from Page 15)

panning and traveling-shot technique. There is also a great need for improved standardization of accessory equipment among the studios, as this would heighten the efficiency of the camera personnel, especially when extra cameras are used, and would naturally give the studios a wider variety of men to choose from, rather than merely being restricted to the men familiar with that studio's equipment.

DANIEL L. FAPP, A.S.C.

To my mind the question of pan shots is more an artistic problem than a me-

chanical one. A competent Operative Cinematographer, granted reasonably good equipment, with which he is familiar, can turn out panning shots which are technically good; but whether or not they will prove satisfactory in the completed production is quite another matter. Too often, such shots are not used naturally; they are dragged in by the heels whenever a character is to move, or to bolster up weak action. I believe that the greatest single step to improve these shots would be for the Director to consult the First Cinematographer more closely upon their advisability—and then follow the First Cinematographer's advice.

USING INFRA-RED IN THE AIR

(Continued from Page 14)

position was nearly above Oceanside, California—about sixty miles or more southeast of Los Angeles; the cameras were pointing northwest, but the city and its environs were lost in clouds and a heavy haze. We made our scene satisfactorily; even allowing for the film's haze-cutting properties, we were sure it would not show us any unwanted land. But—the next day, in the projection-room, all of us were amazed to see that the film clearly showed us the Palos Verdes hills, Los Angeles, and the Santa Monica mountains, sixty to eighty miles away, and absolutely invisible to the eye!

The infra-red sensitive films now available for motion pictures, including the "Infra-D" and kindred products of other firms, are modifications of the true infra-red sensitive emulsions used for still photography. The latter are intended largely for scientific or survey work, and accordingly disregard many features necessary for successful commercial use, such as keeping quality, gradation, contrast, and ease of manipulation. The infra-red sensitive cine-films, on the other hand, sacrifice some small degree of pure infra-red sensitivity, and give in return the commercial advantages we must have in regular production. These films keep rather well; the elaborate refrigeration

systems so necessary for many hyper-sensitized emulsions are not needed. Moreover, air-express services makes it possible to secure absolutely fresh film in a matter of two days or less.

The contrast, while somewhat greater than that of ordinary pan and superpan emulsions, is by no means as excessive as that of the purely scientific infra-red sensitized emulsions. "Infra-D" and similar products may be used in an emergency for almost any type of work one would ordinarily do with SuperSensitive film. Unfiltered, or lightly filtered, it will match up very well, for contrast, gradation, color correction and general quality with scenes made on the more familiar emulsions. Except when heavy filters which cut out large bands of the more actinic visible light and pass the infra-red, are used, "Infra-D" is quite similar to regular SuperPan film, though a bit slower.

For general purposes, the filter technique required is similar to that for ordinary SuperPan. Specifically, it differs from this accepted technique in much the same order as the technique for SuperPan differs from that used in filtering ordinary panchromatic; to produce an equivalent, normal result, one must use a somewhat heavier filter. That is, to produce a definite effect upon ordinary pan-

chromatic film, one might use a "G" filter; for an equivalent correction upon SuperPan, one would probably employ a "23-A." Similarly, using commercial infra-red sensitive cine film, one would need about a "29-F" filter to obtain the corresponding correction.

However, the true advantages of infra-red sensitive film do not appear in this routine work, or with these light filters. Only when one definitely sets out to utilize the infra-red sensitivity, using the heavy filters which arrest most of the visible rays, and leave the infra-red rays a chance to act, does one obtain the real benefits of the emulsion. Using this group of true infra-red filters—from the Wratten 70 on—one enters an entirely new realm. Filtered night-effects made on this film become more convincing. Aerial night-effects are, of course, literally made possible by this technique; but ordinary night scenes on the ground develop surprising possibilities. For instance, the strong infra-red emanation of ordinary incandescent lamps—even low-powered ones—register very strongly. It should hardly be necessary to install special lamps, batteries, etc., in automobiles figuring in such scenes, for in my own tests, I have been astonished by the way ordinary headlight bulbs picked up, even in broad daylight. I recall one scene of this nature in which we used this film, and in an extreme long-shot, the glow

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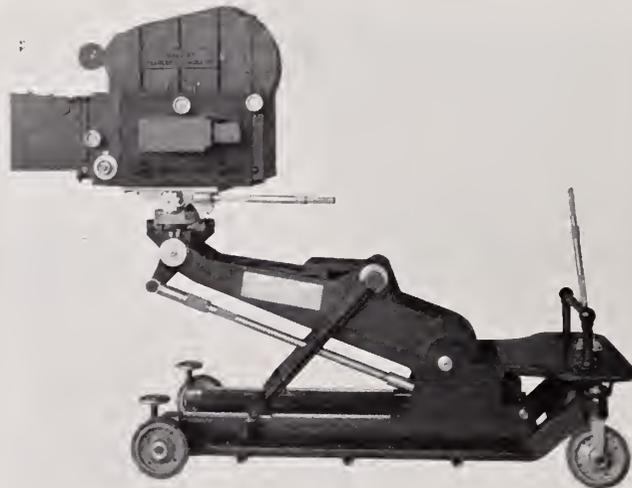
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of a pair of ordinary headlights were visible for nearly half a mile.

An important consideration in making aerial night scenes is that the correction of film and filter must not alter the appearance of the planes shown on the screen. A blue-painted machine, for instance, would appear light grey when photographed with ordinary films, but would be virtually black when shown in the air, photographed with infra-red sensitive film and the requisite heavy filters. Similarly, a red or green machine would be dark in the first instance, and very light in the second. Realizing the importance of this factor, I made extensive tests even before being assigned to "Night Flight," and found that surfaces of white metal, or surfaces painted with an aluminum pigment, would remain virtually the same shade no matter what film or filters were used. Accordingly, the planes used in the picture were all painted with the aluminized paint—and, no matter what the conditions were, they always appeared the same on the screen.

The laboratory handling of infra-red sensitive film need not differ appreciably from that of ordinary SuperPan: the M-G-M Laboratory took the precaution of developing the scenes I made on "Infra-D" in total darkness, on the usual machines, and reported no trouble at all.

The use of infra-red sensitive films promises all cinematographers much. While it will hardly displace the present

types of film for general work, it brings a new and valuable auxiliary for many types of work. Its haze-cutting properties give the exterior specialist a new means of overcoming unfavorable weather and light conditions, and a new tool for making night-effects. But it is, to my

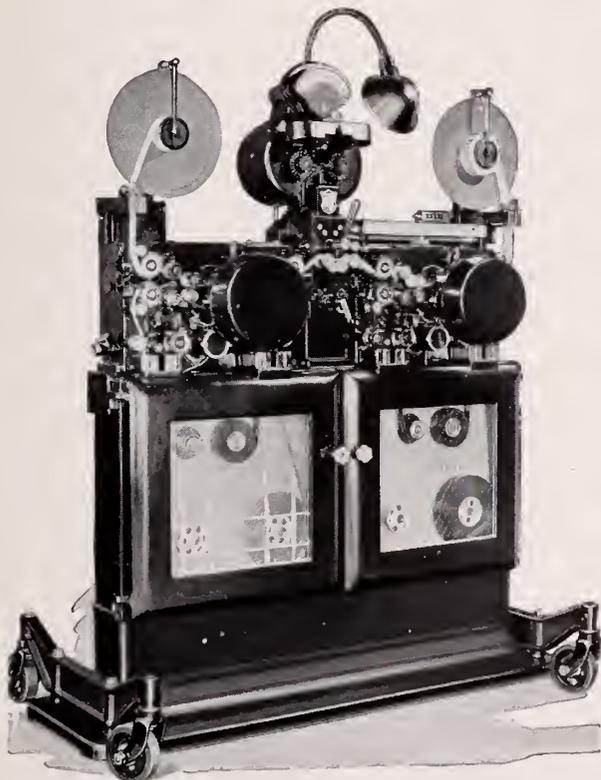
mind, of the greatest value to the specialist in aerial photography, for it opens up to him a new range of technical and pictorial openings, and enables him to keep his specialized work in step with the continued progress of production camerawork.



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Utility Features New Light Crane

(Continued from Page 10)

wheel which is set at a convenient angle, and fitted with a lock so that the crane adjustment cannot be altered accidentally. The shaft upon which this wheel is set drives a worm gear which in turn meshes with a cogged sector, raising or lowering the crane-arm. A considerable variation in lifting-speed may be obtained by fitting single, double or triple-thread worms to this drive. The crane-arm is counterbalanced ingeniously, so that there is little or no variation in the energy needed to operate it at any elevation. This is accomplished by two counterbalancing springs, of helical type, connected to the arm by strong cables wound upon tapered drums, thereby automatically adjusting the counterbalancing leverage to the load.

The camera is mounted upon the end of the crane-arm and kept level by a pivoted mount and a conventional radius-rod system. Two seats are provided for Operative and Assistant Cinematographers, so that shots in which the camera is lifted from normal position to the full extension of the crane (or vice-versa) may be smoothly made—something which is extremely difficult with certain existing designs. These seats pivot, enabling the operators to make extensive panoramic shots conveniently, and are, moreover, invertible for convenient use when the crane is in low positions. Brackets may be fitted for auxiliary lights, and two collapsible handles are fixed at the base of the arm so that the carriage may more easily be pushed or pulled in traveling shots.

The pan-and-tilt head upon which the camera is mounted follows the conventional design practice for blimp-type friction heads. It is excellently counterbalanced in its tilting movement, by means of strong helical springs. There is an interesting innovation in the horizontal, or panoramic movement, in that stops are provided by which the camera may be arrested at any predetermined point, silently and without jar. A channel is cut in the circular base of the head, and rubber-covered stops may be screwed into this channel at any point: similar stops, affixed to the upper, or rotating portion of the head will engage these fixed stops, bringing the camera to rest in the desired place; the rubber coverings insulating the stops from metal-to-metal contact, and absorbing the jar.

The present equipment is a semi-experimental model, and has since its completion been undergoing the strenuous practical tests of use on actual production. To date, it has been used by

three different Directors of Photography at the Warner Bros. Studio: Wm. A. Rees, A.S.C., Gaetano Gaudio, A.S.C., and myself.

I have found the device to be extremely well-adapted to modern conditions. It is narrow enough to pass through any ordinary doorway (it is but 31 inches wide), yet it permits using the camera at any elevation from 24 inches (lens-center) above the floor to a height of nearly eight feet. It permits panoramic shots embracing very nearly the full 360-degree circle, even at the maximum elevation, while, by using the fifth wheel, and pivoting on the axis of the two rear wheels, the full 360-degrees may be encompassed with ease. Its movement is smooth and accurate in every respect. The unique steering system permits the device to be used in the most inaccessible corners of a set: it may be placed directly by a wall, or in a corner of a set, and, by steering the four wheels, it may be "crawfished" obliquely away from the wall (or the reverse) and then pulled or pushed in a straight line, or steered in any direction. Since the operators ride with the camera, changes of elevation, combined with panning or any other movement during a scene are made very simple. Used simply in place of a conventional tripod, the device is not only convenient, but firm. Its weight—1100 lbs.—is in most instances sufficient to assure stability, without "tying down," and the crane-arm permits extremely speedy adjustment for camera height or position. It has been estimated that—quite ignoring the device's merits as a crane—its use in place of conventional tripods, rolling-tripods, "high-hats" and baby tripods can save a company over two and one-half hours in the course of a single working day; and my own experience confirms this.

As has been stated, this crane is a semi-experimental model; practical experience is expected to indicate some minor changes or additions which will facilitate the use of the device. After a period of practical use, it is planned to produce a number of these equipments, embodying, of course, the improvements expected, and to equip the studio with them as standard operating equipment.

Georges Benoit, A.S.C., Honored

• Georges Benoit, A.S.C., who has for some years been in France, has been honored by election to the Vice-Presidency of the Societe Francaise des Cinegraphistes (the French Society of Cinematographers). M. Benoit, long a member of the A.S.C., and a former officer of the Society, was one of the founders of the French body, which is patterned after the American Society of Cinematographers.

John Arnold Heads A.S.C. For Fourth Term

(Continued from Page 9)

tion, and every conceivable type of personal service. The whole plan is aimed to make available to cinematographers the highest type of professional and personal business service, that their economic condition may be enhanced, and that they may be completely freed from business worries.

President Arnold views the future with confidence. "The past year," he states, "has conclusively proven the inherent soundness of the American Society of Cinematographers. We have passed through the most trying times in the history of the Society or of the industry alike, and emerged with the respect and confidence of every member of the industry. We have brought forth a "New Deal" in the relations between Cinematographers and their employers—a new spirit of cooperation—of fair play. These relations must be absolutely fair and equitable, favoring neither producer nor cinematographer at the expense of the other. The Society's one fixed policy is—now as ever—to bend every effort for the advancement of cameramen, both collectively and as individuals; never departing from the high ideals of honor and justice which have characterized the Society since its inception.

"The creation of the ASC-Agency is an important step in this policy. It permits us to realize a new conception of service to cameramen; a type of service which has heretofore been available only to highly-paid players and directors, but never to the equally important camera-artists. Such a service for professional business representation has long been needed: but a similar service for personal business management, publicity, and the like has been even more vitally necessary. With the ASC-Agency to provide these services, we confidently expect to raise the condition of Directors of Photography to new high levels.

"Notwithstanding the importance of these new economic responsibilities, the Research, Educational and Social activities of the American Society of Cinematographers will not be abated. Rather, they will continue and increase, as the importance of the Society and its members increases. We have witnessed the birth of a new A.S.C.: the coming years will see it marching steadily onward to new successes."

Pictures in Paris Opera

For the first time in the history of the famous Grand Opera House of Paris, motion pictures will be shown in that famous institution for the benefit of the Legion of Honor. It is claimed all sound equipment will be immediately taken out of the theatre after this one showing.



Faxon Dean



Ruddy Geraus

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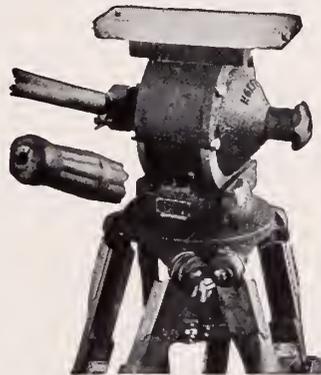
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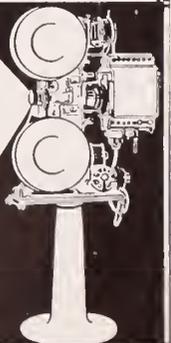
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A. S. C. GOLF TOURNAMENT

(Continued from Page 8)

GEORGE CLEMENS, Toilet Set, donated by Mark Sandrich.

KYME MEADE, 2 Pts. Whiskey, donated by H. N. Swanson.

WILLIAM FOXALL, Electric Vibrator, donated by Nat Finston.

J. PEVERELL MARLEY, 1 Doz. Silver King Balls, donated by Adolphe Menjou.

RAY RAMSEY, Cocktail Shaker, donated by Max Steiner.

WALLACE KELLEY, Still Camera Sunshade, donated by Hollywood Camera Exchange.

FOURTH FLIGHT

JAMES DALY, Pair Bausch & Lomb Binoculars, donated by E. O. Blackburn.

BEN REYNOLDS, Telechron Clock, donated by Warner Studio Electrical Department.

ALLYN JONES, Leather Golf Bag, donated by George Gibson.

WILLIAM DANIELS, M-R "Baby Spotlight," donated by Mole-Richardson, Inc.

BEN WHITE, Merchandise Order, donated by Wheeler and Woolsey.

ALFRED WILLIAMS, Set Matched Wilson Irons, donated by Warren Newcombe.

AL ROBERTS, Gold Wrist Watch, donated by Smith & Allen, for the closest to the 13th hole.

OTTO DYAR, 3 Rolls "Pellex" 16mm Film, donated by Walter W. Bell.

FRANK PHILLIPS, Set Matched Hagen Woods, donated by Ann Harding.

J. D. JENNINGS, Whiskey Barrel Set, donated by Fearless Camera Co.

JOHN ARNOLD, "Rhaco" Pocket Finder, donated by Camera Supply Co.

JACK GREENHALGH, Eastman 6-20 Kodak, donated by Leo McCarey.

HERBERT VAN DYKE, Merchandise Order, donated by Polly Moran.

JOHN HIXON, Merchandise Order, donated by William A. Seiter.

IRVING RIES, 1 Doz. Golf Balls, donated by Lynn Buell.

WILLARD VAN ENGER, Cocktail Shaker, donated by Joe Nolan.

A. RICHARD DORAN, Sweater, donated by Ralph Bellamy.

FIFTH FLIGHT

AL WETZEL, Set of Scheibe Filters, donated by George Scheibe.

BERT LONGWORTH, Leather Golf Bag, donated by J. L. Courcier.

HAROLD MARZORATI, Set Stone Fog Lights, donated by Lights, Inc.

BUD MAUTINO, Merchandise Order, donated by Hazel Forbes.

JAMES GOSS, "Leica" HCE Sunshade, donated by Cliff Thomas.

OLIVER MARSH, Sweater, donated by Jack Brand.

OLIVER MARSH, Cigarette Lighter, donated by RKO Barber Shop.

ROBERT BRONNER, Set Matched Irons, donated by Gary Cooper.

MILTON R. KRASNER, 1 Doz. Golf Balls, donated by M. J. Abbott.

MILTON BROWN, Merchandise Order, donated by Sidney Fox.

SIXTH FLIGHT

RICHARD DA VOL, Set Matched Bristol Woods, donated by Sidney Franklin.

EDWARD J. SNYDER, Set Matched Woods, donated by Carole Lombard.

STANLEY CORTEZ, Leather Kit Bag, donated by George B. Seitz.

ROBERT COBURN, Electric Drink Mixer, donated by Burns and Allen.

DAVID RAGIN, Sweater, donated by Mel Shauer.

PAU LERPEE, Sweater, donated by Mel Shauer.

JAMES GORDON, Merchandise Order, donated by William A. Seiter.

GUEST FLIGHT

C. L. LEWIS, Sweater, donated by Henry Hathaway.

FRED MIRON, 1 Doz. Golf Balls, donated by Henry Hathaway.

RALPH D. OWEN, Subscription to "Variety," donated by Walter Greene.

HOLLIS F. MOYSE, Wooden Highball Set.

GEORGE GIBSON, Copper Beer Set, donated by Charles R. Rogers.

J. L. COURCIER, Six Bottles Champagne, donated by the Hollywood Reporter.

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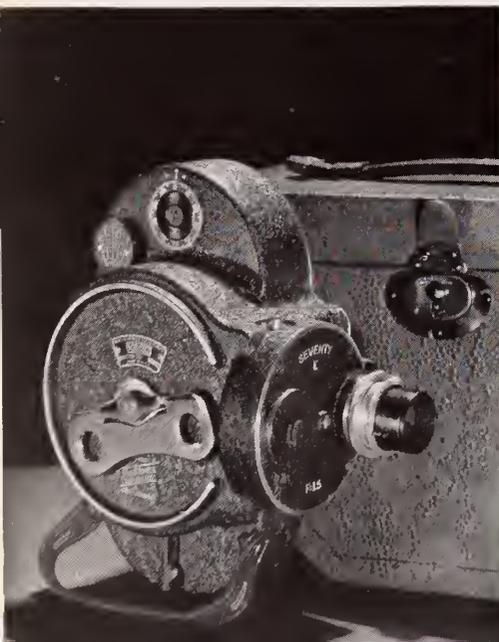


* Such observations, so frequently heard, bear out Bell & Howell's conviction that it takes fine equipment to make fine movies. So here is fine equipment, built as well as Bell & Howell, for 27 years makers of the preferred professional cinemachinery, can make it.



Filmo 70-D Camera

Filmo 70-E Camera



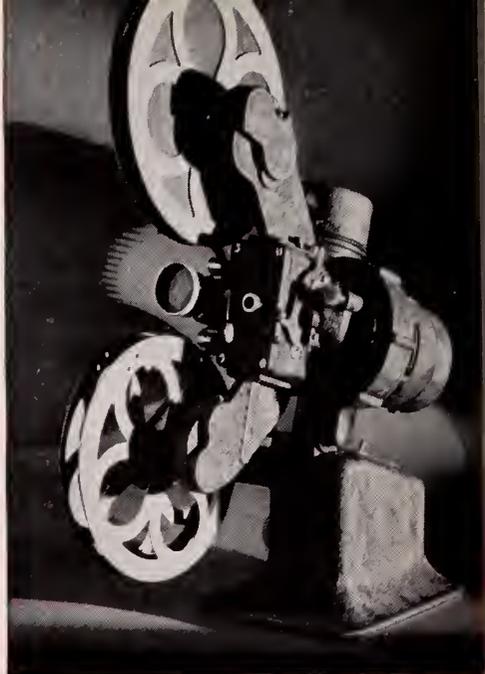
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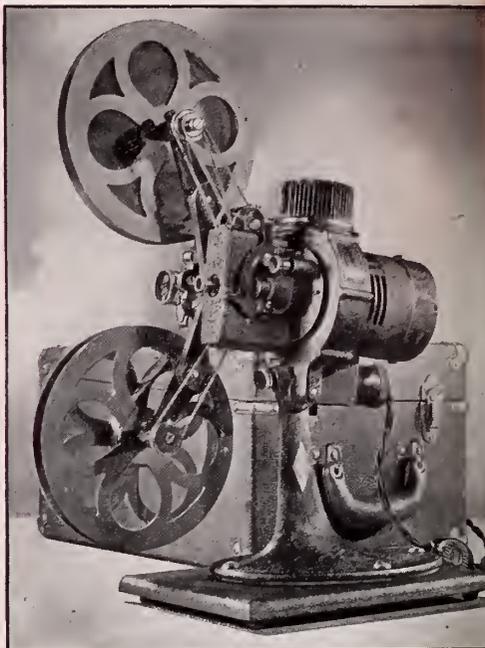
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Filmo R Projector



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Birthday Continuity
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AMATEUR MOVIE SECTION

Contents . . .

FLYING the Rolleiflex by Elmer G. Dyer, A.S.C.....	30
A NEW Outdoor 16mm Film by Dr. H. Meyers, A.S.C.....	31
CONTINUITY For Birthday Party by J. Dickinson Reed.....	32
A PROFESSIONAL Looks at 8mm by Arthur C. Miller, A.S.C.....	33
CINETRICKS, Motion Control by Wm. J. Grace.....	34
SHOOTING Desert Patrol by C. W. Herbert, A.S.C.....	36
BACKYARD Movies, Prize Winners.....	37
TRICKS and Gadgets.....	38
WHEELS of Industry.....	40
HERE'S How, by A.S.C. Members.....	48

• **PROFESSIONAL Criticism of the Amateur picture is a part of the service offered by the AMERICAN CINEMATOGRAPHER. Many are not aware of this. Hundreds of pictures have been reviewed this past year by members of the American Society of Cinematographers for the Amateur.**

Next Month . . .

- Another Professional will give you his opinion of the 8mm. He'll tell you of a picture he shot with this little camera. It's surprising how rapidly this Infant has grown.
- There'll be a continuity that will let Dad play the star role. Of course there will be a baby in it. What's a Home Movie without a baby or child?
- The installment of prize winners for Backyard Movies proves exceptionally interesting next month. You will note there has been a wide variety in themes and backgrounds in those presented. Why not try your hand?



Elmer Dyer, A.S.C.

Flying the "Rolleiflex"

by

Elmer G. Dyer, A.S.C.

IF YOU are sighing for new worlds to conquer with your camera—try aerial photography! It opens up an entirely new field to every type of camerist—the snapshotter, the technician, and the pictorialist alike. It can be as simple or as intricate as you wish to make it; and always it is a thrilling sport.

Modern miniature cameras are ideal for this type of photography. They embody almost every feature that could be desired: well-corrected, fast lenses; accurate, speedy shutters; compact, rigid bodies; and they have, either as regular or auxiliary equipment, large "direct" or frame-type finders. They are compact enough to be used successfully from an open-cockpit ship, and they have (with one or two minor exceptions) no bellows to be flattened by the slip-stream from the propeller. They can be worked quickly and accurately, making it possible to get more and better pictures in a given time.

My own preference is for the "Rolleiflex," which I have used for a number of years, both on and off the ground. Often, when flying across country, en route to a location, I will use this little camera to picture interesting scenes over which we may be flying, or to photograph interesting cloud-formations, etc. The results have been very successful. I have found the construction of the camera to be unusually well suited to this sort of work—especially the large direct-

type viewfinder, which is extremely handy for aerial use. The spring which holds this finder erect should, however, be strengthened, or supplemented with a set-screw or clip, if you use an open-cockpit plane. Similarly, if you plan to fly the ship yourself, in addition to making the pictures, a wooden handle, screwed into the tripod socket (a handle such as those supplied for "Eyemo" movie cameras) and a wire-release for the shutter will make it much easier to use the camera one-handed, leaving the other hand free to handle the flying controls.

There are three main types of aerial photographs: "Vertical," "Oblique" and "Horizontal." The vertical pictures are, of course, those made with the camera pointing straight down, as in aerial maps. As a rule, these pictures don't mean a thing except to the trained aviator or aero-cartographer: they aren't particularly interesting as pictures, save in the rare instances when the pattern of fields, roads, etc., may make an unusually striking composition. Also, they are rather hard to make, unless you have a hole cut in the bottom of the plane, as the air-survey people do.

Oblique pictures are made with the camera pointed obliquely down from the plane—looking down at an angle, exactly as your eyes do when looking groundward from a plane. A large proportion of non-professional aerial stills are probably in this group. You can shoot at almost any angle, and include part of the plane (wings or tail-group) if you wish, or leave the plane entirely out of the picture, getting only a picture of what lies below. An angle of from ten to thirty degrees below the horizontal is probably the best for such pictures, as it gives the most pleasing perspective.

The horizontal type of aerial still is, to me, the most interesting. This class includes pictures of other planes in the air, cloud-formations, and the like. The possibilities of such pictures are almost endless.

Regardless of what type of equipment you may be using, there are certain basic points of technique to be remembered. To begin with, use SuperSensitive Panchromatic film, and filters. You will nearly always find at least a trace of haze in the air, and only through using SuperPan and filters will you be able to cut through this haze. Similarly, if you are shooting for cloud-formations, you'll appreciate the help of a filter which will darken the sky, and make the clouds stand out.

Vibration is the principal difficulty in any kind of aerial photography. In any plane, the vibration from the engine is great enough to force the use of fairly high shutter-speeds; and in an open type, there is a blast from the propeller which adds greatly to both the vibration and the otherwise simple matter of holding the camera. To avoid having your pictures blurred by the engine-vibration, you must reverse the usual procedure: instead of resting the camera (or your arms) firmly on some handy part of the ship, hold it in your hands, letting your body act as a shock-absorber, and use a fast shutter-speed. Shooting from a closed plane, your normal, basic exposure on a bright day, with SuperPan film and no filter, should be about f:6.3 at 1/100 second. Under extra good conditions, I have at times stopped down to as low as f:8.

Shooting from an open-cockpit ship, where you have the slipstream from the propeller as well as engine-vibration to contend with, you will have to speed your shutter up to at least 1/350 second, opening up your lens accordingly.

Focus is, of course, at the infinity-mark; the great depth of focus in most miniature-camera lenses is quite an advantage, as any parts of the plane which may be included in the picture will be reasonably sharp. Telephoto lenses are of no value in this sort of work, as a rule, for not only are

(Continued on Page 45)

A New Outdoor 16m.m. Film

by
Dr. H. Meyer, A.S.C.



Taken on plenachrome film using a K-3 Filter.

Editor's Note: In keeping with the policy of the American Cinematographer to publish a technical analysis of any new piece of equipment or new brand of film, we have asked Dr. H. Meyer, A.S.C., who is in charge of the Agfa-Ansco Hollywood research laboratory, to present a technical description of the new Plenachrome 16mm film which this company recently placed on the market.

THE absence of color sensitivity in the pure red is rarely noticeable in the results of outdoor photography. Anyone who compares landscape photographs taken years ago, when panchromatic emulsions did not exist, will admit that the quality of a high orthochromatic negative shows up as beautiful as that of a modern panchromatic negative; that the cloud effects, the softness of the greens are rendered to an equally satisfactory degree and with the same perfection. The reason for this is, that pure red is very rare in natural objects and in general most colors and shades found outdoors are mixtures, so there is always at least one component which will be taken in by the green-yellow or orange sensitivity of a highly orthochromatic emulsion.

The different types of film now on the market are made to answer rather specific needs in regard to the different lighting problems of the photographer.

Superpan is rated as having the highest general speed. Therefore this film should be considered mainly for indoor exposures with or without artificial light; for night shots and in any case where poor lighting conditions are prevailing.

Panchromatic is rated as having approximately one-half the speed of Superpan and, being sensitive to all colors, will be useful for the widest application in outdoor or indoor photography considering normal lighting conditions.

Plenachrome is about equal in speed to Panchromatic in daylight, but will not register spectral red, and its use should therefore be confined to general outdoor shooting.

When speaking of the Plenachrome emulsion it should be kept in mind that this film is not sensitized by the generally known Erythrosine, but by a combination of dyes which not only increases the green-yellow sensitivity but also extends the color sensitivity far towards the orange.

Of practical interest are the filter factors for Plenachrome which are given below:

Agfa Filter	Daylight Factor	Wratten Filter	Daylight Factor
No. 0	1.25	K1	2
No. 1	1.75	K2	3
No. 2	2.5	K3	4.5
No. 3	3		
No. 4	4		
No. 5	5		

Although exposure on Plenachrome without filter will show pronounced color rendition as against that of any color-blind film, their use is recommendable, and the extremely low factors make the use of filters very practicable.

While in modern processing methods ways and means to correct faulty exposures are employed to a most satisfactory degree, the Plenachrome type claims an additional inherent latitude which should prove quite valuable. This claim has been justified by many practical tests whereby rather wide differences in over and under lighted objects were taken care of by the latitude of the emulsion itself without the help of a corrective means during the processing.

The anti-halo backing makes it possible to use this emulsion for cross light effects and difficult exposure conditions which so often lead to poor results in case a film is used which is not protected against halation. The anti-halo film type enables the advanced amateur to safely shoot for the most daring light effects. In addition the anti-halo backing serves to prevent any edge fog while the film is being loaded or removed from the camera in daylight.

The absence of grain should be mentioned. This extremely fine grain is due to the building of the grain structure in the emulsion itself, as well as the special method of processing.

It is evident from this analysis that Plenachrome is not a throw back to the early orthochromatic films, but is in keeping with the expectations of the advanced amateur who has built his experience on present-day Panchromatic emulsions.



Continuity For Birthday Party

by

J. Dickinson Reed

THIS charming little scenario can be very easily produced in any home. It may be either entirely composed of exterior scenes, or of interiors—or of both. As written, the first sequence (Scenes 1, 2, 3, 4 and 6) may be either interiors—played in a bedroom—or exteriors—played on the front porch. The remainder of the scenes are laid out-of-doors, in the garden, but may, if necessary, easily be moved indoors. While the story as it appears here is written around a little girl, it can easily be changed to suit a boy. It will require about 200 feet of 16mm film.

CAST OF CHARACTERS

Betty.....The little girl for whom the birthday-party is given.
 Her Mother
 Her Daddy
 Her friends and playmates.....As many children as you wish.

Scene 1. FADE IN: Long-shot of Betty and her Mother. Mother is just putting the finishing touches to Betty's best party-dress.

Scene 2. Medium-shot of same. Betty is looking into a hand-mirror while Mother fixes Betty's hair.

Scene 3. Close-up of Betty's face in the mirror.

Scene 4. Same as Scene 2. Throughout the sequence, Betty is excited.

Scene 5. Close-up of dog, barking.

Scene 6. Medium-shot of Betty and Mother. They hear something, and walk out of the picture.

Scene 6-b. (Only if previous scenes are made indoors). Medium long-shot of Betty and Mother coming through front door onto porch.

Scene 7. Long-shot of garden gate, with a number of children (dressed for a party) coming through, hailing Betty.

Scene 8. Close-up of Betty, smiling, and returning their greetings.

Scene 9. Close-up of Mother, also smiling.

Scene 10. Short flash of Betty, running straight into the camera until she more than fills the screen.

Scene 11. Long-shot of garden gate, same as Scene 7; Betty runs into the picture (center), and greets her guests.

Scene 12. Follow-shot, as Betty leads the group to a corner of the garden, where a table is set.

Scene 13. Medium-shot of the children giving Betty the presents and flowers they have brought her.

Scene 14. (Close-up of Betty, excitedly receiving her presents. (Note: If this is made on an actual birthday-party, you might add here close shots of Betty opening the presents.)

Scene 15. Long-shot of Mother, bringing in the birthday-cake.

Scene 16. Reverse of Scene 15; shoot toward group of children, with Mother (carrying the cake) in the foreground, walking toward the group. The children register joyous anticipation of the feast. If you wish, you might add a short series of flash close-ups of some of the children, smacking their lips, rubbing their tummies, etc.

Scene 17. Long-shot, different angle. Mother sets the cake on the table, while the children sit down, and eye the cake expectantly.

Scene 18. Close-up of Betty, in front of cake, preparing to blow out the candles.

Scene 19. Reverse-angle; long shot, with Betty (back to camera) in the foreground, and children, grouped about table, watching her.

Scene 20. Close-up of Betty, blowing out candles. This would be very effective if shot from a low position, bringing the cake and candles very prominently in the foreground, with just Betty's head showing above them in the background.

Scene 21. Long-shot of group at the table: Betty, in background, has just blown out the candles. The children applaud. Mother steps up and starts to remove the candles from the cake.

Scene 22. Close-up of Betty, cake in foreground (taken from normal level). Betty cuts the cake—she screws up her face as though it is an exacting task.

Scene 23. Long-shot of group of children; the cake is cut, and is being served to them.

Scene 24. Panoramic shot, close-ups of the children at the table, busily eating. This is most easily made with a 2 inch lens.

Scene 25. Medium-shot of Mother, standing behind the children. She hears something, looks off toward gate, and waves. She exits in that direction.

Scene 26. Long-shot of Daddy, passing through gate. He is carrying two big parcels.

Scene 27. Medium-shot of Daddy. Mother enters, greets him; he whispers something in her ear. She smiles, nods,

(Continued on Page 46)

A Professional Looks At 8-mm.

by

Arthur C. Miller, A.S.C.

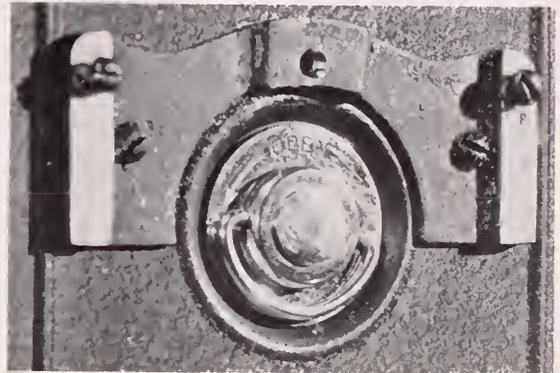
FROM a strictly technical viewpoint, and especially that of a professional cinematographer, it must be admitted that present-day 8mm equipment is not altogether ideal. But then, neither was 16mm equipment at the same relative stage in its development—nor was 35mm, either. I have used, I believe, every type of 8mm camera available in this country to date: all of them make good pictures, but they lack certain desirable refinements, and two rather important features. The first of these is a really adequate finder arrangement for as many lenses as may be supplied. The second, a footage-counter that can be relied upon. Of these, the latter must, I suppose, be dealt with by the manufacturers; but I have found that the amateur can very easily make himself an accurate finder for use with the 1½ inch "telephoto" lens most frequently used with 8mm outfits. It was one of the first accessories which I made for my own camera, and it is so easily made that I am sure that many readers of THE AMERICAN CINEMATOGRAPHER will want to make one for their own cameras.

My finder, which I built especially for use with my Stewart-Warner "Companion-8" 8mm camera, consists essentially of two parts: the mount, by which the finder is fitted to the camera; and the finder proper. Mine is made for use with the 1½ inch Wollensak Telephoto lens which I use a great deal; but by using a larger or smaller tube, the same principle could be adapted to any lens.

The mount is simply a flat piece of brass, cut to the desired shape. As it is made to fit on the side of the camera, almost exactly over the key that opens and locks the camera door, a semicircular piece must be cut from the lower edge of this plate, to allow access to the key. On each end of this plate is soldered a piece of brass which forms a raised track upon which the finder slides; it is raised to allow the finder to clear the door-catch. As the illustration shows, on each of these two tracks is placed a round-headed screw, to hold the finder in place on the mount. In the center of the mount, at the top, is soldered a third brass block, which will eventually be drilled and tapped to hold a screw for registering the finder.

The finder proper consists of a piece of ½ inch brass tubing, cut to measure 3 3/32 inches overall after a flat piece of brass has been soldered over each end of the tube. These end-plates must close the ends of the tube completely. In one end-plate, a small peep-hole is drilled, exactly in the central axis of the tube. In the other end-plate, a rectangular aperture 8/32 x 11/32 inch is cut. This is, of course, the front end of the finder-tube. With these dimensions, the field viewed through the finder corresponds exactly to that of the 1½ inch lens supplied for telephoto use on 8mm cameras.

The finder-tube is soldered to a flat piece of brass, forming a flange. Two key-hole shaped slots are cut in this flange, to fit under the two mounting-screws on the



Finder built by Arthur Miller, A.S.C., for his telephoto lens on the Stewart-Warner 8mm camera. The details are described in the text of his article. At the top is shown the finder fastened to the camera. At bottom is the bracket on which the finder tube is fastened.

mount. Obviously, both the screws and the slots must be carefully aligned, so that the finder will be level! Another piece of brass is soldered on the flange, at a point where it will come directly over the piece which has been soldered onto the center of the mount. When the finder is in place, drill and tap a hole through these two blocks; a screw run through the two holes will bring the finder into perfect registration.

To mount the finder (on a Stewart-Warner camera) take out the two screws inside the camera, and remove the gate. Then put a piece of frosted film (the kind used as a leader on films returned from the Eastman processing laboratories) over the aperture, holding it in place with adhesive tape. When the shutter is open, you can see the image with the

(Continued on Page 43)

Cinetricks



Arrow points to speed control of Bell & Howell Filmo.

NOT long ago I had the good fortune to witness on the professional screen a motion picture called the "Invisible Man." To me, that picture seemed the very apotheosis of the application of trick work to the building of a motion picture story to produce results seemingly impossible outside the realm of the written word.

While the average cinephotographer may not feel himself technically or financially able to duplicate this work with his own meagre amateur equipment, still, I believe that a discussion of the principles underlying trick work is bound to challenge the ingenuity of my readers to intelligent thought with the result that simple means will be devised for obtaining similar screen results.

Generally speaking, trick work may be divided into five classes. However, because of their interrelation, it is sometimes difficult to state that such-and-such an effect can only be obtained by such-and-such a method. Let's list the five headings we mentioned:

1. Speed of the film through the camera.
2. Direction of travel of the film through the camera.
3. Exposing two or more scenes on the same strip of film.
4. Changing the lens diaphragm during exposure.
5. Use of before-the-lens effects, including masks, filters, and dissolving apparatus.

There are certain models of Victor, Bell and Howell, and Cine-Kodak 8 and 16mm cameras which are equipped to take pictures at other speeds than the normal 16 frames per second. The Stewart-Warner also has this feature, and a few foreign cameras such as the Ensign are equipped with two or more speeds. Few amateurs have much idea of the uses for speeds other than the normal speed, even though they have read and heard of the advantages of owning a camera which has these speeds. Perhaps the chief advantage (so they are informed when they buy the camera) is trick work. Let's see just what trick work can be done with cameras having sub-normal and super-normal speeds.

Slow motion is something most amateurs know about, but it is a rather overworked selling theme. I should venture the guess that of all the cameras in use today which have "slow-motion" speeds, not one in a hundred is ever called upon to use it. Slow motion is nothing more than taking a movie with the exposures made faster than the normal speed, and the projection at normal speed produces the

effect of slowing down the action pictured. Slow motion is a confusing term; it should be called "slowed motion"—motion slowed down so the action may be observed at leisure.

I know of several college and high school athletic coaches who have purchased cameras having slow motion speeds (64 frames per second is regarded as sufficiently slowing action in amateur cine cameras) for the purpose of observing the action of their athletes in action, only to experience complete disappointment because the results weren't what they wanted. In professional work, a film speed of only four times slower than normal is not even considered slow motion, for the reason that action is not slowed down enough to be satisfactory. Slow motion is employed generally for only two purposes—one, to find out just how humans or animals move their muscles when traveling at high speed, and two, to study the action of high speed mechanisms.

There are other purposes, of course, to which slow motion may be usefully applied; but the two mentioned are the usual reasons for the purchase of a camera with slow motion speed.

If, however, we forget about this rather narrow band of activity which is based on taking motion pictures at faster-than-normal speed, to wit, "slow motion," we do find other uses for the above-normal speeds. For instance, the amateur has many opportunities to improve his picture-making if he uses film speeds of 24 or 32 frames per second.

Cameras available to amateurs at this time are pitifully similar to those offered the still enthusiast some years ago. It is lamentable that manufacturers of fine amateur movie cameras found it necessary to build them with only one shutter speed, and just when still cameras had educated amateurs to the possibilities of split-second exposures with such cameras as the Graflex and Graphic and other "speed" still cameras having shutter speeds up to 1/500 part of a second, amateur cine cameras reverted to the old days and were all built with but one shutter speed! Only two cameras have variable shutters to my knowledge—the Eastman Special and the custom-built cameras built by Eric Berndt.

So, in reality, amateur cine cameras which offer speeds of 24 and 32 frames are really nothing more than a compromise. These speeds are built in because it is a less expensive way to build cameras which can permit picture-making at shutter speeds which blur the picture less than they would at 16 frames per second. For instance, we have found that a cine camera having a shutter speed of 1/25th of a second at 16 frames per second will record fast action such as a horse race or a Spring Dancer with less blur if film speeds of 24 or 32 frames per second are used. This means a slight slowing-down of the action, naturally, but the real reason for doing this is to minimize the blur because the shutter operates at 1/37th or 1/50th of a second. Also, it has been found that panoramas photographed at 24 or 32 frames are smoother, for the same reason.

Doubtless I will be the recipient from outraged amateur cine camera manufacturers of missives (or should I say "missiles") of condemnation for the thoughts in the preceding paragraph. But I have in my files a number of letters from amateurs who graciously answered a small classified advertisement I ran some months ago as to the requirements of the amateur for an "ideal" camera. In every one of these was the specification "must have variable shutter."

Motion Control

Part One

by

Wm. J. Grace

I fully realize the fact that it might cost a bit more to build cameras with a variable shutter, but if that makes the camera better, the public should have it.

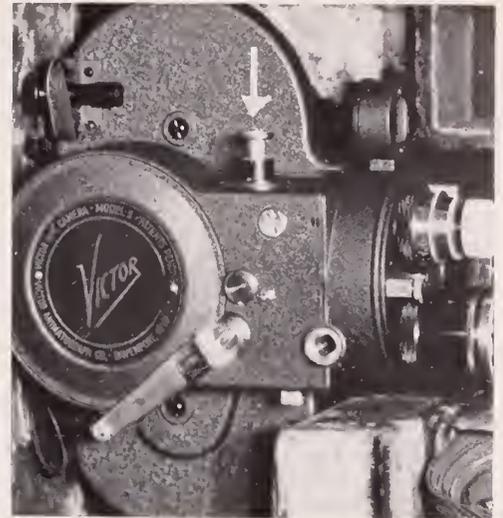
Now, suppose we consider the use of film speeds slower than normal. Although it isn't used so much these days, the professional comedy of yesteryear invariably used quick-action. This is merely taking the picture at less than 16 frames per second, the screen result being unbelievably quick action of the characters. The comedy cop and the comedy scallawag of old ran many a mile at terrific speed. Amateur cine cameras having 8 frames per second speed will make pictures like this to the great delight of the audience if the intelligence of the cinematographer is employed. The filmer must remember, however, that at 8 frames per second, the shutter speed is only 1/12th of a second, and action will be greatly blurred, an effect, however, sometimes desirable.

But film speeds of 8 frames per second were primarily built into amateur cine cameras for another reason, explained at length in most instruction books. Although not as necessary today with our super-speed emulsions, the older amateur cameras had to have some way to take pictures under extremely poor light conditions with slow emulsions, even though a fast lens was used. Thus was born the 8 frame speed. It is carried over into present-day cameras more, I think, because the precedent had been set.

In using the 8 frame per second speed, an amateur must keep in mind that any action taken at this speed will appear on the screen just twice as fast, so if normal action is desired on the screen, the moving characters must be reminded to act half as fast as they normally would. I have seen movies made under light conditions which required 8 frame speed to get enough exposure which screened as if they had been made at 16 frames per second, and the secret was that the action was taken with the characters moving slowly.

Film speeds below 8 frames per second are seldom used, in amateur work at least, because no amateur camera will dependably operate more slowly. Some of the 70D Filmos WILL work at 5 or 6 frames, but the governor then runs so slowly that it cannot be depended on for accurate work. Seldom, if ever, are speeds under 8 frames per second used. From 8 frames, the work then becomes single frame work, or animation. This was discussed in last month's article, "CINE SYNTHESIS."

A word now as to the relative exposures at different film speeds. You cannot, you know, set your lens at the correct diaphragm opening for 16 frame speed and expect the film to magically compensate the exposure requirements if the camera is run at some other film speed. For instance, if the exposure meter indicates that f:6.3 is the correct diaphragm opening for a given shot at 16 frame speed, the



Arrow points to speed control of Victor Model 5.

area of the lens opening (and hence, the diaphragm opening) must be changed if a film speed of 32 frames per second is to be used. Twice as much light must be admitted to the film at 32 frames because the shutter allows only half as much time for the light to act on the film. As each stop means a difference of 50 percent increase, we must use two stops larger, or f:4.5, to obtain correct exposure.

Working the other way around, we see how the 8 frame speed allows the proper exposure under certain light conditions which would not give enough exposure at 16 frames per second. Suppose we wanted a scene which our meter indicated required an exposure at 16 frames speed of f:1. Unless a Dallmeyer f:0.99 lens were on the camera, the picture would be impossible at normal film speed, but if we run the film at 8 frames per second, the time of the exposure is doubled and the lens opening may be halved. Halving the diaphragm opening indicated f:1, gives f:1.5, and the picture is possible. Also, the latitude of the film may even allow the use of f:1.9 for enough exposure.

And now let us summate the discussion of the first general division of trick work. We have seen that "slow motion" is the taking of motion pictures at a rate faster than the normal speed of 16 frames per second (remember, we are talking in this series only of amateur work)

(Continued on Page 47)

Arrow points to speed control of Eastman Cine Special.



Shooting Desert Patrol

by
C. W. Herbert, A.S.C.

Editor's Note: Every amateur must admire the Magic Carpet of Movietone. They are usually of the type the amateur could make on his trips and tours. Mr. Herbert is one of the crew of cameramen employed by the Fox Film Company to make these pictures. In this article he tells you about one of his recent filmings, "Desert Patrol."

WITH the subject matter and location definitely selected for a complete travelogue film, then comes the task of putting on to celluloid the various ideas which have inspired the operator, whether professional or amateur. A complete proposed scenario is of course the best guide to follow, but a rough outline will suffice if you do not feel the need of a scenario.

"Desert Patrol," one of the Magic Carpet of Movietone travel films, was built up from a scenario foundation. This story is of the "life of the Sahariani, the dromedary mounted troops attached to the Italian Army in Tripolitania, assigned to patrol the vast stretches of the Sahara.

Being a film with an organized group of people as the subject, each and every scene must of course show the same people. Variety must therefore be sought in backgrounds and daily activities of the subject. Obviously the easiest course to follow would be to film the Sahariani from morn 'til night, using scenes that portray work, play and hardships, backing up and front plating each and every scene with atmosphere of the location.

Dawn in the desert comes almost with the sun which bolts over the flat horizon like a huge ball of red fire as its rays penetrate the sand particles in the atmosphere. Such a sun is easily photographed by application of a heavy filter and stopping down the lens. By using a telephoto lens, the effect is intensified. A dromedary, a palm tree and a Sahariano silhouetted against the skyline complete the picture.

Reveille commences the day for every military unit. A close-up of a bugler tells the story and scenes of the soldiers getting up follow naturally. Human interest scenes such as burros and chickens around the camp and close-ups of types of the soldiers yawning are indispensable.

To emphasize the effect of early morning, it is well to arrange some shots against a clear blue sky, with light coming from one side so as to cast long shadows. White objects with one side light and the other shaded against a blue sky are most suitable for these scenes. The Sahariano bugler with his white uniform stood out in bold relief against a black sky, accomplished with a heavy red filter and panchromatic film.

Some troops start the day with a big breakfast, but the Sahariani are content with strong sweet tea which each man makes for himself. Here scenes can be made of the men fanning a small precious fire, pouring out the thick mixture and drinking. Head close-ups permit an intimate introduction of the types of the men.

Flag raising is always in order, but so commonplace that it was easily left out without injury to the story.



Dromedaries, the backbone of the troops, receive first attention. Here is an opportunity to call attention, in dialogue or title, to the fact that these desert ships possess the remarkable ability to go without food or water for days. You can always get a laugh by a head on shot of the dromedary's mouth, especially when he is chewing.

Soldiers must work, and work provides action for motion pictures. Following the rule of seeking out the typical and interesting features, crude irrigation pumps worked by man power to make the desert bloom, as well as plowing with a dromedary hitched to a Biblical time plow, fit in nicely. Close-ups of small boys swimming in the water hole as the men dip out the water, and a follow shot of the crude plow making a furrow are in order. Other activities which provided action and interest are soldiers washing clothes, mending harness and clipping hair from their mounts. Here again is an opportunity to point out an interesting fact, that camel hair coats that parade on Fifth Avenue start to grow in the desert.

All of the above features are easily worked out with general views, showing the palms and fortress background, and the invaluable close-up to bring your subject nearer to your audience.

All work and no play is neither good for the Sahariani or your film. Desert entertainment, commonly called a "Fantasia," fits in nicely now. It is an easy job here while everyone is in a playful mood and music is in the air. This type of material with the native music of drums, flutes and goatskin pipes, lends itself particularly to sound sequences.

Occasionally as you stage a scene the extras around the set provide some unexpected shots that are intensely human. During the filming of the Fantasia small boys shinnied up

(Continued on Page 42)



BACKYARD MOVIES

Movie Film Free

We reproduce on this page two little plots that win the 100 ft. rolls of 16mm panchromatic film. Remember that we give away each month not less than one 100 ft. roll of film for plots and continuities sent us which we print. Read these plots over and see for yourself how easy it is to win a roll of film free.

J. Oliver Tucker, one of this month's winners, is a typically progressive reader. His scenario, based on the use of a titler for filming close shots of insects, etc., reached us a week before our article on the subject went to press last month! Congratulations, Mr. Tucker!

For the benefit of those who may not have read the article referred to, we will state that any type of titler fitted with a supplementary lens may be used. The support for the title-card should be folded out of the way, or if this is not possible, removed; and a wire frame slightly larger than the actual field, and about 1 1/4 inches closer to the lens than the actual plane of sharp focus, as represented by the normal position of the title-card. With the lens focused at the infinity mark, and stopped down exactly as though photographing normal action, it is easy to get good 'magniscopic' movies of insects, etc., with any type of 8 or 16mm camera. Simply line up the frame to include approximately the field you desire, with your insect-actor about 1 1/4 inches beyond the frame—and there you are!

Death in the Backyard

(With Apologies to Ernest Hemingway)

Scene 1. Close shot of a plate, with flies clustered about it. (Put the plate on a table in the yard, smear a bit of honey or syrup on the plate, and get a full shot of the plate with the flies buzzing around it. This shot will probably not need the titler.)

Scene 2. Medium-shot of kitchen-window: two hands reach out carrying a freshly-baked cake, which is set on the sill to cool. (A white frosting is preferable for this.)

Scene 3. Close shot of a fly on platter, made with the titler. The fly leaves and buzzes out of the picture. (If you can show him being frightened away by a wasp, you are in luck!)

Scene 4. Close shot of the fly on the cake. (Made with titler.)

Scene 5. Close shot of the fly cleaning his legs and wings. (The writer has not succeeded in getting this shot, as his actors seem nervous. It may be omitted.)

Scene 6. Close-shot of a spider starting to spin its web. Coax the spider onto a flower. Place camera on a table or other firm support, pointed toward

some shade, with the subjects backlighted. Photograph the spider as it crawls over the flower and drops off. Raise the flower to keep the spider near the center of the picture. This is intended to suggest the making of a web. ..F:8 should be about the right exposure.

Scenes 7, 8. A couple of shots of be-dewed spider-webs. These should be taken early in the morning, without the titler, and with the camera perhaps three feet distant, pointed toward the shade so as to give a dark background. The web should be backlighted, and scene 8 made closer than scene 7, and from a slightly differing angle.)

Scene 9. Close shot of spider, sitting at the center of his web, waiting.

Scene 10. Close shot of fly crawling over a person. Make this with the titler, and show the fly crawling over someone's arm, ear, or better yet, over a bald head. Finish the shot with a hand frightening the fly away.

Scene 11. Extreme close-up (made with titler) of a fresh, well-made spider-web. The shot should be backlighted, and a large black cloth—such as a focusing-cloth—should be hung about two feet behind, to give the necessary contrast. About f:5.6 at 7 a.m. should be about right.

Scene 12. Short flash of the spider, as in scene 9.

Scene 13. Close-up of web, as in scene 11. The fly blunders into it, and is caught. (Catch a fly without injuring it, then gently toss it into the web, in the center of the camera's field.)

Scene 14. Close-shot of the spider, as scenes 9, 12. The spider feels the movement of the web, caused by the fly's struggles, and hurries over to investigate.

Scene 15. Close shot of the fly, struggling in the web, as scene 13. The spider enters and dispatches the fly, and wraps it with web. Stop the camera after the spider leaves (if it does) to wait until the fly quiets down. Be ready for the spider's return, when you must photograph (from the same set-up) the spider cutting away the various strands, and carrying its victim away. (This should be the end, but if you want to

be particularly gory, you can try to get some shots of the spider eating the fly.)

THE END.

J. OLIVER TUCKER.

Burlingame, California.

Something Always Happens

This picture can be made in the normal manner, or with the Lubitsch technique of "I'd Be Delighted To," using only close-ups of feet and legs, hands and arms, etc. As written here, the script is for the latter treatment.

Scene 1. Close shot of a telegram being opened.

INSERT: Telegraph-blank bearing message:

Mrs. Geo. Smith,
234 Blank Ave.,
Blank City.

Moving again stop need your
help stop leave george for a few
days stop give us a hand stop
love
Sister Sue.

Scene 2. Close shot of hands (feminine) packing a suitcase.

Scene 3. Close shot, bottom of front-door. Door opens, and a pair of trimly-shod feminine feet pass through; this should be a knee-length shot, showing the suitcase held in the hand.

Scene 4. Close shot. The same feet approach a taxi parked at the curb; they stop, while the suitcase is given to the driver. The feet then enter the cab, and the door closes behind them. The cab then starts off, while the camera pans around following it to a long-shot as it disappears down the street. Fade out.

Scene 5. Fade in: Close-up of feminine feet (the same ones) climbing the step of a Pullman.

Scene 6. Close-up of the wheels of a locomotive. The wheels start to revolve and move out of the picture; the tender, and the wheels of a couple of coaches pass. Fade out.

Scene 7. Fade in: Close-up of clock, indicating 6:45.

Scene 8. Close shot of front door, from inside. The door opens, and a pair of masculine feet walk in. The door closes.

Scene 9. Close-up of hat-rack: a man's hand reaches into the picture and hangs up a man's hat.

Scene 10. Close-up of note, pinned to a pillow. A man's hand reaches in and picks up the note.

INSERT: Note, written in feminine hand:

(Continued on Page 44)

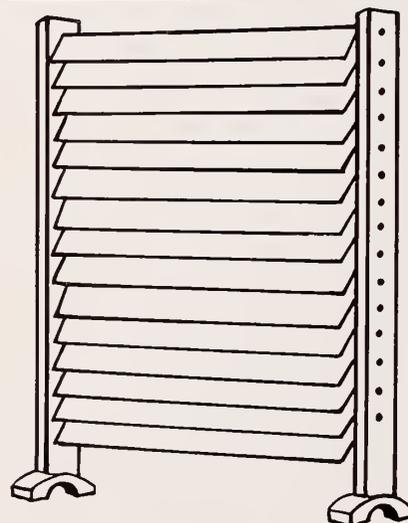
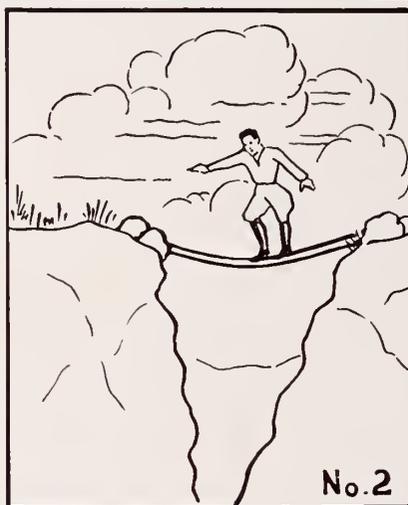
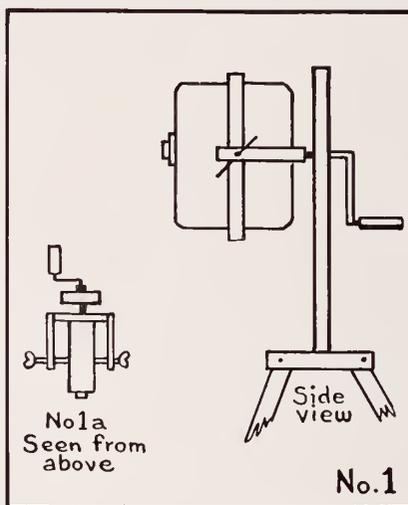
OPTICAL PRINTER "WHIRLS" MADE WITH ANY CAMERA

One of the most bewildering effects seen in professional pictures is the "whirl," in which everything seems to be spinning around. These effects are usually made in the Optical Printer, and are used for a variety of effects, from comedy effects of dizziness to 'arty' transitions and backgrounds for optical montage sequences. At first sight, they seem too difficult to be attempted by the non-professional filmer—but with the aid of a simple attachment which can be made by anyone who is handy with tools, such effects can be made with any type of 8 or 16mm home-movie camera.

Sketch No. 1 and 1-a explain the whole trick: a simple revolving cradle or vise holds the camera in any position, and permits it to be spun at any speed. The actual construction of the gadget may of course be varied to adapt it to any type of camera: it is essential that the lens and the axis of rotation be well aligned. The camera must, of course, be firmly fastened, so that it will not move out of place during the shot. Since most cameras have a catch on their release-trigger, to keep the camera going without the necessity of keeping one's finger constantly on the trigger, it is easy to make these shots, merely starting the camera, and at the appropriate moment, turning the crank that will revolve the assembly. If, however, you have one of the few cameras not equipped with such a catch, or if you have had the catch removed, you can hold the trigger down with a strip of adhesive tape.

Now for a few ideas on how to use the gadget!

Imagine a sequence showing a couple of kids boxing in the backyard: one lands a steamy haymaker on his opponent, making him reel dizzily. Can you visualize the reaction if, on the screen, you showed the apparent view of the dizzy boxer, with the whole world—including his opponent—spinning dizzily around? Well, make your sequence this way: a routine succession of shots showing the two boys boxing. Finally show "Carnera, Jr." starting his big punch. Then a short flash of the glove rushing right into the lens—the gadget helps here, for you can turn the camera upside-down, and shoot the scene backwards, that is, have the boy place his glove right on the lens, and then draw it back, while you shoot at a speed of 12, or even 8 frames per second, to speed the action. Then a normal close-up of the glove landing on the boy's jaw. (If your fighter doesn't know how to 'pull' his punch, you can shoot this in reverse, and slightly under-speed, too.) Then a big, normal close-up of the face of the boy who did the hitting: midway through this scene, start to revolve the camera, and cut to a longer shot—still spinning



—which shows the boy and more of the background. Then a normal close-up of the second boy slightly dizzy, and registering astonishment. On the screen the effect is that the first boy landed a regular haymaker, and made the other chap so dizzy that the whole world spun

around. Some wallop!

Or—suppose you are an aviation enthusiast. Did you ever try to describe the sensations of a tailspin to non-fliers? Why not show it on the screen. Get a shot of a plane in the air starting a spin. Then take a vertical still of the ground—say of a familiar town or airport, and mount it in your title-board. Get a still taken from a plane, giving the view you would normally see from the cockpit; cut out the background, and mount the still on the front of your gadget, so that it will frame the still on the board. Then start your scene, spin your camera for a few turns, straighten out, and cut to the shot of the spinning plane levelling off—and you've shown your spin-sensations very easily and effectively!

Your gadget can also be used for trick transitions, ending one scene in a spin, and beginning the following one the same way, then cutting the two together at the top of the spin.—Arthur Campbell.

Walking the Plank

Both professional and amateur producers every now and then are confronted with a "thrill" shot where the hero (or heroine) is supposed to escape the villain by crossing a gorge, or going from one building to another on a tight-rope—but the actor doesn't qualify as a tight-rope performer. But don't be embarrassed—the camera can carry off the situation perfectly. If your hero can't walk a tight-rope, he can surely navigate a nice, broad plank. So set up your plank, and camouflage it with a rope tacked to its nearer edge. Frame the picture so that only the actual thickness of the edge of the plank shows—and if this is camouflaged by a rope, the shot on the screen will show your hero walking the rope! He must, of course, go through the motions of a tight-rope walker; and as the plank will bend and sway as his weight passes over it, the effect will be perfect. To gain the effect of height, shoot upward from a very low angle, putting the plank at a corresponding angle, so that only the edge shows. It is usually a good idea to hide the ends of the plank with a small pile of stones, or something of the sort. Properly done, it's a swell trick!

—Arthur Campbell.

Something New in Screens

Our French contemporary, "Cine Amateur," of Paris, recently published an interesting description of a new type projection-screen for amateur and professional use. This screen is composed of strips of cellulose-acetate, arranged in the form of a Venetian blind, or shutter. A simple pull-string arrangement allows the user to vary the angle of the strips. It is claimed that these screens give very surprising results, and that by experimenting one can place the strips at such an angle that projection of exceptional brilliancy can be had even in daylight.



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A few of the Special's many unique features, not to mention those pictured at the right, are: set of masks—circle and oval, vertical and horizontal; double lens turret for two of six interchangeable lenses; camera speeds from 8 to 64 frames a second.

The basic Ciné-Kodak Special model, with Kodak Anastigmat f.1.9 lens, 100-foot film chamber, and set of six masks, is priced at \$375. Estimates for adaptations to scientific or technical work made upon request. Ask your dealer for the free Ciné-Kodak Special Book.

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WHEELS OF INDUSTRY

Dealers "Value Book"

• Something that has been talked about in the photographic industry for years as being essential to good business practice, is a basic value on all second hand articles along the same line as used by the automotive industry in their "blue book."

A book of this nature has finally been compiled by the Wilshire Publishing Company of Los Angeles.

Earl T. Boaden, long associated with photographic enterprises, is responsible for the book. Listed among his contributors are E. M. St. Claire, of Agfa-Ansco Corp.; Jos. Farnan, of Ampro Corp.; F. R. Abbott, Bausch & Lomb Optical Co.; E. A. Carlson, Bell & Howell Co.; T. R. Craig, Craig Movie Supply Co.; Jack Van Holt, Eastman Kodak Co.; James S. Yuille, Eastman Kodak Stores; E. M. Helff, G. Gennert; C. H. Ralke, Victor Animatograph Corp.; G. Sauppe, E. Leitz, Inc.; H. M. Lende, Spencer Lens Co., and R. M. Lynn, Willoughbys.

It is said the volume will contain approximately 250 pages, and will contain in addition to the "trade-in-values" many formulas and helpful hints.

Sound on Film Library

• According to an announcement from J. Navilio of Brooklyn, N. Y., that company has added to their library of films a number which have sound on the film itself.

With the growing popularity of the sound on film projector, it is believed many will turn over to this type of projector as in most instances they will show the silent film and of course the library subjects now being offered with sound will help to diversify the program.

Bi-Post Lamp Now Made in 2000-Watt Size

• The Incandescent Lamp Department of the General Electric Company, Nela Park, Cleveland, Ohio, announces the adaptation of the bi-post base construction to the 2000-watt, 115-volt G-48 bulb lamp.

The application of the bi-post design principle to this popular motion picture studio and spotlight lamp insures a more rugged lamp and one in which the relative position of the base and light source is determined entirely by the limits of metal working accuracy.

Its maximum overall length, from shoulder of prong to center of filament, is 5 inches, and it has a life of 200 hours.

Harrison Multi-Filter

• According to Harrison and Harrison, that company has originated what they term their Multi-Filter. This filter contains from three to four filters on one piece of glass. Each filter, however, is definitely marked. The yellow filters for instance contained on one glass are the K-1, K-2, K-3 and G Filters. The separation of each of the filters is plainly marked.

One glass also gives the complete line of red filters. By means of these filters the photographer has practically all of the popular type of filters on two pieces of glass.

Berndt Galvanometer

• Eric C. Berndt of New York City announces a Recording Galvanometer. This is described as being complete with optical system and exciter lamp ready to install in 16mm or 35mm camera or recorder.

This meter requires a 6 volt battery. Its overall dimensions are 5 inches long by 3 inches wide and 3 inches high.

"The Ten Contax Lenses"

• Carl Zeiss, Inc., have recently published an interesting brochure, "The Ten Contax Lenses," describing the wide range of Zeiss "Tessar," "Sonnar" and "Biotar" lenses for the Contax Camera. Even for non-users of this popular miniature camera, the booklet is of interest, for the author, Dr. K. Wolter, of the Carl Zeiss optical laboratories, has included an excellent discussion of the practical phases of photographic optics, treating the action of lenses, focal length, angle of view, perspective, brightness of image, speed, definition, resolving-power, air-bubbles, depth of focus, etc. A description of the various Zeiss universal, speed, telephoto and wide-angle lenses for the Contax follows. The book also includes a description of some of the very useful accessories developed for use with the Contax: multiple, tele, wide-angle and sports finders, supplementary lenses, a special holder for mounting spectacle lenses over the finder-eye-pieces, a very practical collapsible sunshade, reproduction apparatus, etc. "The Ten Contax Lenses" may be obtained gratis from Carl Zeiss, Inc., 485 Fifth Ave., New York, and 728 So. Hill St., Los Angeles.

Ilford Booklet on Night Photography

• Users of plate-cameras will be interested in a new booklet issued by Ilford, Ltd., Ilford, London, England, entitled "Night Photography with Ilford Hyper-sensitive Panchromatic Plates." It gives a valuable discussion of night photography with these new plates, which appear to be a distinct advancement in super-speed emulsions. It is hoped that the same emulsion may be made available for miniature-camera use.

"The Cinematographer's Book of Tables"

• "The Cinematographer's Book of Tables," has just been issued by Fred Westerberg, of Hollywood. It is a pocket-size handbook, containing, in tabular form, information often vitally needed by all cinematographers, professional and amateur alike, in their work.

Among the more important topics treated are the types of lamps used, their wattage, life, base-type, etc.; angles of view and size of field of 16mm and 35mm camera-lenses; an outline of make-up for different types; transmission-graphs of the more important filters; filter-factors, with an f-value compensating chart; dynamic symmetry; timeshutter values; f-shutter values; time-footage tables for 16mm and 35mm film; depth of field for various lenses at all stops; supplementary lens details for 16mm cameras; sensitometry; projection tables for 35mm, 16mm and 8mm; film and aperture specifications for 35mm and 16mm; 16mm camera identification-marks; developer formulae; and tables of metric and U. S. weights and measures, with conversion tables.

Mr. Westerberg has produced a truly valuable reference work, which should be in the hands of every cinematographer. He is to be congratulated upon his painstakingly thorough treatment in assembling so much vital information in so small a volume.

Aluminum Film

• According to published announcement in the *Filmtechnik* of Germany an aluminum film, standard size, is being developed. Projection is said to be obtained through reflection of the image instead of the normal transparency method. The main objection, according to experts, is the loss of light through reflection.



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Just give us the story scene by scene; don't try to write a full scenario; make it simple and do not forget a few close-ups.

Send as many plots as you wish, only write each one on a separate piece of paper. Be sure to have your name and address on the same sheet of paper and please write on one side of paper only.

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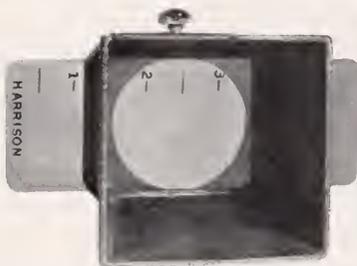
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- All red filters are on the same glass, similarly marked for the different densities.

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SHOOTING DESERT PATROL

(Continued from Page 36)

palm trees to get a good look. Hanging precariously to the trunk of the trees, they swayed in rhythm to the music and beamed with delight. In moments like these a telephoto lens is indispensable to grab off a close-up. If you make a point of glancing around as you film a scene, many a great shot can thus be added to your bag.

Sahariani ride dromedaries for miles and miles, yet in headquarters they must drill like ordinary soldiers on foot. Drill parade gives another opportunity to work in local atmosphere with a background of mud plastered fortress, a minaret, and sentry tower projecting their heads skyward. General views give an opportunity for a mass shot, always effective with troops, and the usual close-up of the commanding officer furnishes variety. A low shot looking up at the commanding officer presents him in a more impressive aspect and increases the significance of the scene. Another low shot as the men march over the camera gives your sequence personality.

With the introduction, work and play of the story tucked away in cans, the more unique phases of the life of the Sahariani need covering. Military police preserve order in crowded cities, the coast artillerymen maintain the security of the coast line while the Sahariani patrol the desert as they face its hardships. Nothing typifies the terror of the desert like a sandstorm which incidentally provides plenty of action to give a punch to your film.

When spring has made its entry into northern climes and trees bud, the desert feels its influence in the hot winds which

blow up from the south. To obtain a good sandstorm requires some perseverance and luck. If your stay in the desert is timed around the "Sirocco" period, then it is easy. Rolling, ever shifting dunes are the logical background for this sequence. Sahariani and dromedaries struggling up the shifting sand dunes against the merciless wind as they patrol the trackless desert, and make camp amid a blinding storm leave a convincing impression. A close-up of a dromedary climbing a steep hill by using his front knees and rear feet as supports for his high awkward body shows how this beast adapts himself to the treacherous desert. To cinch the effect of realism, one shot of shifting sand as the wind whips over the crest of a dune completes the story.

The first day of these sand storms is by far the best for photographing since enough wind and sand are blowing to give your scene plenty of action and at the same time depth. Later on in the storm the air becomes so filled with sand, and the light of the sun is obscured so that your scene cannot show any distance or detail. Of course sand storms can be faked by the use of aeroplane propellers if you are fortunate enough to find them in the heart of the desert, but such scenes cannot have much depth and still look realistic.

Mass action of troops provides the camera operator with abundant opportunity to create spectacular scenes, but choice of location is all essential. If the terrain is flat and your camera is low, then as the mass moves towards the camera the first few men block out those behind them and the effect is lost. One of two alternatives are at your disposal—either find a high position for your camera to look down on the mass or else plant your toops on a hill sloping towards the camera. Most scenes of this nature are heightened by fast action moving towards the camera. A very low shot as the mass moves close up and over the camera adds to the effect.

If the opportunity presents itself, side angles, follow shots and rear views of the troops moving are valuable. Here again is an opportunity to create an effect by the employment of panchromatic and filters. Desert sand and blue skies melt as one on ordinary film, but when filtered to secure a black sky, the effect leaves a lasting impression on your audience—particularly when the subject against the sky is white. The special DuPont Infra-D film is particularly valuable for creating such effects. Even in brilliant desert light, when an A filter is used with this film the lens opening must be f:2.5 for full exposure and an ink black sky.

Sahariani are Mohammedans and consistently adhere to the teachings of their

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religion. Noon day prayer by the troops provides subject matter of pictorial beauty and extreme interest. The treatment of these scenes mainly requires the application of the general rule of atmospheric background of palms and desert while the Sahariani in earnest devotion provides the opportunity for close-ups. Shadows of palms on the ground add to the effect if your camera location is carefully chosen.

Don't forget that you can even make a close-up of a close-up and try to follow the general rule of always making a close-up immediately after you complete your general view.

PROFESSIONAL LOOKS AT 8 MM

(Continued from Page 33)

aid of a small dental mirror. Mount your camera firmly—say on a tripod—and check carefully the area taken in by the lens. Then place the door on the camera, hold the finder (in its mount) beside the door, and adjust it so that it includes the same area as shown by the lens. Fasten the finder-mount firmly to the door with a clamp, and mark the position of the mount. Take the finder from the mount, drill and tap two screw-holes through mount and door, and fasten the mount to the camera. The finder can be removed from the mount at any time, and when remounted, and held in place by the registering-screw, it will be absolutely accurate except at very close range, when the separation between finder and lens will throw the finder laterally off to a slight extent.

The chief fault in most of the pictures 8mm novices have shown me is the unsteadiness of the camera caused by the operator. Mechanically speaking, 8mm cameras are satisfactorily steady; but no camera in the world can make steady pictures if it is not held on a firm support. With too many 8mm users (and 16mm users, too), the interest seems to be on WHAT they are photographing, instead of HOW they are photographing it. The camera is either shaking, continually panning, or moving up and down. Panning is not objectionable if you have a moving person or object to be followed; but it should be done only when there is a logical reason for it. In following horses on a race track, for instance, the camera has to be moved rapidly, yet makes a pleasing picture, for the horses, which are the center of interest, draw the attention from the objectionable feature introduced by the rapid movement of the camera. But—make the same shot WITHOUT the horses! The camera is moving the same way, at the same speed, and covering the same area—but without the horses, which furnish a logical reason for the movement, the picture is bad, and strains the eyes of the audience. 8mm cameras are so light, and so

As the end of your story draws to a close after a careful coverage of all the important and outstanding features of the daily life of the Sahariani, there must be a fitting end to your film. Days of working with these carefree devoted soldiers of Italy leave you with nothing but admiration for their courage and faithfulness. Scenes that glorify your subject must be made to complete the story. The most beautiful pictorial scenes that you can find will serve this purpose. Heavy filtered scenes of the Sahariani on patrol amid the desert wastes are the answer—with a sunset silhouette shot thrown in for good measure.

well-balanced that they can be held absolutely rigid, without a tripod or other rest, if the operator keeps his mind on how he is photographing. If they are not held steady, the small size of the frame, and the relatively huge magnification in projection, will magnify any unsteadiness.

If you want to make a moving shot, take a leaf from the professional's book: plan it out so you will know beforehand just where and when the camera will start to move, and where it will stop. Then pick out the spots in the scene where the people come to a standstill, so that you can make close-ups to be cut into these shots. The result will be a very smooth running picture. In all other shots, get back far enough to allow your subjects ample room for normal movement, so you won't have to swing the camera to keep them in the picture. And—don't forget to make plenty of close-ups.

Still File For Amateur Movies

Often when talking to your friends about the beautiful little film you have just made, you are handicapped by having no projector handy to bear out your statements. Several of the more progressive cinephotographers have adopted the still-file system, so that they can have illustrative stills available at any time.

It should be very easy to make a series of snapshots while you are shooting your picture, duplicating all the important scenes and climaxes. If you haven't the time to make them yourself, you can nearly always trust it to some member of your filming-group—in fact, it is really better to have somebody else act as still man, so that you can concentrate on the cine-camerawork. Once the stills are made, it is easy to make a file or album of them, giving a very complete record of what the film is about, and how you treated it.

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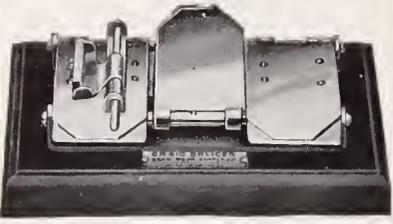
BACKYARD MOVIES

(Continued from Page 37)



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Darling George:

Have gone to Sue's for a few days to help move. Just know you won't mind. Be a good boy. Jane.

Scene 11. Close shot of hands, holding note. The note is thrown wildly into the air.

Scene 12. Close shot of George's feet—they start to dance.

TITLE: "WHOOOPS! WHAT A BREAK! WHAT TO DO?"

Scene 13. Close-up of George's trouser pocket: his hand comes out with money. He counts it.

Scene 14. Close-up of telephone. George's hand dials a number. Fade out.

Scene 15. Fade in. Close shot; George removes his trousers. As he steps out of them, he gives them a kick, so that they land in a heap.

Scene 16. Close shot: George's hand turns on the water in the bath-tub. Fade out.

Scene 17. Fade in: Close shot of ice-box door; George's hand opens it and brings out a bottle.

Scene 18. Close-up of George's hands pouring a drink.

Scene 19. Close-up of the glass, empty. Fade out.

Scene 20. Fade in: Medium long-shot of bath-tub, with water running out onto the floor.

Scene 21. Close shot of George's hands mopping up the spilled bath-water. Fade out.

Scene 22. Fade in: Close-up of clock: it says 9:00.

Scene 23. Close-up of feet entering bath-tub.

Scene 24. Close shot of George, pulling on neatly pressed trousers.

Scene 25. Close-up of bureau-drawer. George's hands open the drawer, and remove a clean shirt, socks, etc.

Scene 26. Close-up of George's foot. He pulls on a sock, revealing a large hole.

Scene 27. Close-up of drawer, but showing more of the interior. George's hand hunts for another pair of socks—but there are none.

Scene 28. Close-up, removing sock. He fingers the hole.

Scene 29. Close-up of a darning-needle. George is trying to thread it, very clumsily, and without success. Fade out.

Scene 30. Fade in. Close-up of clock: it reads 10:00. Fade out slowly.

Scene 31. Fade in slowly: Close-up of clock: it now says 11:00.

Scene 32. Close-up of George's hands, still struggling with the needle and thread. At last he gets the needle threaded.

Scene 33. Medium shot of George's lap, from over his shoulder: he lays the

sock on his lap, and starts to darn it. Fade out.

Scene 34. Fade in: Close-up of clock: it reads 1:00.

Scene 35. Same as Scene 33. George finishes darning his sock, and tries to pick it up. It is sewed to the trouser-leg!

Scene 36. Close-up of a pair of scissors. George's hand comes down and grabs them.

Scene 37. Same as scenes 33 and 35. George's hand brings the scissors in, and cuts the sock loose: in doing so, he also cuts a large hole in the trouser-leg.

Scene 38. Close shot in a corner of the room: the trousers come flying into the picture, landing in a crumpled heap on the floor.

Scene 39. George's hand holds up the trousers he originally discarded. Pan down the pants, to show them badly wrinkled.

Scene 40. Close-up of ironing-board. George places the trousers on the board, and smooths them out, preparatory to pressing them.

Scene 41. George's hand sets an electric iron on the trousers. Pan, following the hand while it plugs in the iron. Fade out.

Scene 42. Fade in: Close shot of ice-box door. George opens it and mixes another drink. Fade out.

Scene 43. Fade in: Close shot of iron: it is smoking merrily.

Scene 44. Close shot of George's feet, standing beside ice-box. A half-empty glass drops to the floor, breaking, as the feet hurry out of the picture.

Scene 45. Close-up of the iron, still smoking. George's hand comes in and jerks it off the trousers.

Scene 46. Close-up of smoking hole in trousers.

Scene 47. Medium shot of hand holding up the trousers. Back-light this, so that the hole will show plainly. The hand drops the trousers disgustedly.

Scene 48. Close shot of ice-box. George's feet enter, slowly. The door opens. Fade out slowly.

Scene 50. Fade in slowly: Close-up of alarm-clock on bedside stand, ringing. It points to 8:00. Dissolve to:

Scene 51. Large pile of bottles. Dissolve to:

Scene 52. Long shot of George, asleep, lying on the floor by the bed. His head is pillowed on a pair of shoes, and he has an empty bottle in his hand. If you can, light this with daylight coming through a window, and falling on George. Fade out slowly.

THE END.
MRS. K. G. STEPHENS.
San Francisco, California.

Flying the "Rolleiflex"

(Continued from Page 30)

they slower, but they bring the ground, relatively speaking, so much closer to the lens that you have to increase your shutter-speed too much to avoid blurring from the apparently increased motion.

If you can fix a lens-hood or sunshade on your camera, and have it so firmly mounted that there is no danger of its being blown off by the slipstream, this will be a very great advantage. For the same reason, filters should—wherever possible—be fitted *INSIDE* the camera, behind the lens. Incidentally, this is always the safest place for filters.

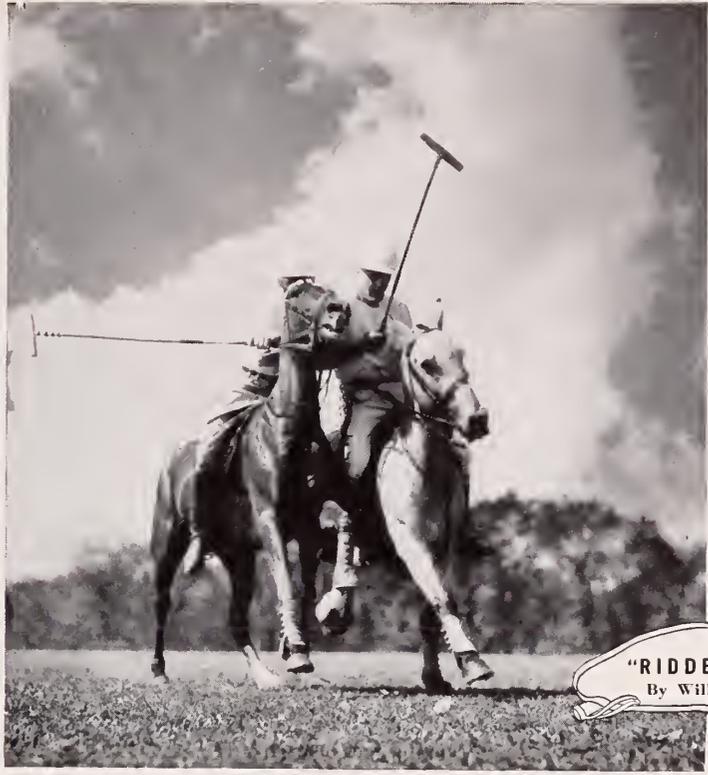
For all-around use in aerial photography, with SuperSensitive film, I think that the 23-A filter is probably the best. It is a fine haze-cutter, and gives a very nice correction besides. It will darken the sky enough to make clouds stand out quite well, adds contrast to the picture, yet does not increase the exposure too much. For some types of horizontal cloud-effect shots, or pictures of nearby planes, the "C" and "X-2" filters are also useful; while for the most spectacular cloud-effects, if you have a fast enough lens, some of the heavier red filters are excellent. However, the best policy is to pin your faith on one filter, and use it as standard equipment; and I have found the 23-A to be the best all-around filter for this purpose.

Filter-factors should be allowed for exactly as though you were on the ground.

Once in a while, you will find yourself flying under a thin screen of high clouds, which diffuse the sunlight, which will naturally call for some increase in exposure. However, if you are using filters which—like some of the heavier red ones—pass any appreciable proportion of the infra-red light, and film in any degree sensitive to this, you will be surprised at the way these clouds pass the invisible infra-red, while diffusing the visible light.

In most aerial photography, you will usually have to take the lighting chance offers. Whenever you can pick and choose, however, a cross-light is the best, as it gives more relief. On some cloud formations, a backlight is effective, but front-light is to be avoided, as it flattens everything out. Planes silhouetted against a large expanse of white clouds are very good subjects, while silver colored metal planes, such as the Ford, Boeing and Douglas airliners, are very striking if shown against a dark, heavily-filtered sky.

If you shoot planes in the air, nearby, remember that, although they seem to be moving slowly, they are actually traveling at better than a hundred miles per hour—so be sure that you shoot from an angle which will minimize the movement across your picture. Also, remember that you'll have to speed up your shutter to "stop" the movement. In a word, shoot such subjects exactly as you



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would any similar speed subject on the ground, allowing, of course, for the fact that you, too, are moving.

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• The XXIXth Annual International Salon of Photography will be held by the Societe Francaise de Photographie et de Cinematographie, in Paris, France, Oct. 6-21, 1934. The closing date for entries will be May 31, 1934. All pictorialists are invited to submit prints, which may be by any process. Entrants are limited to four prints each, and each print must bear, on the back, the name and address of the exhibitor; number and title of print, corresponding with entry-form; and the process. On the front of the print,

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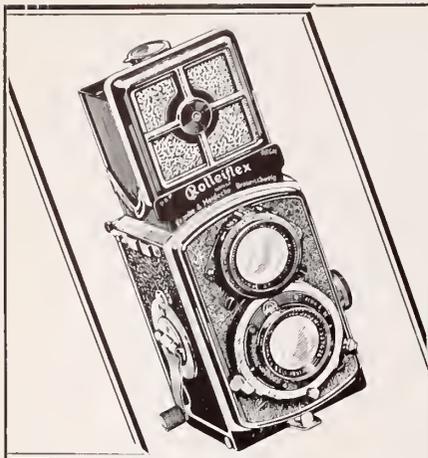
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The Birthday Party

(Continued from Page 32)

and then takes one of the parcels, which she hides behind her.

Scene 28. Long-shot of party. Daddy enters. All the children stop eating, and look up at him. Betty jumps up and kisses him. He gives her the parcel he carries.

Scene 29. Close-up of Daddy, smiling broadly. He speaks:

TITLE: "Here's your present, Betty."

Scene 30. Close-shot of Betty, with the big parcel in her hands. She sits down, and starts to unwrap it.

Scene 31. Series of short flashes—close-ups (big heads) of the children, expectantly watching. (Shoot these from a variety of angles).

Scene 32. Betty unwraps the parcel—and takes another out of it.

Scene 33. Close-up of Daddy, smiling. He winks. Pan over to a close-up of Mother, smiling.

Scene 34. Close shot of wrappings, string, and boxes on the ground beside Betty. There is quite a pile, including a number of boxes, successively smaller.

Scene 35. Close shot of Betty—still unwrapping. The parcel is quite small now, and she is getting impatient and worried.

Scene 36. Medium-shot of Betty. The parcel is very small now, and she is about worn out.

Scene 37. Panoramic shot (close-ups) of the children. They are disappointed too.

Scene 38. Medium-shot of Betty. She finally opens the last box—and finds in it a very tiny doll.

Scene 39. Close-up of Betty—about ready to cry because of her disappointment.

Scene 40. Long-shot of the children, laughing.

Scene 41. Medium long-shot of Betty. Mother approaches, and suddenly brings out the other big parcel, giving it to Betty.

TITLE: "Don't cry—here's Daddy's REAL present!"

Scene 42. Medium-shot. Betty starts to open the box.

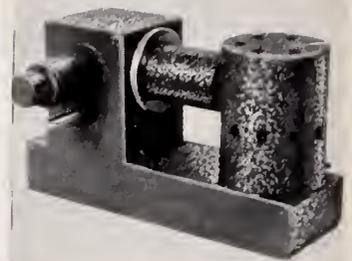
Scene 43. Close-up of Daddy, smiling.

Scene 44. Medium long-shot of Betty, surrounded by the group of children. She takes a big, beautiful doll out of the box.

Scene 45. Close-up of Betty and the doll.

Scene 46. Medium-shot. Betty runs over and hugs Daddy.

Scene 47. Medium-shot of Betty, holding the doll. The children have joined hands and are dancing around her in a



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ring. Mother and Daddy are in the background, beaming down at the children.

FADE OUT
The End

If it is a little boy's birthday it might be more appropriate to make the opening different. An opening that would be a bit original would be to start with a close-up of a spoon in a bowl mixing dough. We assume this is the cake dough. Next you see this dough in the cake pans being inserted in the oven then you cut to a close-up of the finished cake and see the candles being placed in it.

If you have a camera that winds backward, this would be a fine chance for lap-dissolves.

Or if you wish you can also use it as a background and then superimpose your main title over it.

Cinetricks Motion Control
(Continued from Page 35)

for one of two reasons. First, we wish to observe at a slower pace the action which a human, an animal, or a machine goes through its motions. This is sometimes necessary to make it possible for our slow-witted eyes to grasp the motion involved. Second, we wish to minimize the blurring caused by the photographing of a fast moving object with a slow shutter as well as to make more smoothly graceful the gyrations of a dancer by slightly slowing the screened action.

Quick motion, the photographing at slower than normal film speed of a given action, is used for comedy effects and to make pictures under light conditions which are too poor to allow of sufficient exposure at normal film speed.

In next month's article, we will take up tirk work which involves the use of reversed travel of film through the camera, and the common methods by which the effects so obtained with professional equipment may be obtained simply with amateur equipment.

"Amateur Talking Pictures And Recording

By **BERNARD BROWN, B.Sc. (Eng.)**
Pitman Publishing Co., N. Y. and London.

Here is a book to please the many amateur cinematographers who have yearned to experiment with talking pictures. Not only does it give a very sound review of the theory of sound-recording and the general principles used in professional film and disc sound-recording, but it supplies, too, some very practical information as to actual equipment and methods for amateur recording—synchronous and otherwise—by the disc method. He likewise makes some mention of the possibilities of amateur sound-on-film recording with both 16mm and 9.5mm film.

Being published in England, where the photograph is taken much more seriously than here, the book is a remarkable directory of British-made apparatus for



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home-recording; some of the equipment described and illustrated seems excellent, and should interest many individuals who, while not particularly interested in making their own talkies, are none the less interested in the possibilities of making their own gramophone discs. There is also a description of a British 16mm sound-on-film system—the British Thompson-Huston Company's product, which is different from American apparatus in that it uses standard 16mm film (with the same perforation as for silent pictures) and a reduced picture-area.

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• The magazine "Camera" of Switzerland reports a new Leica attachment which permits the making of 250 exposures in a single loading. This was reported on exhibition at the Photographic Exposition in Berlin.



PHOTOELECTRIC METERS AND COLOR. How does the color-sensitivity of the photo-cell exposure-meter correspond with that of the film? Should I make any allowance for this in using such meters?
—B.E.M., Hartford, Conn.

The color-sensitivity of most photo-electric or photocell exposure-meters now available (including the Skinner, Weston, Electrophot, etc.) is very similar to that of the human eye. The maximum sensitivity is in the yellow region. Modern Panchromatic film, especially SuperPan, has a very similar sensitivity, differing slightly, of course, with each make of film: there is a slight variation between the film's color-sensitivity, and that of the eye, but this is not great enough to make an error greater than the latitude of film and processing can take care of.

Orthochromatic and Semi-chromatic films, on the other hand, have a marked preference for blue, which must be allowed for early in the morning and late in the afternoon, when the light becomes strongly yellowish. In the middle of the day, the reading of the meter will be quite satisfactorily accurate if due allowance is made for the slower overall speed of these emulsions, as indicated by the directions for using the meter. Early in the morning and late in the afternoon, however, it is wise to compensate for the yellowness of the light by opening the lens one full stop more than the meter-reading.

—Clyde de Vinna, A.S.C.

REFLECTORS. I am a member of a newly organized Movie Club, just getting ready to start its first production. We are using a Bell & Howell camera, and I'd like to get a few pointers on exterior work. How are reflectors used for general scenes of from two to five subjects? What are the best positions in back-lighting a subject? How many reflectors are necessary for general scenes?—J.R.F., San Diego, Cal.

Your questions are answered more thoroughly than is possible in the limited space here available, in an article in last month's issue of THE AMERICAN CINEMATOGRAPHER, "The A-B-C of Outdoor Lighting," by Arthur Campbell. This

HERE'S HOW

by A.S.C. Members

article will give you a clear understanding of the basic principles of controlled exterior lighting—especially the use of reflectors—and we urge that you study it and the diagrams which illustrate it. Though these diagrams are of extremely simple set-ups, with but one subject shown, the principle may be expanded to meet any need.

For general use, the best lighting is a "cross-lighting," with the direct light striking your subjects from the side, and the reflected light from the reflectors lightening (but not completely eliminating) the shadows on the opposite side. This lighting can be further improved by placing other reflectors somewhat behind the subjects, throwing their light on the subjects' backs, giving a supplementary back-light. This, as Mr. Campbell points out, is very nearly an ideal lighting for average exterior scenes. Such a set-up is shown in Fig. 2 of Mr. Campbell's article.

In a true back-lighting, the sunlight should strike the subject from behind, and reflectors should be placed in front, just outside the camera-lines, to illuminate the front of the subject. One of these reflectors should be closer to the subject than the other, to avoid flatness. In making back-lit shots, the camera should be equipped with a good, deep lens-hood or sunshade, and care should be taken to see that the direct rays of the sun do not strike the glass elements of the lens (or the glass of any filters you may be using), as this would cause "flares," or reflections on the film from these surfaces. A sunshade is always a great benefit in any sort of camerawork; no professional will work without one.

The number of reflectors needed must depend on a number of things: how many people you are using, how they are grouped, how large a field you are photographing, and sometimes the size of the reflectors. As a rule, when you are photographing only one or two people, you can get by with but two or three reflectors for simple set-ups: when you are photographing more people, you will need more reflectors, in order to light each individual properly. As a general rule, count on at least two reflectors per person, and more than this if any of the players will have to move around in the scene, for in such a case you will have to fix reflectors to light them properly in each position they will occupy. In your own case, if you have a scene in which two or three principal players appear, with a greater number of supporting or extra people (as is so often the

case in club productions), it is wiser to concentrate only on the principals, with perhaps a couple of reflectors to lighten the shadow-sides of the extras. In this way, your principals, being better lit, will stand out from the crowd—and save you time and trouble in lining up your shot. —Dwight W. Warren, A.S.C.

REVERSING YOUR OWN. Is it possible to purchase a film that is fast enough to take pictures on the outside, and then develop this film and reverse it into a positive for projection? If so, can you tell me where I can find the necessary information for doing this, the formulae, equipment, etc.?

—C.P.R., Harvey, Illinois.

Of course, all of the reversal film available commercially—Eastman, Agfa, Pellex, etc.—is of this type, and the charge for the processing (which is done by experts) is included in the cost of the film. We do not recommend that the amateur try to do his own reversing, for while it is quite easy, he cannot give his film the same degree of individual control possible in a professional laboratory, and he will not, as a rule, get the most out of his shots. The "Cinematographic Annual" gives instructions for reversing, both using "flashing" (light) for reversion, and chemically reversing the image. The former requires the use of a solid opaque drum; the latter may be done with any type of equipment, including the Stinemann reels. Any type of film may be used: one may process one's own reversal stock, or use either negative or positive film for the purpose. DuPont, Gevaert, Selo, and other firms supply positive film (16mm) at very low prices, averaging \$1 per hundred feet. This may be used for exterior shots, and reversed by the individual with surprisingly satisfactory results. —Fred Gage, A.S.C.

BOOKS ON ANIMATED CARTOONS. I have been unable to obtain any information on animated cartoons and motion pictures similarly produced. If you have available a hand-book, or other similar data, that you may desire to place in the hands of individuals, information to that effect would be appreciated.—J.H., San Rafael, Cal.

There have been no such hand-books on animated cartoons published recently. However, several magazine articles, monographs, etc., have appeared: "Sound

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Cartoons and 16mm," by Walter Lantz, Producer of Universal's "Oswald" cartoons, appeared in THE AMERICAN CINEMATOGRAPHER for July, 1932, and a paper, "The Production of Animated Cartoons," by W. Garity, of the Walt Disney Studios, appeared in the "Journal of the Society of Motion Picture Engineers" for April, 1933. The one standard work on animated cartooning (silent) is "Animated Cartoons," by E. C. Lutz, published about twelve years ago by Scribner's. "The Cinema Handbook," by Austin C. Lescarboua, published by the Scientific American Publishing Co., New York, 1921, has a useful chapter on animated cartoons, dolls, technical drawings and "Mechanigraphs," for commercial and educational purposes.

—Wm. Stull, A.S.C.

8mm FILM IN 16mm CAMERAS.

I frequently have occasion to do extremely large-screen projection from 16mm. I have heard that 8mm film has the finest grain of any film on the market. Could I use it for making my 16mm films which are to be projected to extreme sizes?

—R.M.P., Chicago.

You are quite right in saying that 8mm film has the finest grain of any sub-standard emulsion now marketed. Theoretically, it would be ideal for your work. You overlook, however, the facts that the 8mm film, while of 16mm width, is specially perforated for the 8mm camera; and also the fact that, as the last stage in the mechanically operated reversal processing machines, the film is automatically split lengthwise, to give the two 8mm-wide strips which are joined together for projection. Therefore, it would hardly be possible to use 8mm film for your purpose: it would be almost impossible to have it processed without being split, and if this was done, the double perforation would give you continued projection-trouble in framing.

—Edward J. Snyder, A.S.C.

LENSES. "Which do you recommend as the best lens for all-around home-movie filming: the Universal-focus, f:3.5 or the faster, focusing types.—V.H.C., Dallas, Tex.

This must depend entirely upon the type of work you want to do. For people who make many interiors, or work frequently in a poor light, the faster lenses have undoubted advantages. For those who photograph subjects where extremely critical focus is necessary, or who have occasion to project their pictures on a large screen, the focusing-mount lenses are also valuable. But—especially after viewing thousands of feet of amateur film sent us for review—we must strongly recommend that everyone's

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FOR SALE—3¼x4¼ Korona Pictorial View camera case, 11ex Acme shutter, six cut-film holders. Box 241, c/o American Cinematographer. T

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REWARD \$100.00 for return of Bell & Howell Camera No. 910 with Fearless Silent Movement. No questions asked. Fearless Camera Co., 8572 Santa Monica Blvd., Hollywood, Calif.

equipment include a Universal-focus lens, even if it is to be used as an auxiliary to a faster, focusing objective. Stopped down to f:11 or smaller (as is always the case on normal exteriors) a 25mm fixed-focus lens as used in 16mm cameras will assure that everything from six feet on to infinity will be in virtually perfect focus; and the 12.5mm lenses used for 8mm pictures will, under the same conditions, keep everything from two feet forward sharp. Moreover, in designing any fast lens, some concessions must be made to obtain the added speed; accordingly, a slower lens—such as most Universal-focus lenses are—will generally give slightly better optical quality; though in the best designs, the difference is hardly perceptible except to the trained eye.

—Joseph Walker, A.S.C.

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THE HOUSE OF RUBY has since 1910 been the country's leading specialists in buying, selling and renting motion picture apparatus for every purpose. Always on hand, Bell & Howell, Mitchell and Akeley cameras, and accessories, including complete sound on film cameras. Our 16mm department includes everything. Keep us in touch with your wants. Ruby Camera Exchange, 729 7th Avenue, New York City. Cable "Ruby-cam." T

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FILMS WANTED: 16mm FILMS wanted of historical events, rare prints, movies taken many, many years ago, or in their infancy, of famous men, educational, etc. E. Sullivan, 3939 Flad Ave., St. Louis, Mo.

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WANTED to buy old issues of Photographs. State price and date of issue. Gregg Toland, c/o American Cinematographer. T

WANTED—Motor adapter. J. R. Lockwood, Glendale. Douglas 3361-W.

16mm Colored Sound Movies Experiments Shown

• Laboratory experiments which demonstrate the practicability of making and printing 16mm sound-on-film motion pictures in natural colors, were described before the Society of Motion Picture Engineers convening in Atlantic City, by research engineers of the RCA Victor Company of Camden.

It is believed that these experiments will open up a new and potentially broader field of usefulness for the convenient 16mm size sound-on-film industrial and educational motion pictures which have hitherto been restricted to black and white sound photography. With the new color methods, products which depend on rich coloring and design for their principal sales appeal will have new avenues

of merchandising and selling opened up for them. Color photography added to sound should also prove valuable in enhancing the "eye value" of other types of products and services. Its application to visual education will mark an important step forward in that field.

The sound recording experiments with color photography were conducted by the RCA Victor Company engineers with the Kodacolor film and color filter process. Actual recording tests showed that no distortion of a serious nature resulted from the peculiar base of the film which is specially embossed (longitudinally lenticulated) for color sensitivity. Further experiments by the Camden engineers established that color subjects made by the subtractive color process on standard 35mm film could be optically reduced to 16mm size and successfully printed on Kodacolor film stock.

Amateur Talkie Camera Here Soon

• The development of simplified apparatus which promises to make it possible for anyone to make personal sound motion pictures in the near future was described in a joint paper delivered before the Society of Motion Picture Engineers, by research engineers of the RCA Victor Company of Camden.

It was disclosed that since the advent of sound revolutionized the motion picture art, the Camden engineers have been working on the problem of developing a practicable amateur sound camera, which would be compact in size, and simple and economical to operate. According to the paper presented these efforts are expected to bear practicable fruit in the near future.

The sound camera was described as a "newsreel" type, incorporating the sound recording system in the single lightweight camera case. As the subject is photographed, the operator talks into a mouthpiece leading to a vibrating metal diaphragm. This diaphragm, which is set in motion by the speaking voice, is coupled mechanically to a tiny mirror which vibrates in unison with it. A light beam directed on the mirror is reflected with its fluctuations on the sensitized edge of the film as it passes through the camera. For recording the voice of the person or group being photographed, as well as for atmospheric sound effects, a separate microphone attachment together with electrical amplifying and recording equipment are provided for convenient mounting on a specially designed "unimount" tripod upon which the sound camera itself may also be set.

The paper emphasized that while experimental models of amateur sound cameras have been brought to an advanced stage of development in the laboratory, the final models would not be ready for public use for several months yet.

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This \$1,000 will be divided very simply. There will be a grand prize of \$250.00 for the best all around picture. There will be from 10 to 15 prizes in the various classifications of \$50.00 each. Even though you may not win the first prize you would have a chance at the \$50.00 given for the best picture presented in the following classifications. Scenic, Travel Educational, Scenario, Home Movies, Kodacolor, Technical and any other classifications which might be brought forth by the entries made.

If you intend to enter this contest please send coupon on this page so that we might send you official entry blank.

Please send me one of your official entry blanks. I intend to enter a (16mm. 8mm 9½mm) picture in your 1934 contest. . . I understand my entry must be in your office not later than October 31, 1934.

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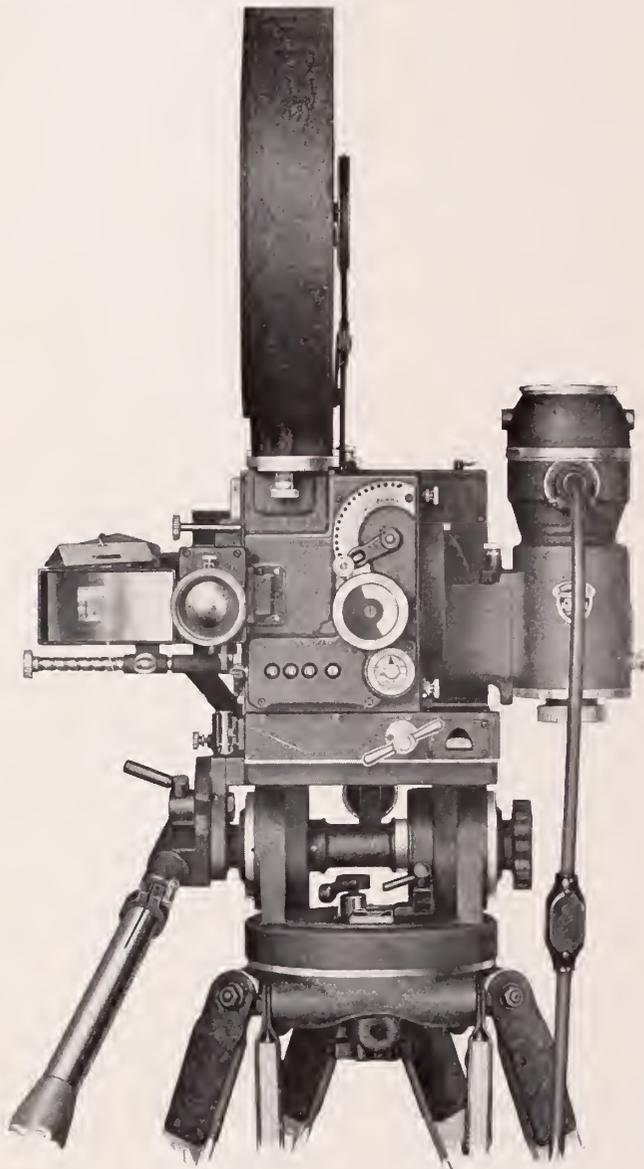
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The Motion Picture CAMERA Magazine

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Metal Set-Platform Construction
Making Industrial Movies
... and other Features

JUNE, 1934

price 25c

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by The
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Volume XV June, 1934 Number 2

What to Read

HOW Miniatures are Photographed by J. D. Jennings.....	60
INFRA-D As Used on the Ground by George J. Lancaster, A.S.C.....	61
INDUSTRIAL Movies Forge Ahead by Edwin L. Dyer, A.S.C.....	62
STANDARD Metal Construction for Set-Platforming by George J. Folsy, A.S.C.....	63
UPSETTING Traditions with Viva Villa by James Wong Howe, A.S.C.....	64
GETTING Good Sound is an Art by Harold Lewis, E.E.....	65
COMBINATION Filter Diffuser by Gaetano Gaudio, A.S.C.....	70

Next Month

- L. O. Huggins returns with an article on the "Language" of Color. A timely topic with so much discussion going on of the new Technicolor process which the R.K.O. Studios will employ on the color subjects to emanate from that organization.
- The European Viewpoint on 16mm. Sound will be discussed. We will give the angle of the German mind on this technical problem which is so popular today.
- Members of the American Society of Cinematographers will contribute from their rich experience in the studios on things technical and artistic.



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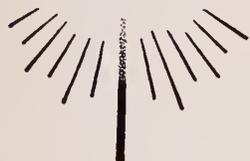
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A still from "Motor o' Mine," featuring Leon Errol. Director, Roy Mack. Lighting by Frank Murphy.

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Why must G-E scientists know about SHADOWS?



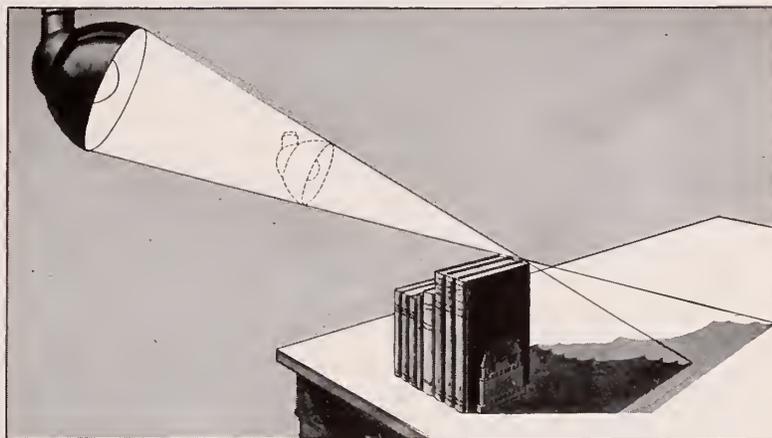
A. Harsh shadows produced by bare lamp



B. Soft shadow created by lamp in reflector

THESE three illustrations bring out, simply, three basic facts about shadow formation. Picture A shows the harsh, sharp shadows produced by a concentrated light source, such as a bare lamp. Picture B shows the softer shadows created by a somewhat diffused light source, such as that same lamp in a reflector. Diagram C illustrates the principle that the sharpness of a shadow depends upon the distance of a light source as well as upon its size . . . and hence that the sharpness of a shadow remains unchanged, provided the diameter of the light source is proportionally increased or decreased as the distance from source to subject is increased or decreased.

Cinematographers are familiar with these basic principles about shadows and with their several corollaries . . . and with scores of refinements of them gained from long, practical experience.



C. The sharpness of a shadow depends upon both the distance of a light source and its size

Why, then, is it important for G-E laboratory experts to be grounded in the fundamentals?

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A set-miniature, from "Cleopatra." The foreground is a full-size set; beyond the railing, statue and stair, the set is a miniature.

How Miniatures Are Photo- graphed

by
J. D. Jennings

ALMOST since the inception of the motion picture, advantage has been taken of the fact that the camera creates its own scale and perspective. Understanding these laws, we can so photograph a large object that upon the screen it appears small—or photograph objects or scenes which are actually small, and make them appear large on the screen. Commodore J. Stuart Blackton has stated that one of the first productions of the old Vitagraph Company, made at the turn of the century, was "The Battle of Manila Bay," done so successfully in miniature that even trained naval experts were sure a Vitagraph cameraman had actually photographed the real battle. From these early beginnings down to such present-day achievements as "King Kong" and "Alice in Wonderland," which owed their success in a great measure to painstaking miniature work, the miniature has been a vital adjunct to motion picture production.

Even films radically different from such examples of out-and-out "trick photography" as those mentioned, owe much to miniatures. Many scenes which would be prohibitively expensive or actually dangerous to film in the normal manner are made safely, economically and—which is more important—satisfactorily, by the use of miniatures. Shipwrecks, railroad, auto and airplane wrecks, and the like, are brought to the screen safely and at a much lower cost than would be possible otherwise. The same, of course, is true of floods, explosions and volcanic eruptions. But many other scenes are made in miniature, even though they could conceivably be done normally: inserts of ships at sea or at anchor, of airplanes, trains, and the like, can often be secured more satisfactorily in miniature, and the cost of even an "expensive" miniature is vastly less than that of chartering a liner or a train.

A third class of miniatures, vitally important in many films of a general nature, yet rarely considered as "miniatures," is the "set-miniature," in which part of the set is constructed full-scale, and part of it in miniature. Properly executed and photographed, this construction is not only perfectly satisfactory, but also gives the shot far greater depth than would be possible otherwise.

As a rule, miniatures of any type are designed jointly by the art department, the research department, and experts from the studio's prop department; in many studios, these departments maintain a staff of designers and workmen who specialize largely upon miniature work. A few studios have a separate department for the construction of miniatures. In almost every studio, the photographing of miniatures is detailed to a separate, specialized department with a staff of specialists in miniature cinematography.

Photographing miniatures demands a high degree of specialization. The majority of miniature scenes are photographed at extremely high camera-speeds, under artificial light. This naturally requires a high intensity of illumination, while the small size of the miniature sets and objects being photographed requires extreme delicacy in the arrangement of the lighting. There is the further requirement of having to match the lighting, photographic quality, etc., to the type of photography used by the production cinematographer directing the photography of the production as a whole. A miniature scene is a failure unless it is in every way a perfect match for the rest of the production. It must not advertise itself as a miniature.

There are few, if any, set rules about photographing miniatures. Each scene must be considered individually, according to the basic factors entering into its particular problem. As has already been pointed out, the majority of miniatures are photographed at high camera-speeds: this smooths out any irregularities in motion, and lends massiveness—actuality—to the shot. A miniature liner, for instance, could be photographed at normal sound-speed, but if it were, the result would be a shot that was obviously a miniature. The ripples on the water, for instance, would look like ripples, and their effect upon the ship would make it jiggle around as no liner really does. Therefore, we photograph such scenes at camera-speeds of from six to eight times normal: this slows the ripples down to a very good approximation of the waves and swell of the open sea, and in the process, magnifies the ripples into waves. At the same time, the ship, instead of bobbing like a cork on the ripples, sways majestically and smoothly, like a full-sized liner. In the same way, the smoke from the

(Continued on Page 66)



Above: Infra-D film; no filter. Heavy haze.
The scene is reproduced as the eye saw it.
Below: Infra-D film; 70 filter. Note haze penetra-
tion, and altered rendition of foliage.

Infra-D As Used on the Ground

by
George J. Lancaster, A. S. C.

INFRA-D film is a photographic material especially designed to meet certain requirements of specialized workers in the field of photography. In some of its phases it is quite adaptable for cinematographic work. This film carries a spectral sensitivity which is quite different from normal panchromatic emulsions in that its sensitivity is restricted to the blue, deep red, and near infra-red regions of the spectrum. Between these two extremes, i. e., in the green and yellow, this film has no sensitivity. Because of this fact it cannot be used interchangeably with normal panchromatic emulsions.

As the degree of blackening of a photographic material depends upon the light intensity, the time of exposure, and the wave length or color of the light, it is customary, and in fact almost necessary, when using Infra-D film to use filters. These filters naturally cause a definite increase in the overall exposure. The filters adaptable for this kind of work are those having transmission in the deep red end

of the spectrum. These filters absorb all of the blue light and as a result the emulsion as used with the filters records only red and near infra-red light. In photography of this type the actual filter factors of the various filters which can be used are given very little consideration. It is usually necessary at normal cranking speeds to use a rather fast lens fairly wide open. In motion picture work where the camera-taking speed is fixed it is necessary to accomplish the desired exposure condition by adjustments of the lens diaphragm or by variations in the angular opening of the camera shutter.

This type of film has been used in motion picture work almost exclusively for air sequences. It is the purpose of this paper to discuss the use of this film when used on the ground.

Its fundamental advantage in this respect lies in its haze-cutting ability and it is therefore a particularly useful film in rendering details at distances where visually these distant objects are blurred and indistinct because of the intervening haze. This film has a definite useful field but it must not be used to photograph normal scenes where normal rendition is desired. It might be said that weird and exaggerated effects can be more readily produced with the Infra-D film than with normal panchromatic negative.

It was evident from the first few feet we shot on a test for a major studio that it is impossible to backlight a scene and at the same time secure satisfactory photographic results. This, of course, is diametrically opposed to the practice of all cinematographers who first look to their backlight. Infra-D, however, makes us reverse the action, and for best results, use a light which is condemned by all good photographers—a flat front light. This light is necessary, perhaps, because there is so much green in nature, and Infra-D, not being sensitive to green, needs the assistance given by sunlight to shed some of the other colors of the spectrum on the green and also to bring it out by means of light.

Fairly good results were obtained with three-quarter lighting. However, this type of lighting cannot be used on all scenes. The results with this lighting were a slight contrast between the shadows of buildings and trees, while the objects brilliantly lighted were rendered in grey tones. The test scene was photographed in early spring; the countryside was fresh and green. In this test we wanted to see to what extent we could retain the greens. We tried a 23A filter plus a 56 filter. As you know, the 23A Wratten filter is light red while the 56 filter is green. This combination gave us a good green rendition.

We wanted to photograph snow-capped Mt. Davidson from the floor of the desert. Our set-up was 17 miles from the mountain. In addition to the hood of the mountain being snow-capped, huge snow clouds gathered intermittently beyond the mountain; the balance of the landscape was yellowish in hue. We shot this with a flat front light.

We selected this particular scene because of the tapaz blue sky, white clouds lighted at top and dark underneath, snow on the mountains; below the snow line was sagebrush and undergrowth characteristic of the desert, blending into the floor of the desert with its alkali sand mixture. These combinations of tones and colors we felt would be ideal for determining the results obtained with the filters recommended for Infra-D Film. These filters are No. 70 Red Filter, No. 88 Deep Red Filter and 23A plus 56. You will note from the description of this scene that it was lacking in greens.

(Continued on Page 66)



A modern industrial film in production, Edwin L. Dyer, A. S. C., at the camera. Note modern equipment, including latest DeBrie Silent Camera, and standardized-unit construction of lomp-rail.

Industrial Movies Forge Ahead

by
Edwin L. Dyer, A. S. C.
(Jam Handy Picture Service, Detroit)

THE BUSINESS of making movies for industrial uses has changed tremendously within the past few years. It is no longer a haphazard, "shoestring" enterprise, but a stable adjunct to "big business," operating on a scale and in a manner comparable to the best of Hollywood's major studios. Business leaders have found definite work for the film to do, both within their organizations, and in their relations with the public. The majority of films are made to suit a specific purpose. As a rule, industrial films are intended for one of three basic fields: first, exhibition within the firm, to introduce new products or new methods to the personnel; second, for exhibition to the general public, in a manner similar to sponsored radio programs and continuities, combining entertainment with a minimum of advertising; and third, as definite propaganda as to the uses or manufacture of a product, or the resources, researches and services of a firm, for educational use in showings before schools, clubs, and the like.

Accordingly, the industrial film of today is planned and produced as painstakingly as any Hollywood-made feature production. The majority are comedy-dramas, of feature length (nine to twelve reels), and embellished with every technical refinement of a major-studio production. The stories are well written and entertaining, though naturally centered to a greater or lesser extent upon the particular firm or product sponsoring the production. The majority are 100% dialog, with capable professional actors (some of them real "box office names") playing the leading parts. The physical details of production—sets, costumes, and the like—would not be out of place in any Hollywood production. The sound is of the best; in our studio, Western Electric wide-range recording, handled by experienced recordists trained in the ERPI laboratories. Photography and lighting are on a par with that seen in major-studio releases: a great majority of these films are photographed in natural color, which has been proven markedly superior to black-and-white for commercial purposes.

Aside from the fact that we are usually barred from attempting extreme low-key lightings, as our films must often be shown under more or less unfavorable projec-

tion circumstances, the general photographic technique is identical with that used in Hollywood. The most modern of photographic and lighting equipment is used, and is available in abundance ample for any emergency. All types of special-process work are used: the projected-background method has proven even more useful in industrial work than it is in the making of dramatic films. The same may also be said of Optical Printing and re-recording, which are invaluable.

One phase of our set-construction is novel, and of interest to Hollywood workers; the spot-rails, which are placed at the top of the sets, just as in Hollywood, are built in standardized sections, designed so that they clamp together, with a special groove which fits over the top of the set. They are supported from the floor, rather than hung from the roof, and, thanks to the standardized construction, can be assembled in a few minutes, and used and re-used repeatedly. This construction has proved to be a great time and money saver.

The making of these films often entails a considerable amount of location work, frequently requiring us to photograph actual interior scenes in factories, laboratories, and the like, or in famous buildings which could not be economically reproduced in the studio. In many instances it would be impossible to use the regular studio lighting equipment in these places. Accordingly, I have devised special lightweight equipment, which, while easily portable, is none the less highly efficient and may be used on any ordinary circuit. This lighting equipment is an adaptation of my own of "Kodaflector" units and clamp lights (both made by Eastman) and using Photoflood lamps. I have 24 of the Kodaflector units, which consist of a folding tripod of the music-stand type supporting two reflectors on a horizontal bar.

The reflectors are collapsible, and the whole outfit occupies very little space. In addition, I carry a dozen of the clamp lights, which may be attached to any object for support, and, thanks to a rubber-covered spring clamp, used without fear of marring anything. Since each of these lamps draws but 2.2 amperes, yet has almost the same efficiency as a regular 1000-watt studio lighting unit, I can be assured of ample illumination without overtaxing any normal wiring. The small cur-

(Continued on Page 68)



Above: The metal units assembled to form a lamp-rail.
Below: A camera crane constructed from the metal units.

Standard Metal Construction for Set-Platforming

by
George J. Folsey, A. S. C.

PRESENT-DAY practice in set-platforming is decidedly inefficient, not only from the standpoint of construction economy and flexibility, but often from the cinematographer's viewpoint, as well. The present practice is to use wooden construction, with semi-standardized sections, bolted and nailed together. The entire construction is hung from the roof-girders of the stage by standard wooden members, pierced with bolt-holes at regular intervals. The

electricians' catwalk is made up from standardized wooden sections, while the lamp-rail is usually built up from new and scrap lumber.

In some instances, this construction is satisfactory enough; it supports the lights, and, being independent of the set, allows the removal of "wild" walls without disturbing the lighting set-up. On the other hand, this construction is far from flexible: it permits only certain definite adjustments as to height; often in building the smaller sets the limitations of the platforming necessitate that the set be built several feet higher than is necessary. This forces the cinematographer to place his top and back-lighting units higher than is really desirable, and to focus them upon set and players from angles that are neither photographically satisfactory, nor economical. At the same time, the present construction is often wasteful of material, and it likewise takes a good deal of time to erect.

For some years, the writer has hoped a more satisfactory construction might be evolved. Within the past month, Phil Tonuro, cinematographer for the Gaumont-British studio, visited Hollywood, and described to me the set-platforming practice used in the British studios, which seems ideal.

In England, standardized metal construction is used throughout; the only wooden members are the sections used for flooring the catwalk. The rest of the construction is built up of standardized steel tubes, joined together by metal clamps. The tubular members come in several lengths—long, short, and intermediate—all of which fit into the joining clamps, which are collar-shaped, and made in a variety of forms for joining the tubes crosswise, endwise, and at different angles, as well as to supply sockets for mounting the lamps.

With this type of construction, there is virtually no limit to the possible adjustments. The supporting members are clamped to the overhead girders (the "Gantry," to use the English phrase). Since the clamps by which the platform-members are attached to these uprights are of the collar type, and not dependent upon any arbitrarily-spaced bolt-holes, the lamp-rail and catwalk may be placed at any desired height. This eliminates the necessity of building the sets to a height that suits the platforming, and should result in greatly increased efficiency, improved photography, and considerable savings in set-construction.

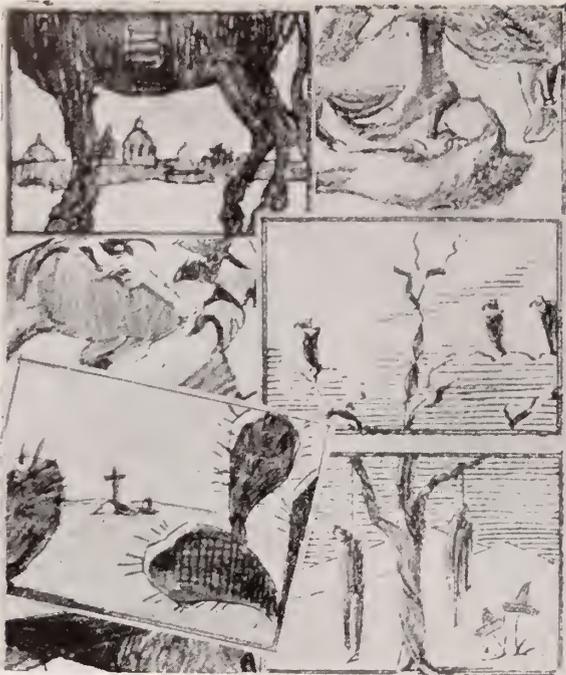
The members supporting the catwalk are clamped to the uprights, and the wooden walk is laid over them. The lamp-rail, instead of being made of nailed wooden members, is of the same tubular metal construction. Special collar-type clamps fit upon this, and carry sockets for the lamp-bases; obviously, they may be spaced as desired, and slid easily to one side or the other for any minor adjustments that may be needed during shooting.

Often it is necessary to place a lamp low on the wall of a set in order to obtain some particular effect. With our present methods, this is a time-consuming job, and, whether the lamp is slung against the wall by ropes, or fastened to wooden members nailed to the wall or platforming, the result is seldom perfectly satisfactory.

Using this metal construction, placing a lamp in this manner is very simple. A tubular member is simply clamped to the spot-rail, and the lamp slipped into a fitting clamped to the lower end. It can be done very quickly, and, thanks to the flexibility of the tube-and-clamp construction, the lamp may be placed with extreme accuracy.

Obviously, this type of construction is economical. The sets may be built solely to suit the requirements of action and photography, and the platforming adopts itself to the

(Continued on Page 72)



Some of the sketches evolved by Mr. Howe and Art Director Harry Oliver for the "Viva Villa" scenario. (Slightly reduced.)

Upsetting Traditions With "Viva Villa"

by
James Wong Howe, A. S. C.

HERE is all too little co-operation between the Art Director and the Director of Photography. The Art Director reads the script, and proceeds to design sets which embody his individual conception of the story. The Director of Photography reads the script, and forms his own mental concept of its background.

In the meantime, the Art-Director's sketches have taken shape as final sets for the production. When production is to commence, the Director of Photography, with his pre-conceived idea of what the sets should be, walks onto the stage—and finds himself faced with the problem of photographing the action on sets which do not conform to his idea of the photo-dramatic treatment of the story. He may have visualized a dark set for certain action—and find that a very light one has been built; he may wish to use extremely low camera set-ups for certain other scenes—and find that the sets are not high enough to permit him to do so. The result is seldom satisfactory to either

the Director of Photography or the Art Director; for the ideas and artistic conceptions of each suffer.

On "Viva Villa," however, Art Director Harry Oliver and I were able to avoid these disappointments. Instead of working separately, we co-operated very closely from the start. We studied the script together, and made hundreds of sketches of the way we visualized each scene. Frequently, we would make half-a-dozen different sketches of each scene, finally selecting the one which seemed most perfectly suited to the photographic and dramatic requirements of the scene, as we jointly conceived it. From these, we prepared a complete pictured scenario of the film, which clearly indicated the sets and the camera-treatment for each scene. These sketches were incorporated in the final script of the picture: they served the dual purpose of simplifying both the production and pre-production problems, and of assuring better co-ordination between the Director and the Director of Photography.

Before the actual start of production, for instance, locations have to be chosen. When the script embodies such sketches as these, the problem of the location scout is easier, for the sketches tell him exactly what the Director of Photography, the Art Director and the Director want. He need not waste time and effort, picking out a number of locations which "might do"; he searches until he finds a spot which closely approximates the sketch he carries. Then he can report, "Here's your sketch—and there's the location which matches it."

Similarly, these sketches show us quite clearly the lighting-effects which will be the most effective for each shot. On location sequences, this is especially important, for there is a great waste in getting to a location, and then finding that the light will not be at the right angle for your effect until perhaps hours later. Combining the sketches with the location-scout's reports, we were able to figure out in advance exactly the right time of day to photograph each scene to give us the best visual effects. Thus, in planning a day's work, we could look at the script, and see that, of the scenes to be done that day, certain ones would best be photographed in the morning, others in the afternoon, and routine the schedule accordingly.

But it is in the more normal studio-made scenes that this method of preparation seems most advantageous. If, for instance, the Art Director and the Director of Photography feel that any certain scene or sequence requires a definite low-key or high-key treatment, the set can be designed so that it is ideally suited to that treatment. Similarly, if it is decided that one sequence requires only the normal camera-angles, the sets for that sequence will require only routine design and construction. If, on the other hand, some scene or scenes in the sequence will require shots from extremely low set-up, we can have the set built to allow for that; either having the walls built higher throughout, to give us the desired background for such shots, or with special sections extended to the required height, at exactly the places where the low-angle shots will be made. This latter method is probably preferable, for it will permit the Art Director to make the rest of the set lower, thereby allowing the Director of Photography to arrange his lighting at more favorable angles than if the entire set were built with high walls. Obviously, too, marked saving in the cost of constructing such sets will be found.

Similarly, if we decide that a sequence will be more effective if shot from relatively high camera angles, the walls may be made lower than would be necessary if there were a possibility of normal or low-angle set-ups being

(Continued on Page 71)

Getting Good Sound Is An Art

by

Harold Lewis, E. E., S. S. E.

Vice-President, Society of Sound Engineers
Winner of Academy Award for Recording, 1933.

THE successful Cinematographer is more than a technician; he is an Artist. Upon the foundation of accurate and extensive knowledge of the technique of cinematography—lighting, exposure, emulsions, optics, and so on—he builds to success with an inborn artistic and dramatic instinct and an acquired understanding of the application of cinematography to Dramatic Art.

It must, inevitably, be the same with the Sound Engineer. He must—especially at present—have an accurate technical knowledge of electrical engineering as applied to sound transmission—circuits, frequencies, acoustics, and the potentialities of the sound-system he is using; but with all this, he must also be an Artist in the dramatic use of sound. He must know when to depart from the technically perfect recording, in order to build to dramatic effect, and how best to use this new ingredient—sound—to most fully benefit each scene and sequence. Like the Cinematographer, he must build upon technique with an inborn artistic instinct.

With the equipment generally in use today, it is surprisingly easy to obtain a commercially adequate recording. But a commercially adequate recording is no more satisfactory for dramatic purposes than is commercially adequate cinematography. The photographic treatment of each scene must be delicately co-ordinated with the dramatic mood and tempo of the action: frequently, this necessary dramatic treatment requires a radical departure from the straightforward commercial ideal. An extreme low-key or night-effect shot, for instance, would be definitely bad, if considered by the standards of straight photography: yet it is desirable and valuable if used properly in a dramatic film. The same is true of diffusion, or of filtering: each is dramatically valuable in its place, yet actually a definite distortion of normal technique.

Dramatic sound-recording must in the same way often depart from the standard of the commercially ideal record. Like the Cinematographer, the Recording Engineer must vary the key of his recording to suit the dramatic needs of story and scene. A Comedy, for instance, is best recorded in a rather high key. The volume-level is usually higher than normal, and the tonal quality crisp, to add to the intelligibility of fast-paced dialogue and action. There is both a psychological and a mechanical reason for this treatment: the audience viewing a Comedy is relaxed, and the dialogue must therefore be brought to them; also, a successful Comedy is well punctuated with laughs, through which succeeding lines must penetrate.



Harold Lewis, E. E., S. S. E.
who recorded "A Farewell to Arms," acclaimed
as the best recording of 1933.

A Drama, on the other hand, must generally be recorded at a much lower key. Restraint—subtlety—are the key-notes of the modern conception of Drama; a low-keyed recording matches this concept perfectly. Such a treatment is possible, too, because the audience at a Drama is less relaxed than at a Comedy: more alert—actively co-operating. The theatre itself is quieter; there are fewer laughs and so on for the sound to penetrate. In "A Farewell to Arms," for instance, some of the most effective scenes were recorded at an extremely low key, and played in whispers.

A Melodrama requires strongly contrasted sound-treatment, even as it requires strongly contrasted photographic treatment. Many sequences will be recorded in a low key, suddenly punctuated by very highly-keyed scenes. Yet even in the low-keyed recordings for a Melodrama, one dare scarcely go as low as in a Drama, because of the very audible audience reactions.

The problem of the Recording Engineer is complicated by the fact of his virtual physical isolation from the rest of the company on the set. Although recently the use of portable monitoring booths has lessened this isolation, the Recording Engineer is still not as close to the set and the action being filmed as is the Cinematographer. He is, in fact, more like someone listening in on a radio—and like a radio listener, his communication with the set is by telephone, or by leaving his post to go to the set. For this reason, it is vital that the Recording Engineer study the script beforehand, until he is as familiar with it as the Director or Cinematographer. He must know how each scene fits into the pattern of the picture as a whole, what precedes it and what follows, so that he can give it the best and most dramatically expressive aural treatment possible.

In the same way, he must be familiar with the vocal characteristics of the players. Just as certain people invariably photograph well, while others require a world of deft lighting and camera-treatment if they are to be favorably presented, so, too, certain voices will record well under almost any conditions, while others require all the technical artifices known to audiography if their voices are to

(Continued on Page 73)

HOW MINIATURES ARE PHOTOGRAPHED

(Continued from Page 60)

liner's funnel is slowed down and magnified by the slower motion, again increasing the illusion of actuality.

As a rule these ship-miniatures are towed by ropes placed well below the waterline. This gives us better control of the ship, its speed and movement than if the miniature were self-propelling. At times, one or two electricians or mechanics ride inside the ship to operate lights, etc. For shipwrecks, we often build tracks along the bottom of the tank, so that the ships will collide, or run aground, exactly as we wish. For such shots, breakaway baws, or other sections, are of course used. If we have to sink a ship, we have a special, deep section in the tank, and arrange our cables so that the ship can be pulled below the surface, leaving no detail of the sinking to chance.

Obviously, a miniature ship can hardly move fast enough to actually create either the bow-wave or wake so inevitably a part of a real ship's progress. To supply these, tiny jets of water or compressed air are directed from the proper angles at bow and stern, giving a perfectly realistic effect. These jets are fed through hoses trailed (below the waterline, of course) behind the ship. Similarly, current for navigation, cabin and other lights is supplied from the studio mains. Occasionally a miniature ship will be provided with an electric motor, to power any necessary motion such as, for instance, that of the several hundred pairs of oars or sweeps on Cleopatra's galley in a recent film. In this particular instance, jets of compressed air also provide the white wake of the oars.

Lighting and photographing these miniatures is very similar to lighting and photographing full-sized objects, but on a smaller scale. The same effects of modeling, key, and so on are obtainable, but lighting a miniature must be done vastly more delicately than for a full-size object. In a ship, for instance, navigation lights are usually represented by tiny flashlight-bulbs, while lights inside the cabins, etc., are provided by ordinary home lamp-bulbs. We have found that the most desirable combination of lighting is to have the set—which is usually painted in monochrome, and highlighted for modeling and perspective in the painting—lit very flat, with the miniature itself lit rather harder, to accentuate it. For day shots, as a rule, I have found that diffused daylight—supplemented as necessary by artificial light—is best for the general lighting, with strong artificial lighting for the modeling lighting on the miniature. For night

effect shots, artificial lighting throughout is best, as filtered night shots throw the contrast off balance, and accentuate the exposure-problems of extreme high-speed camerawork.

A properly-designed miniature should almost automatically take its own perspective, so in theory, there should be a wide choice of lenses permissible. Theoretically, one can make the long-shots with a wide-angle lens, and the closer shots with objectives of longer focal length. This, however, does not take into consideration the demands of the high taking-speeds, which necessitate that the lenses be used almost at full aperture. Therefore, in practice, we invariably use a fast 25mm. lens for all miniature shots. Even at full aperture, such a lens gives excellent depth of field, which is obviously important. A recent miniature, for example (that of Cleopatra's galley), could hardly have been made any other way, for we had in the foreground at a distance of about a yard from the lens, a miniature dock, which served the dual purpose of adding depth to the scene, and giving us an attractive foreground for our composition: the middle distance in the shot—where the galley passed—was fifteen or twenty feet from the lens, while the background, representing a city, harbor and hills, was well over seventy-five feet from the lens. As the scene was shot at high speed, the lens had to be worked at full aperture; obviously only a 25mm. lens would give satisfactory depth at full aperture for such a shot.

Most miniature scenes are photographed with rather heavy diffusion which, oddly enough, enhances the illusion of actuality. For night effects many miniature-workers use a graduated neutral-density filter, to simplify the problem of getting a dark night sky. The normal types of diffusion are used—discs, diffusion-screens, and gauzes—according to the need of the scene, and the individual technique of the cinematographer.

The choice of cameras for making miniature-scenes, and the routining of camera-inspection and maintenance are absolutely vital. Cameras must be specifically adapted to high-speed work, and maintained in absolutely perfect condition. A pilot-pin movement is essential. Due to the extremely high speeds used—the average is from 540 to 720 feet per minute—particular care must be exercised in threading the camera, and a sensitive, quick-acting automatic cut-off must be provided to guard against film-buckles. Unless the

motor is immediately disconnected in case of a buckle, very serious damage to the camera can result. An equally important problem—and one occurring more frequently—is the prevention of film-scratches. The aperture-plate or film-channel must be kept absolutely clean, and carefully inspected immediately before and after making every shot. Any particles of dirt or grit on the aperture-plate during the making of a high-speed shot will not only cause scratches and abrasions on the film, but pile up a little mound of emulsion which, due to the friction generated by such high speed, melts into a bit of metal almost as hard as steel, and extremely difficult to remove.

As a matter of regular routine, we make it a practice to send our camera to the precision machine-shop for a careful overhauling before making any high-speed miniature shot. Only by this method can we be assured of being reasonably free from camera-troubles.

Infra-D As Used On the Ground

(Continued from Page 61)

The first filter we used was the No. 70. This brought out Virginia City which was just below the snow line. It could not be seen plainly with the naked eye. The film, however, with the use of No. 70 filter, brings it out clearly. The topaz sky rendered black, while the top sides of the clouds were absolutely white but those portions of the under sides of the clouds which did not receive the direct light were tinted in all hues of greys and blacks; the floor of the desert came out very light grey, a sort of monotone. The side of the mountain photographed a deeper grey than the floor of the desert. This picture was shot at sound speed; shutter 160 degrees; stop F.2.5; lens 104mm, Cook.

We used the No. 88 Filter on the same scene. This filter gave us the same color corrections as the No. 70 but to a greater degree; that is, everything was darker, which is natural, as this is a much heavier filter. We could not open the camera lens any wider for this filter as we had it fully open for the No. 70 filter.

As a sort of extra test we tried out the No. 72 filter. This did not prove satisfactory. I photographed the scene in a very dark key which might have been suitable for a night effect, but not for the correction in colors which we were seeking.

It isn't advisable to photograph people with this film. The shadows are inclined to photograph too black; if a shadow is thrown on the face it will show up very black instead of a pleasing half-tone secured with the regular types of film.

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Industrial Movies Forge Ahead

(Continued from Page 62)

rent requirements make it unnecessary to carry a special generator truck, or to use heavy cables: I use ordinary No. 10 cable to serve as the supply line, with No. 14 or No. 18 wire for the spreader lines to the individual lamps. By using regular three-way connectors at the junctions of the cables, an extreme flexibility is possible. And since the outfit is so compact, it is easily carried about in the rear seat of an ordinary sedan.

On a recent picture, for instance, I was able to carry my complete lighting and photographic outfit in my car, driving from Detroit to New Orleans, where I photographed scenes in several of the quaint old restaurants which are so famous, and which could hardly be duplicated successfully in any studio. One of my objectives was Antoine's Restaurant, which is exactly the same today as when Antoine Alciatore first opened the doors in 1840. Thanks to this extremely portable equipment, I obtained some unusually interesting shots both of the marble and mirrored dining salon, with its old-world French buffets and chandeliers, and of the cooking operations in the quaint, immaculate kitchens, where the food is still prepared as they did it a century ago. These scenes would have been virtually impassible with regulation lighting equipment.

Often, important scenes and sequences must be made in factories where, in addition to the photographic and recording problems naturally incident to such locations, there is the added problem of getting the scenes as required without interfering with the actual work of the plant. This is usually solved by working at night, though of late many plants have recovered to a point where production continues twenty-four hours a day, and our problems are increased accordingly. The portable lighting equipment plays an invaluable part in enabling us to get these scenes as we want them, for there is often insufficient space to accommodate the usual lamps, or insufficient current available.

Recently a tire film required a series of close-ups of the behavior of super-balloon tires under many types of road and driving conditions. To get these we built a platform on each side of the car, mounted on strong wooden beams passing under the chassis, and supported by chains from a yoke on top of the car. We had originally planned to counterbalance the camera and its crew with a load of sandbags on the opposite platform; but we found that a stationary weight was not satisfactory when we shot the results of fast cornering, blowouts (simulated by firing a .45-calibre revolver bullet into the tire), and the like. So we replaced the sand-bags with members of the crew—neither the camera-staff nor their human counterweights spent a dull moment on that assignment!

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COMBINATION FILTER-DIFFUSER INCREASES OPTICAL EFFICIENCY

It is an established scientific fact that light, passing from air to glass, or vice versa, loses approximately 4% at each such glass-air surface. In other words, if we place an Optical Glass flat in the path of a beam of light, this beam will lose 4% as it enters the glass, and 4% of the remaining 96% as it emerges, making the total loss of light in passing through this apparently clear sheet of glass 8%. To word it differently, if we pass a beam of light through such a glass, this transmission loss will leave us but 92% of the original light-beam after the light has penetrated the glass.

This is, of course, a well known fact: but it becomes of decidedly practical importance when, as is so often the case, a number of color and Neutral Density filters are used in combination with a diffusion disc or screen, the whole mounted on a blimped sound-camera, which in itself necessitates photographing through an Optical Glass window. While on location for a recent picture ("Mandalay") I found myself forced to shoot through six such glasses on some scenes: and while this is, of course, unusual, it is by no means uncommon in the regular course of production for a cinematographer to find it necessary to use a diffusion disc, a color filter, and a Neutral Density filter together, which, in addition to the glass-fronted blimp, makes a total of eight glass-air surfaces, each of which takes its 4% toll of the light even before it reaches the lens. These 4% losses may in themselves seem negligible, but the total loss for these eight glass-air surfaces totals 27.9%. In my own extreme case, I found that the loss from these sources totaled approximately 40%!

The obvious solution to such a problem is clearly to combine the functions of as many of these various devices as possible into a single unit, thereby minimizing the number of glass-air surfaces through which the light must pass before reaching the lens. Within the past few years, the Eastman Kodak Company's research experts have pioneered the way, combining the Aero 2 color-filter (which is by long odds the most frequently used in modern production) with the 25% and 50% Neutral Density filters. These combined filters are universally used, and known as the 3N5 and 5N5, respectively.

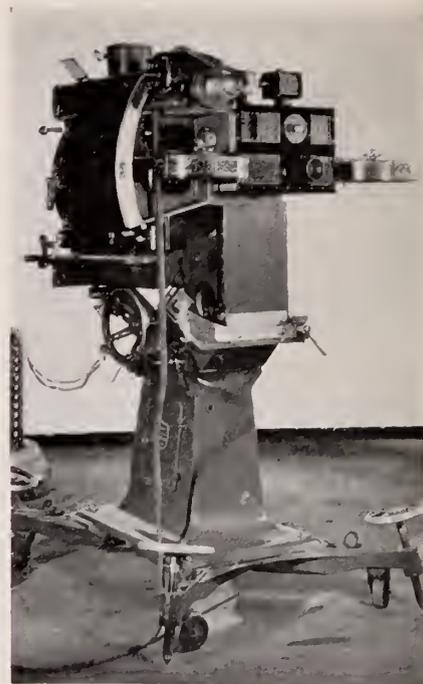
After my experience in making "Mandalay," I began to ask myself if the same principle could not be carried farther, to combine filters, Neutral

Density screens, and diffuser into a single unit, thereby reducing the number of glass-air surfaces to the minimum, and also reducing the danger of flares and reflections from these surfaces.

Therefore, I discussed the problem with Emery Huse, A.S.C., and we, in collaboration with the scientists of the Eastman Research Laboratories, evolved a set of filters combined with the Eastman Motion Picture "A" and "1/2 A" diffusion discs. These filter-diffuser combinations are mounted in the same manner as the regular diffusion discs, and consist of the desired disc, upon the flat side of which is cemented any desired filter. My present set includes the 25% and 50% Neutral Density filters, the 3N5, 5N5, Aero 2 and G filters combined with the regular "A" and "1/2 A" diffusion discs; the filters are naturally duplicated, one complete set embodying the "A" diffuser, and the other the "1/2 A". Such a set is sufficient for all normal needs, and obviously, most any practical filter may be coated upon these diffusion-disc bases.

By this means, we have been able to reduce the number of glass surfaces interposed before the lens from four to two: the blimp-window and the combination filter-diffuser. This reduces the number of glass-air surfaces from eight to four, and the loss of light is reduced from approximately 40% to 15%. To date, on both tests and production, I have been unable to observe any lessened efficiency in the combination, either as a filter or a diffuser. In fact, the results have been so successful that several other cinematographers at the Warner Brothers'-First National Studios have ordered duplicate sets of the combinations.

Obviously, these combinations can be coated on almost any type of diffusion screen, and with most any type of filter or combination of filters that is possible as a single unit. It is even conceivable that some cinematographers or studios required to do a great deal of exterior cinematography with sound, could carry the same process to the ultimate, and combine filter, diffusion-screen and blimp-window in a single interchangeable unit. This would naturally reduce the glass-air transmission losses to a minimum, as there would be but a single glass, whose two surfaces would absorb but 8% of the total light available, and at the same time minimize the danger of reflections or flares from the glass surfaces—by Goetono Goudio.



Improved Mount for Process Projector

GEORGE J. TEAGUE, whose process projector was described by Frank B. Good, A.S.C., in the August, 1933, issue of the AMERICAN CINEMATOGRAPHER, has recently perfected further improvements in his machine. The essential designs of the optical and mechanical units are unchanged, save that the clutch between the driving motor and movement has been improved, to allow even more accurate synchronization of camera and projector, and the entire movement is enclosed within a sound-proofed case, slightly larger than that of the previous design, making it possible, when a long projection-throw is used, to operate the projector outside of a sound-proofed booth.

The most essential improvement is an entirely new mounting, which gives greater rigidity, and at the same time makes possible effects not otherwise obtainable. The mount consists of a sturdy cast-aluminum pillar, on a detachable, wheeled undercarriage. This undercarriage is fitted with four screw-jack legs, so that the machine can be rigidly anchored, and is removable, so that in a fixed installation the projector may be rigidly and permanently secured in place. The supporting pillar contains a small locker in which movements, lenses, and similar small but valuable parts may be locked when the machine is not in use.

The projection-head and lamphouse are mounted on a tilting base, which may be tilted up or down in the same manner as a tilting tripod-head, by turning a convenient wheel-crank. A curved

sector, sliding in a clevis-bearing, locks the tilt in any desired position.

The projection-head itself is mounted in a separate assembly, in such a fashion that it can be revolved around the optical axis of the optical system. Another sector, sliding in a locking guide, secures the head in any position. Normally, a fifty-degree arc of rotation is provided, but by the use of extension-sectors and a supplementary lock at the axis of rotation, a full 360-degree rotation is possible. The possibilities of this adjustment are tremendous: often, if either the background or the foreground-set is not truly level, it can be corrected by a slight rotation of the projector-head. Similarly, the background may be deliberately placed at an angle for special effects—even, for comedy scenes, inverted. Scenes apparently laid on a boat can be given the proper roll by slowly racking the projector; this can be done either by hand, or by adding a simple semi-automatic device which is being designed.

Two of these projectors have been completed: one is now in use at the General Service Studios, and the other, Mr. Teague has taken to London, for use in the process sequences of several productions being made by Alexander Korda's London Films.

Upsetting Traditions With "Viva Villa"

(Continued from Page 64)

used. In the same manner, if the action indicates the need for crane or perambulator shots, again we can plan for them before the sets are built. In a word, this co-operation between the Art Director and the Director of Photography enables us to plan more efficiently, to build the sets to suit the camera-treatment, rather than (as has so often been the case) building the sets first, and trusting to the skill—and luck—of the Director of Photography to adapt his camera treatment to the sets he is given.

Another phase of the photographic treatment of "Viva Villa" which differs radically from the accepted tradition, is the choice of lenses for many of the different scenes. Normally, one makes close-ups with a two- or three-inch lens, subordinating the background to the more important action of the close-up; similarly, one normally photographs mob and battle scenes with wide-angle lenses—24mm. or 38mm. foci, as a rule—in order to get the maximum field with the minimum of space.

I did exactly the reverse on "Viva Villa."

I made all the close-ups with a wide-angle lens—and the mob and battle long-shots with two- and three-inch objectives.

There was a definite, photo-dramatic reason for this treatment. The story centers on Villa and his companions: but behind them and their action is ol-



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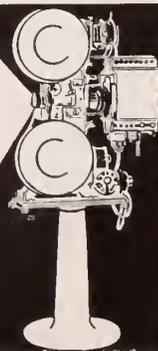


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ways the drama of Mexico itself—the ever-present thought that Mexico, the nation, is greater than any individual.

Therefore, instead of making close-ups in the normal manner, concentrating all attention on the actor, and subordinating the background, I used 24mm. and 38mm. lenses, which, even in a close-up, showed a wide expanse of the background, and—due to the short focal length—had sufficient depth of focus to keep the background well defined. In this manner, the background—Mexico and its people—was always in evidence. The audience could not forget that it was there, overshadowing even Villa himself.

Similarly, I made the battle scenes with lenses of a longer focal length in order to mass the mob more compactly together, to add to the sense of confusion a battle always engenders.

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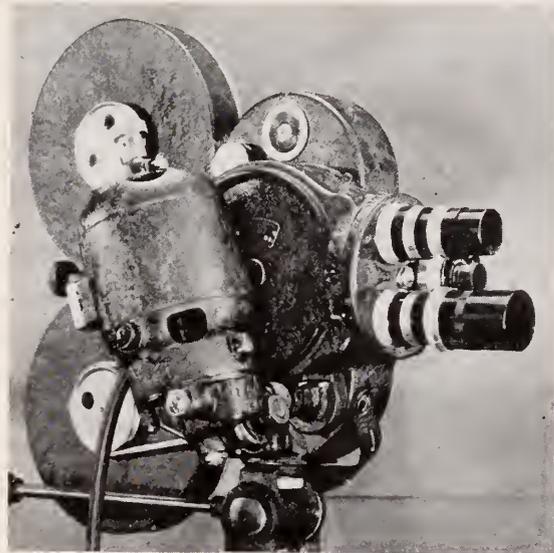
(Continued from Page 63)

set. The same material may be used over and over, and it is quickly and economically assembled. At the Gaumont Studio, Mr. Tannura informs me, a crew of only four men take care of six stages; they work solely at erecting and dismantling the set-platforming. Mr. Tannura also informs me that the metal construction does not give rise to any acoustic troubles.

But set-platforming is by no means the only use of this adaptable construction. With the addition of a standardized wooden platform, it can be assembled to form a parallel of any size. Recently, a production called for a series of shots of the bow-wave of a liner ploughing through the sea. The script demanded close, head-on shots; normally, it would be difficult to make them. If a parallel could be hung by ropes or chains from the bow, it would be none too steady; while photographing the shot from a motorboat running immediately in front of the liner would be even less satisfactory, and none too safe. But the set-platforming crew were able to use their metal sections to form a perfect support for the cameras, and to

do it quickly and accurately. A framework of the tubes was anchored on the ship's deck, and extended forward fifteen or twenty feet from the bow. From there, long upright tubular supports extended down for thirty feet, supporting a camera platform at exactly the desired distance from the prow, and just the right height from the water. It was safe, and steady. A camera crew rode the device and made their scenes while the liner steamed on its regular route across the English Channel.

Another time, a camera-crane was required—and the studio had none available. So they built one out of the standard tubular sections! The crane-arm, of course, could easily be built from these sections; the pivot about which it was elevated required no added parts. The horizontal revolution was obtained by mounting the crane on microphone-boom wheels, which ran in a circular track on a wooden platform; the crane and the undercarriage were also connected by a tubular member fitting into a collar which permitted it to pivot. The base of the crane, built below the platform referred to, was also of the tub-



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GETTING GOOD SOUND IS AN ART

(Continued from Page 65)

ular units, and in turn mounted on rubber-tired microphone-boom wheels. The entire cast of the crane was scarcely more than that of the labor involved in its assembling, and it could be torn down and reassembled as the need arose.

This type of construction has much to recommend it. It is economical, efficient, and amazingly flexible. It benefits the cinematographer directly in making it possible to place the lights exactly right to gain the most advantageous lighting, and makes the moving of any lamp for special effects quick and easy. It reduces excess construction of sets, and wastage of platforming material. And it permits an amazing variety of construction for special and unusual purposes. It seems a very definite step forward in every way.

Zucker Becomes Dealer

Frank C. Zucker, A.S.C., in association with J. Burgi Cantner, has formed the Motion Picture Camera Supply, Inc., with offices at 723 Seventh Ave., New York City.

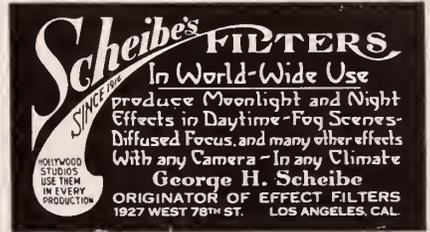
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be satisfactorily fixed upon the soundtrack. The Cinematographer, knowing in advance something of the facial characteristics of his players, can modify his lighting, diffusion, etc., to photograph them most favorably. If the leading lady, for instance, has an unattractive nose, he can modify his lighting to correct this flaw; if the leading man has more wrinkles than jibe pleasingly with a youthful part, he can use a heavier diffusion throughout to conceal them. Similarly, the Recording Engineer can modify his recording to minimize vocal shortcomings. In the same way, he can minimize the unnatural effect of the stage-trained actor's habit of "pitching his voice across the footlights," or amplify on inordinately slight voice.

The recording of dialogue is, to my mind, far harder than the recording of music. In the latter, one may use as many microphones as may be necessary, and he is likewise sure of a mechanically consistent performance on the part of the musicians. In recording dialogue, on the other hand, modern practice re-

stricts us almost invariably to a single microphone (a desirable factor generally, as it gives a truer perspective) and with the average actor there is no assurance of a mechanically consistent performance. Between one take and the next, he (or the Director) may decide to change the intonation or emphasis of his reading, which naturally keeps the Recorder on his toes every minute. And in most modern productions, the microphone-boom operator on the set must "follow" as skillfully as any Operative Cinematographer or Akeley-camera specialist.

Laboratory problems affect the Sound Engineer every bit as much as they do



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Getting Good Sound is An Art

the Cinematographer. Every Cinematographer knows he must work well within a definite margin of commercial safety unless he has a perfect laboratory behind him; so too must the Sound Man. In the same way, the co-operation of those on the set—Cinematographer, Director and Players—is of vital importance. An appreciative, understanding Director is a vital factor in making a well-recorded production. The Director who has no time to listen to his Recordist, or to his Comedon, seldom gets the best of either recording or photography; while others—like Frank Barzage, for instance—co-operate so perfectly that we often deliver better work than we know how.

In this business, no one may safely set himself up as a prophet: but in closing

I will venture the statement that the Sound Engineer of the future will be for less the technician and a more thorough Artist. The day of the initial technical development of sound and sound-recording apparatus is past, and the day of the truly artistic development of sound is dawning. Therefore, while the Sound Engineer of the future will in all probability be, as now, the product of an Engineering College, he will—like the Director of Photography—concern himself for less with the mechanical technique of his craft, and more and more with the artistic application of sound to the cinema. The mechanics of sound will take care of themselves: but the Art of Dramatic Sound-engineering must be built from the experience and artistic instincts of men who realize that recording, like cinematography, is not alone a Science, but a high Art.

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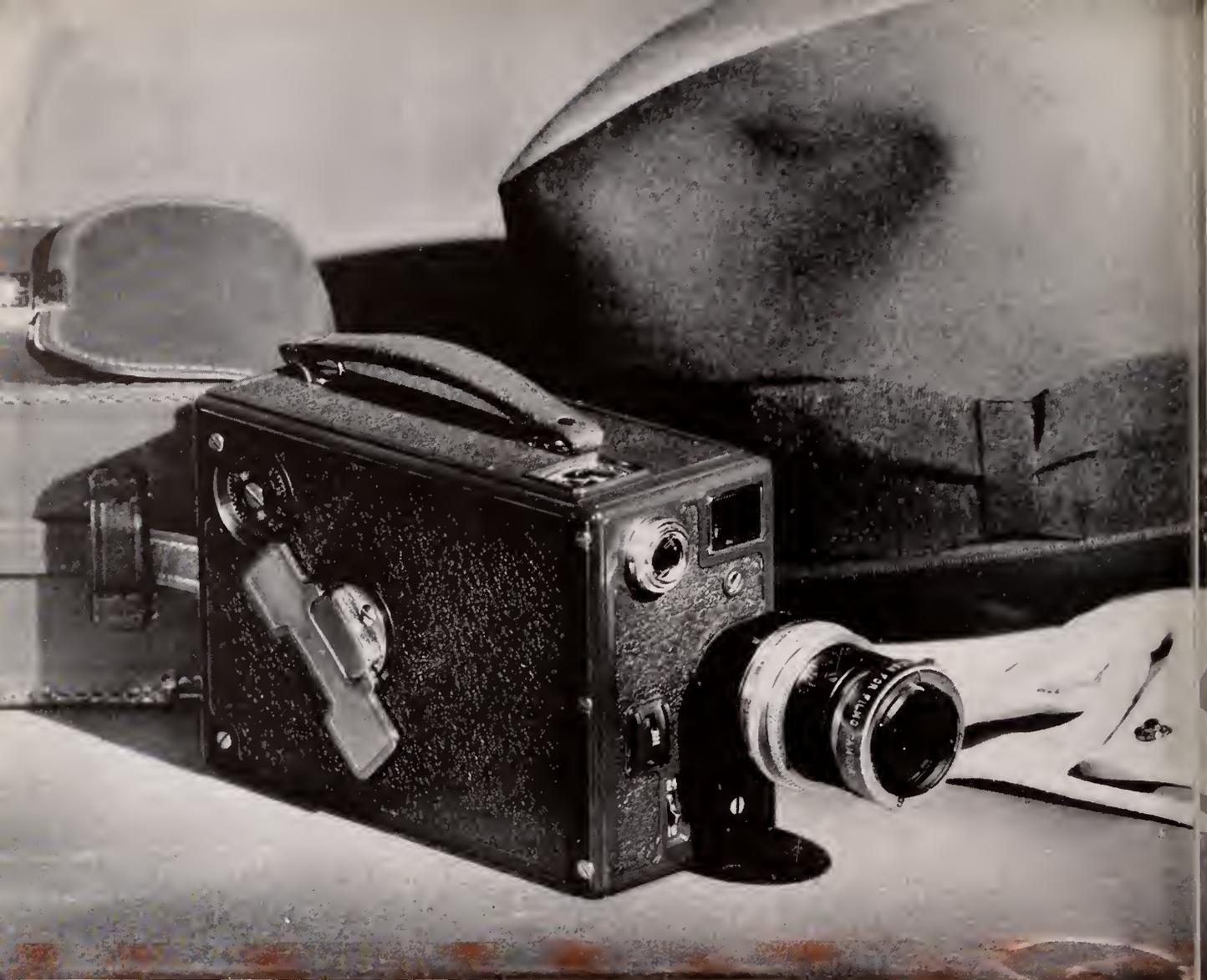
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JUNE, 1934

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AMATEUR MOVIE SECTION

Contents . . .

POOR Exposure Lost a Prize by L. Guy Wilky, A.S.C.....	80
THE Professional Learns from the Eight by Ray Fernstrom, A.S.C.....	81
MINIATURE Photography at Night by Clarence Slifer, A.S.C.....	82
A Continuity for Filming Father by Mrs. J. D. Reed.....	83
CINETRICKS, Reverse Film Travel by Wm. J. Grace.....	84
KODACOLOR Gives Life to Travel Films by John W. Boyle, A.S.C.....	86
WHEELS of Industry.....	87
BACKYARD Movies, Prize Winner.....	88
TRICK Shots, how to make them.....	90

Next Month

- The Contributions coming in to us on our Free Film Offer for Backyard Movies are getting better and better. Read this month's offering. It's a timely subject, the Circus and will make a colorful picture for your library.
- There will be another Child Continuity next month. Don't forget that Child pictures are always interesting . . . and they are the easiest to make.
- There will be tricks that you can do with your camera suggested by members of the American Society of Cinematographers and gadgets you can make yourself.

PROFESSIONAL Criticism of the Amateur picture is a part of the service offered by the **AMERICAN CINEMATOGRAPHER**. Many are not aware of this. Hundreds of pictures have been reviewed this past year by members of the American Society of Cinematographers for the Amateur.



L. Guy Wilky, A. S. C.

Poor Exposure Lost a Prize

by
L. Guy Wilky, A. S. C.

AS ONE of the judges of the American Cinematographer Amateur Movie contest the most outstanding fault that struck me . . . or should I say the fault that struck me most forcefully in some of the pictures was the exposure—poor exposure I might say . . . or wrong exposure. As we say in the professional field, they "burned" the scene. Translated this means they put too much light on it.

I recall one picture. A mighty fine picture. Beautiful composition, nice cross-lighting in many scenes, interesting angles, and still it lost out as a prize winner simply because of over-exposure.

This might have been eliminated if that cinephotographer had edited those scenes out of the picture, but the fact still remains that a very good photographer spoiled a

prize winning picture by over-exposure on a number of scenes.

Just how we are going to overcome that fault is hard to say. Hard to say because so many amateurs will not follow the obvious method or will not put in hard work to eliminate this hazard.

The easiest and undoubtedly the safest procedure is to use an exposure meter. This in the long run will prove the safest. It is certain the average amateur is not shooting pictures every day as does the professional here in Hollywood. In between pictures the amateur will forget things. He will forget the proper exposure. Perhaps something in the lighting or composition of the scene he is taking throws everything else from his mind. If, however, he could make exposure mechanical it is certain he would be correct more times than he would be wrong.

You see a photographer has a great many things to think of if he wants to make good pictures. There is light, composition, exposure and focus. Those are the highlights. Light and composition can be broken down into many parts. Exposure, however, does not vary a great deal unless you are seeking a certain key. Focuses cannot vary for sharp pictures.

So many things affect exposure. The very nature of the subject you are taking. The light that is falling on it. The nature of the light, the quality of that light. Your exposure meter tells you instantly. That is, if you use it rightly. It is possible to use an exposure meter wrong, but if the operator will follow the instructions he will be correct. If you are wrong you are not following instructions. At least that is my contention, as I do not believe that any manufacturer is going to try to deliberately fool you. He wants his merchandise to work properly so he is going to give you as correct information as it is possible to give.

While the exposure meter was looked upon as being something of a very questionable value for quite sometime by the professional, more and more of them are observed in the studios being used by the best motion picture photographers. It is another tool of the cameraman, and an important tool; because exposure is one of the most important phases of photography.

With the use of reversal film it is more important that the amateur get nearer to the correct exposure than it is for the professional.

There is said to be a greater latitude in the negative and positive method than there is in the reversal film method of processing.

The negative and positive has a wide latitude in the printing of the positive. One can read the density more accurately than it is possible in the reversal. This latter, however, does in some systems employ the photo-electric cell method of control. This is said to be very accurate within certain degrees of lighting, but is claimed to have a heavy falling off after a certain period. However, those are technical things, not touching very heavily upon our present problem of proper exposure.

It isn't necessary with an exposure meter to go through a series of tests to determine whether or not it is correct. Take it for granted that it is correct. Use the reading it gives you, but be sure that you have followed out all the instructions of how to use that meter properly. Read those instructions over carefully. Practice according to the instructions, before you expose your film, to accustom yourself to the handling of the meter. While they have been made as simple and fool proof as possible, still it is necessary to have a basic knowledge of how to handle them the same as you must have a basic knowledge of speeds, brakes and clutch before you can drive a car.

The Professional Learns From the Eight

by
Ray Fernstrom, A. S. C.

FOR THE FIRST TIME in my life I could carry a movie camera in my pocket. From then on I became an ardent devotee of the little eight. Bill had called me to help him "shoot" his scout troop so that the film could be run for a meeting of parents.

We planned about forty setups of the camera and having only my professional experience to draw upon I expected this to take a couple of Sundays. Imagine MY FIRST SURPRISE WHEN WE DID THE JOB IN THREE HOURS.

With the ease of a "Brownie" we set up in a car for "dolly" scenes, climbed a balcony that could be reached no other way and even "shinnied" a flag pole to obtain one of my "Swedish" angles that in professional parlance would have required a high "parallel."

In one game where the boys lined up in a twenty-foot circle we shot pans of boys chasing each other around the outside at a lively pace. The little eight held in hands followed this action, fast as it was, without once losing the action in the splendid finder provided.

Our scout master was a man with splendid character of face. When we back-cross-lighted him and shot him from the ground, requiring but a moment, the effect was really artistic, doing full justice to his strong features.

To obtain the best composition with the entire troop lined up for inspection, we had to shoot from the street at an angle that required some elevation. With the "eight" this merely meant climbing onto one of our cars giving us that "peeping view" of the grounds, filling the empty foreground with a hedge and covering the sky partially with overhanging boughs.

Then to build up this sequence we moved in for closer views of the action. First a follow shot of the color bearers, a dally shot of the "scout master's view of the scouts" and a low shot of the "scouts' eye view of their leader."

Then the scouts demonstrated first aid. Here we had a chance to shoot those angles that are such an outstanding attraction in all Japanese and Russian Cinematography. Our first showed the boys at work on a broken arm and leg. Here we shot downward at angles that gave us dynamic symmetry in our compositions, and then repeated in reverse shots of the patient looking up at the faces of the helping scouts.

We used no reflectors but did use filters to soften shadows, a light yellow-green and a red-orange since our emulsion was panchromatic.

On all stationary scenes we used a tripod and a very



Ray Fernstrom, A. S. C.

steady one too. The free head provided gave our pans and tilts that "solid-slide" effect so marked in professional results.

One feature we utilized might well be developed for professional work. This pertains to tripods and fast pans. Setting the camera back a foot off the tripod on an extension we were able to swing the lens in an arc away from the point of swivel, removing completely the blur that even today is an objectionable feature of the photography on major studio productions. This simple trick that was hit upon extemporaneously might well develop into an aid to professionals.

With an eight in my pocket now, I can collect locations, test theories on composition, filters, and odd angles without inconvenience or great expense, and can show these theories and ideas in a practical manner far superior to mere words, of which Confucius said a picture equalled ten thousand, and I say a movie, one million.

In the past men have gone on professional assignments and locations carrying still cameras to gather scenes for the home folks. With an "eight" your professional can bring back scenes through his life medium pictures in motion. Now without great cost every trip can be re-lived with his family, every country, its people, happy incidents, people associated with en route, homes visited, events happening on days when traveling, OR not shooting professionally. Every day a pleasure and every pleasure profitable since the scenes taken or locations discovered might well be of value to the cinematographer's professional work.

What with processing of eight mm. in most parts of the world it should be but a small matter when several cinematographers are on a production location for one to trot off in search of new places with his "eight" and return to show these quickly to the director.

As to size, the "eight" that fits your pocket, the tiny

(Continued on Page 97)

Miniature Photography at Night

by
Clarence Slifer, A. S. C.

FOR many years, I have made a hobby of night photography. The belief that some day it would be possible to make instantaneous pictures at night, served as an incentive for continued research in this field. Surely, such an accomplishment would be equal to any of the imaginary achievements of Jules Verne.

Today, such a feat as instantaneous night photography may be performed with almost commonplace regularity. Even though I made many pictures during this transition from tripod to snapshot night photography, I find it hard to believe that the seemingly impossible has been accomplished by the makers of lenses and photographic emulsions. Their attainments have made available to you, a new and interesting source of subject matter.

The making of night photographs has always demanded the use of the fastest lenses and films obtainable. Very early, during my adventures into this field, I recommended the advantages of the miniature camera for this type of photography. Large aperture lenses have a shallow depth of focus. This condition can only be offset by the use of short focal length lenses. Thus making it advantageous to use the miniature camera. (By actual photographic tests I have found that at $f2:0$, the 50mm. Summar lens on my Leica possessed a much greater depth of focus than did the $7\frac{1}{2}$ inch Tessar lens at $f4:5$ on my Graflex.)

So early in 1925 when the miniature type Ermanox camera, with its then astonishing $f2:0$ Ernostar lens, was placed upon the market, I procured one for night photography. Later, I made a camera especially for this type of work, employing an $f1:5$ lens. Because of its ability to use motion picture film, I was attracted by the Leico camera. This camera I have used for some time for night photography.

Last fall, when the Leica organization placed upon the market the new $f2:0$ Summar lens, my interest in night photography was revived and I obtained one at the earliest opportunity. Perhaps it does sound illogical that I should be anxious to try an $f2:0$ lens, when I had previously used lenses of faster ratings. This, however, can easily be explained.

Lenses are rated by their "f" values. Lenses having low "f" values, i.e. $f2:5$, $f1:5$, etc., are termed fast lenses. This is because they normally permit the making of faster exposures than lenses of higher "f" values. This "f" value of lenses is arrived at by a purely mathematical calculation (focal length of lens divided by diameter of lens) and not by any scale of photographic effectiveness. From this it may be seen that although lenses may have the same "f" value, yet due to their design they may differ greatly in photographic speed. Color correction and sharpness are also factors that contribute to the speed of a lens.



Top left photo shot by moonlight, time 15 sec., exposure $f2:00$. Upper right made by light of paper match after it had flored down; exposure 1 second of $f2:00$. Lower photo shot at night; time $1/20$ th second of $f2:00$. Dupont film used on all shots.

Under present conditions, I have found that the following exposures will give nicely timed negatives, using the $f2:0$ Summar wide-open on DuPont Superpan. This film being faster in the threshold part of the scale than any film that I know of. Night street scenes in the business or theatre sections, $1/20$ th second. All normally illuminated interiors at night, $1/20$ th second. Places where the lighting is above normal, as theatres, boxing matches, etc., up to $1/100$ th second. Portraits with one paper match as the sole source of illumination, one second. Portraits with moonlight (full) as the sole source of illumination, 15 seconds.

The speed of the film may be still further increased by hypersensitizing it in an ammonia bath or by slightly fogging it after the exposure has been made and just before developing. However, the speed of film is now ample for the majority of the shots, hitherto impossible with the then available materials, without resorting to this added trouble.

An exposure of $1/20$ th part of a second just about stops all normal slow movement, as people walking, etc. This speed is also about the slowest shutter speed permissible with the hand-held camera. Slower exposures may be made only with great care. I have found the following dodges helpful. By tripping the shutter with a cable release or with a self-timer and by bracing the camera with a neck or foot strap.

I develop my night exposures in D76 developer for the full normal time. For poorly lit subjects the Eastman D82, maximum density, developer may be used. It does, however, give more grain than does D76.

Modern films have much latitude, so detail is recorded in even the grossly over-exposed sections of the negative. As miniature negatives are printed by projection, this detail is easily "dodged in" on the enlargements. I prefer the softer grades of enlarging paper for night photographs

(Continued on Page 94)



A Continuity for Filming Father

by
Mrs. J. Dickinson Reed

THIS article should start with a great big "Warning to Husbands"—it's **not** for them! Quite the contrary—it is intended for those long-suffering women, the wives of cinemaniacs. There must be thousands of us, patient martyrs to our husbands' photographic fancies. Personally, I've posed and acted up and down the whole state of California, while my spouse shot scenery, tests, and light-effects, or experimented with the continuities which have been appearing in the AMERICAN CINEMATOGRA-PHER. But the worm has turned—here is a continuity I wrote—and made my Lord and Master act in! Sister, try it out on **your** husband!

MAIN TITLE: DAD GOES DOMESTIC

Scene 1. (Fade In) Close-up of a safety-pin. Make this fill the whole picture. Then move the camera back (or lap-dissolve) to show that the safety-pin holds a note, written in a feminine hand, attached to the back of a comfortable armchair. The note reads:

Dear Bill—

Couldn't wait any longer. I'll be back when the bridge-tournament is over. Take care of baby.

Love,
MARY.

Scene 2. Long-shot. Father is standing by the chair, looking at the note disgustedly. He shrugs his shoulders, and sits down to read his paper.

Scene 3. Close-up of Father's hands filling his pipe.

Scene 4. Medium close-shot of Father. He puts the pipe in his mouth, and reaches for a match.

Scene 5. Close-up of a small baby in his crib, starting to cry.

Scene 6. Same as scene 4. Father is just lighting his pipe, when he hears something. He stops, listens, and the match burns his finger. He hastily drops the match into the ash-tray, puts down his pipe, and gets up.

Scene 7. Long-shot, in the nursery. The crib is in the foreground: Father comes quickly through a door in the background, and looks down into the crib.

Scene 8. Same as Scene 5. Close-up of the baby, crying.

Scene 9. Medium-shot, of Father and the crib, from a different angle. Father reaches down and picks up the baby—no, baby is quite dry: what else can be the matter? Ah! He has it—the kid's hungry! He puts the baby back into the crib, and hurries out of the picture.

Scene 10. Long-shot in the kitchen (or back-porch). Father comes in and opens the ice-box door.

Scene 11. Close-up inside ice-box. Father's hand reaches in, and hunts for a bottle. There is none. He picks up an ordinary milk-bottle.

Scene 12. Long-shot in kitchen. Father—milk-bottle in hand—is looking for something to mix the baby's formula in. He can't find it. Finally he gets down the family cocktail-shaker.

Scene 13. Close-up of the shaker. Father slops some milk into it, followed by whatever syrup or the like your baby uses. He spills some of the syrup on the outside of the shaker.

Scene 14. Medium-shot. Father closes the shaker, and begins to shake. He doesn't enjoy it, as the syrup makes the shaker very sticky. Fade Out.

Scene 15. Fade in. Close-up of feminine hands, dealing cards at a bridge-table. Fade Out.

Scene 16. Fade In. Same as Scene 14. Father puts the shaker down, and starts to pour the mixture into the baby's bottle. As he can't find the funnel, he spills as much as he gets into the bottle.

Scene 17. Close-up of Father's hands trying to get the nipple over the top of the bottle. He is very clumsy—spilling the bottle several times, etc. Finally he succeeds—after losing most of what he has managed to get into the bottle.

Scene 18. Medium close shot, by the stove. Father puts the bottle in a pan of water, over the fire, to warm.

Scene 19. Long-shot of living-room. Father enters, and picks up his pipe, lights it. He notices something in the paper, and sits down to read it. Fade Out.

Scene 20. Fade In. Close-up of the pan, with the bottle in it. It is boiling merrily. Fade Out.

Scene 21. Fade In. Close-shot of newspaper in front of Father's face; smoke from his pipe puffs out from behind it. Suddenly the paper is jerked down, showing Father's face—he remembers the milk! He jumps up.

Scene 22. Long-shot in kitchen. Father enters hastily, and grabs the pan from the fire. It burns his fingers. He blows on them and swears. He looks around, finds a holder, and gets the pan off the fire. Then he turns off the gas. He holds the hot pan in his hand, trying dazedly to find somewhere to put it. Ah! The ice-box, of course.

Scene 23. Close-up of the ice-box. Father opens the

(Continued on Page 91)

NO STANDARD amateur movie camera is equipped to run film past the lens in reversed direction travel for taking pictures, and altho professional cameras can be made to run backward, the effects of reverse film travel are practically always obtained in the printing.

What, then, is the object of heading this discussion as it is headed? Simply to establish the idea that movies may be made backwards for certain effects. The means used professionally are not available to amateurs, but the amateur can do this sort of work very easily, as we shall see.

One of the first tricks the fledgling movie enthusiast tries once he has the "feel" of his camera is to take a picture while holding the camera upside down. For some reason, the first subject so photographed is some friend diving from a spring-board. The psychology behind this unconscious but almost certain choice is obscure—but this is not a treatise on psychology, so we will drop this aspect.

Screened, without performing the magic rites (one of the "secrets" of movies) of turning the film end for end, the diver would dive up from the bottom of the picture into the water at the top. Reversed end for end and spliced back in, however, the diver performs the miraculous impossibility of jumping out of the water onto the spring-board. All very clever, and all that sort of thing, but that particular subject has lost its originality by reason of its being overworked.

Because reversed action of the aforementioned diver is so hackneyed a subject, most amateurs shy at the mention of reversed action movie making. This is most unfortunate because it happens to be one of the simplest yet most effective tricks any amateur can film. Forget about the spring-board incident. Use the trick a hundred other ways. But use it wisely.

The underlying principle of the mechanics of making reversed action shots with amateur equipment is simply this: Take the picture while holding the camera upside down. When the film has been returned from the processing station, cut out that upside down scene, turn it end for end (but do not allow the front side to be twisted to the back) and splice it in. Please note that this applies only to 16 mm. film. We'll take up the 8 mm. mechanics in a moment.

Perhaps you know how to do this trick, or it may be a new one to you. Withal, it is a safe wager that you haven't figured out why the film taken upside down and turned end for end made backward movies—but as betting isn't legal in many states, we'll pass that "sure thing." Frankly, I still like to toy with the reasoning behind it all, and with your permission, we'll see how it looks in print.

We take the picture upside down. That means that the film really runs past the lens from bottom to top, instead of the normal path of top to bottom. The travel of the film is thus reversed. Since we turned the camera upside down, the image recorded on the film is recorded reversed top to bottom and left to right from what it would have been recorded had the camera been used right side up. Another way of putting it is that the tops are where the bottoms of the scenes would normally be, and the lefts where the rights should be, and vice versa, with respect to the other pictures on that roll, the normal pictures.

If we projected this scene as it came back from the developer, the actors would go thru their motions in a normal procedure but upside down to the audience. The first frame exposed upside down would be the first to be projected, also upside down. But upside down pictures wear on the nerves, so we cut out that scene and turn it around, and splice it back in. Now the actors are right



"Cut the upside down scene from the developed roll—"

Cinetricks---

side up and the right side is where their right side ought to be. But when projected, they go thru their action backwards!

That was a terribly difficult trick to do, wasn't it? And wasn't it "mysterious"! Certainly and bosh!! Motion picture work hasn't the least iota of mystery—it is plain, common, everyday applied horsesense and don't let anyone change your mind. If you will but stay with me thruout CINETRICKS, perhaps my amateur movie readers will understand my almost fanatic desire hereby to debunk some popular notions standing in the way of better amateur work.

But back to work. You will notice that when you turned the upside down 16mm. film around end for end you kept the same side of the film facing you all the time. That works fine with any film which has symmetrical perforations. The perforations of 35 and 16 are symmetrical about the center of the film, and the single row of the 9.5 Pathe (which isn't used in the United States much) is in the middle, so 35, 16, and 9.5 are simple to turn end for end.

The problem with 8 mm. film, however, isn't quite so simple. It has but one row of perforations when finished, and that one row must be kept on the right side as you face the screen. The reversed action, or upside down shot, then, must be regarded as a problem special to the 8. There are two simple ways out of the difficulty, either of which may be used depending on your own ideas. One is to disregard left and right and just project it that way. The other is to use a mirror or right-angled prism before the lens while taking the shot, to reverse left and right. The 8, in addition to being turned end for end, must also be turned front to back.

Theorists will come forward with the thought that in the case of reversed action shots made on 8, because the shot must be projected with its emulsion on the opposite side of film to that of the shots made normally, quite naturally, this shot will project out of focus. The focal plane of the reversed shot is the thickness of the film away from the plane of the normal scenes, and will be out of focus. To stem at the outset a flood of mathematical proofs that such a film will be out of focus, I challenge my readers to try it out first before arriving at too positive a conclusion.

Perhaps under certain conditions, reversed action shots on 8 will be a bit fuzzy, out of focus, when projected. But when you discover how surprisingly sharp the pictures do screen, and you are puzzled over it, hark back to the primitive days when you first discovered the photographic term "depth of focus as compared with lens focal length."



"... and turn end for end.
Action now projects in reverse."

Reverse Film Travel

by
Wm. J. Grace

The use of reverse action is in no wise restricted to comedy or frivolous work. Professional work many times makes use of the trick for reasons of mechanical expediency or human safety. Of course, the trick work is done in the optical printer, the negative and positive being run in opposite directions instead of the same direction. Not all reversed action shots possible with the optical printer of the professional are within the capabilities of the amateur with his reversal film which requires that he "build in" his tricks as he takes his pictures.

To mention a reversed action trick which the amateur can not do, witness the golfing instruction series which appeared a year or so ago in our theatres. At various points in the stroke the picture was "stopped" for inspection by the audience as the voice of the expert called attention to position of wrist, forearm, shoulders, and stance. At the end of the inspection the picture continued the action. It was a simple thing for the optical printer to stop the travel of the negative and print a number of successive frames of the halted negative frame, and then, when the proper time had been reached, to start the travel, either backward or forward, of the negative. This example is cited not to act as discouragement but to suggest possibilities.

To suggest, on the other hand, at least one reversed action trick quite within the range of the amateur's equipment, suppose a sequence is desired showing a human target being outlined with the knives of an expert knife-thrower. Few amateur actors care to repose the necessary faith in even an expert, and few amateurs could afford the engagement of one plying such a trade, so by the trick of reversed action the knives may be convincingly pictured precisely outlining the heroine. Let's go thru the procedure.

With the camera upside down, the scene is started with all the knives stuck in the back-board and a relieved smile on the visage of the human target. Strong thread or fine piano wire colored to blend into the background are yanked

one at a time, the knives flashing out of range of the camera. Meanwhile, the expression of the lady-in-out-line changes from stoical grimness to one of hope that the first knife misses her person. Being filmed in such a way that it is to be projected backward from the sequence in which it was filmed, the expression must change also in reverse so that the projected shot, when turned 'end for end and spliced in, will be convincing.

A little practice will develop skill in the "knife-thrower," who, by the way, is not in the picture at all; a rehearsal or two of the target will prove interesting and not difficult. Until the technique all around is screened, it may need a bit of polishing, but the effect is worth many times the trouble, even if the work were not so extremely interesting in itself.

If the role of teacher by the film route does not concern you, nor does the filming of a play requiring a sequence such as we described, perhaps comedy will be appealing. At any rate, by all means rummage about mentally and imagine the places in your serious or trivial filming which might be made by the trick of reverse action, then try your hand at it. It is easy, it is fascinating, and it is intriguing and entertaining to your audience. Artfully employed, reverse action is most difficult to detect. Boldly exploited for obviously impossible effects, ludicrous movies filmed backwards are immeasurably heightened in effect.

In the summation of this and the preceding article, MOTION CONTROL, why could not some combination of the two tricks be used? Take your diver normal in direction and speed, then take him at half speed diving backward. Or, picture him at half speed forward and follow with a slowed motion backward shot. And reverting to the knife-throwing example, film it at half speed (backward) and the knives will flash into action twice as fast on the screen. Caution the actor, of course, to go thru her pantomime half as fast as she would normally.

Next month we will discuss one of the most intriguing of all the tricks of cine work, double exposure. It isn't quite so simple as the trick we've just discussed, but it is so much broader in its possibilities that it is really the ace of the cinemographer's bag of tricks. See you next month, then.

Distortion

Sometimes we may want to get a shot of a person or scene slowly becoming more and more distorted, as in a nightmare sequence, or the like. Now-a-days, this is often done on the Optical Printer, but it can easily be done in the camera, too.

Suspend a fair-sized optical-glass flat in front of your lens, quite close to the lens (if you have a matte-box that will take 2-inch square filters, this is ideal). You begin your scene shooting through the glass, getting a normal effect. When you want the distortion to start, spread a little warm Sweet Oil (or Castor Oil), along the top of the glass. As it flows down over the glass, the picture will become more and more distorted.

If you want to reverse the effect—that is, begin with the scene distorted, and then have it return to normal—you can do it in two ways. You can make the scene as outlined, but with the camera upside-down, and reverse the film end-for-end when you cut the picture. Or you can slowly remove the flat from the matte-box. Each, of course, will give a different effect.

JACK SMITH, A.S.C.



Kodacolor Gives Life To Travel Films

by
John W. Boyle, A. S. C.

A YEAR or so ago, Ray Fernstrom, A.S.C., and I went to Scandinavia to produce a series of travel-films. We carried with us equipment for both black-and-white and natural color (Multicolor) cinematography, and returned with nearly 30,000 feet of film. For the sake of safety, we duplicated almost every color shot in black-and-white: but after returning to Hollywood and viewing both sets of film, we virtually abandoned the black-and-white, for the natural-color scenes in every instance proved more arrestingly dynamic than the monochrome ones. The resulting pictures, including the seven-reel feature, "Sweden—Land of Vikings" and several short-subjects, have all been released in the Multicolor version, and have proved far more successful than similar black-and-white films could have been. Both critics and laymen have told us that the color gives a sense of actuality entirely missing from a black-and-white picture; it is, they have told us, almost as though they had actually made the trip with us, rather than being merely spectators at a movie-show.

Now, if color is so helpful to the professional travel-filmer, it can be equally valuable to the amateur. The amateur's audience is far more likely to be "cold" to a travel-film—and accordingly, it will be more appreciative of the enlivening influence of color. Moreover, the amateur has at his disposal, in the Kodacolor and (in Europe) Agfacolor process, a natural-color process far more perfect than anything available to the professional. Being a three-color process, the colors are truer; and since it is not dependent for its color-effects upon any dyes, rotating

filters, or the like, the colors will be more consistent. And with SuperSensitive Kodacolor film now available, coupled with the fact that Kodacolor may now be made under artificial light as well as outdoors, virtually anything that can be photographed in black-and-white can now be photographed in color.

Consider the possibilities of a trip to Sweden, such as the one which gave us "Sweden—Land of the Vikings." You sail from New York, usually in the morning, at an hour which will give you a fine color-shot of the New York skyline, the shipping, and such familiar features of an ocean voyage. The crossing gives you interesting opportunities for effective color scenes aboard the ship: the deck sports are always interesting, and with a little "staging" can be made into a very colorful sequence, while shots in the veranda-cafe, the bar, etc., are very interesting.

Landing at Gathenburg a week later, you will probably enter the harbor in the evening; but thanks to the mid-night sun, you will still be able to get satisfactory color-scenes, even at eight-thirty or nine in the evening. Gathenburg itself is an interesting city, built nearly three hundred years ago under the direction of Dutch architects, and accordingly interlaced with picturesque canals. Even in the evenings, you can get some finely characteristic scenes showing how Mr. Average Swede amuses himself at the open-air cafes and concerts in the great park of the Horticultural Society (Trädgårdsforeningen), which fronts one of the larger canals.

By all means make your trip from Gathenburg to Stockholm via the Gata Canal. It is in itself a fascinating experience, and the most unusual of picture-material, as well. You travel on a tiny white steamer—a liner reduced to the dimensions of a baby Austin, in order to pass the century-old locks. You steam up the Gata Alv river to Trollhattan, where you begin your climb up the first flight of locks. From there you travel on, through lakes, rivers, and man-made canals, across the heart of Sweden. Along this route are innumerable opportunities for effective scenes: on some of the canal stretches your ship seems to be steaming over the fields, or along shady roads travelled by peasants' carts, bicycles, and an occasional automobile. Such shots as you can secure from the deck are interesting under any circumstances, and doubly so in color. Then you can often land, and get similar shots of your ship, or another, in which the contrast of the tiny white ship steaming along through the verdant green fields is highly effective. A pause is always made at the home and burial-place of John Ericsson, of "Manitor" fame, who built the canal, and should yield very effective scenes. The canal-locks, hand-operated by men whose fathers and forefathers have operated the same locks before them, are worth special attention. So, too, are many of the towns, cities, and quaint medieval castles which you pass en route across Sweden.

Stockholm itself is a city of strange contrasts. Built on an archipelago where the Baltic and Lake Malaren meet, much of its traffic is water-borne, upon the immaculate little white steamers which are so typically a part of the Swedish scene. Passengers—food—firewood from Finland—all flow in and out among the islands in an unceasingly colorful stream. Ashore, the "old city," with its narrow, twisted streets, and bustling traffic, gives one a glimpse of the Stockholm that was, while the newer quarters, with modern buildings—including Europe's only skyscraper, a twin building connected with a street-spanning arcade; the modernistically beautiful, yellow-brick City Hall, with its famous roof, each shingle of which bears the name of the citizen who contributed for its purchase; the

(Continued on Page 95)



WHEELS

OF INDUSTRY

Fotashop Panchromatic 16 mm.

ACCORDING to an announcement from Fotashop of New York City, that company has added 16 mm. panchromatic reversal film to its line of 16 mm. negative and positive film which it has been marketing to the amateur trade.

According to the claim of that organization this film is fully panchromatic and is shot at the normal panchromatic speed of other brands of 16 mm. panchromatic reversal films.

Brooks Developing Tank

BURLEIGH BROOKS announces a new developing tank under the name of Nikor Tank. This tank is made of stainless steel and comes in three sizes, 35 mm., vest pocket and No. 120.

It is the claim of Brooks that this tank is so constructed that it loads very simply.

Canadian Library

CLAIMING one of the largest 16 mm. libraries in Canada, the Regina Photo Supply, Ltd., of Regina, Sask., announces 900 reels of Religious, Educational, Travel and Entertainment films. They are now planning the inclusion of 16 mm. sound subjects in their library.

AGFA 16 mm. Negative

ACCORDING to an announcement made by the Agfa Ansco Corporation, that company is now marketing its Plenachrome film in 16 mm. negative.

This negative has the same characteristics as the reversal film in that it is sensitive to all colors excepting Spectral red. The rapid development of the use of negative and positive in this country within the past year has dictated the advisability of this company entering this field. Up until this announcement the choice was practically restricted to Dupont negative.

It is expected that other companies will make announcement of a 16 mm. negative.

AGFA Appoints Processing Plants

THE first company to entrust the processing of reversal film to outside laboratories is the Agfa Ansco Corporation which announces that the territory adjacent to Kansas City, Mo., will be taken care of by the Calvin Company, B.M.A. Bldg., Kansas City, Mo., and in Canada by the Street Photo Supply Company, 1479 St. Catherine Street, West, Montreal, Quebec.

These companies will process all types of 16 mm. film sold under the Agfa trademark.

16 mm. Sound Library

THE Sound Film Circulating Library, Inc., has announced the opening of a branch film library for the New York Metropolitan District at the Industrial Finance Corporation in the Graybar Building, adjoining Grand Central Station. This is the first of its branches

to be installed in banks in all of the principal cities in the United States extending from coast to coast.

Each branch library will confine rentals to the trade, that is to business and mercantile and show services to whom clientele applies for film rental. Service to such establishments will be at a trade discount per rental and obviates the necessity of investment by the dealers in pictures.

The library will carry several hundred subjects at all times and each branch will carry at least one complete set of all subjects, it is claimed. Its selections will be those appropriate for schools, church organizations, colleges, clubs, hotels, camps, steamships and industries.

Kodak Filter Holder

A DEVICE that permits a single filter to fit a variety of lenses has been put on the market by the Eastman Kodak Company, designated as the "Cine-Kodak Universal Filter Holder." A metal collar, equipped with rubber-covered coil spring arranged in such a way as to clamp on lenses differing in size, the device provides an unchanging circumference to which the filter may be affixed, thus eliminating the need to buy different filters for different lenses.

The Cine-Kodak Universal Filter Holder's usefulness will be, of course, for persons with interchangeable-lens cameras. It is designed to fit the following Cine-Kodak lenses: f. 2.7, 15 mm.; f. 3.5, 20 mm. (interchangeable style only); f. 1.9, 1-inch; f. 3.5, 2-inch; f. 4.5, 78 mm.; f. 4.5, 3-inch; f. 4.5, 4½-inch. In addition, it will fit many lenses of other makes.

The U7 Cine-Kodak Color Filter is of the correct size to slip over the filter holder, and thus becomes standard when the holder is used.

New Focomat Enlarger

E. LEITZ, INC., 60 East 10th Street, New York City, is announcing a new autofocal enlarger for miniature negatives known as the "Focomat." It resembles the popular Valoy Enlarger, and accommodates all small negatives up to 3x4 cm. A feature of the Focomat is the autofocus arrangement by means of which enlargements from 1½ to 10 diameters can be made with the assurance that the image is in sharp focus.

As with the Valoy, the Focomat permits Leica Camera 50 mm. lenses (Elmar, Hektor and Summar) to be used as enlarging lenses, hence the enlarger may be purchased without lens.

Debrie in Hollywood

GEORGE NOFFKA, general manager of Andre Debrie, Inc., is in Hollywood, displaying the new model Debrie Super Parvo 35 mm. Camera.

While in Hollywood, it is Noffka's intention to appoint a Western representative for the Debrie line of cinematographic equipment.

Eastern sales are under the direction of H. R. Kossman, of New York City.



BACKYARD MOVIES

Movie Film Free

E. W. Nelson of Chicago gives us a practical idea for the use of the 8mm. or 16mm. camera. Here is an idea that everyone will find practical. Nelson, of course, gets the roll of Panchromatic film. Read his suggestion over—see how simple it is, but how practical. Then try your hand at winning a roll of film free. Send your suggestions to the Editor.

Sometime soon, the World's greatest, most stupendous aggregation of ferocious wild animals, death-defying aerialists, unexcelled equestrians and comical clowns is going to honor your town by giving several performances before being called away from your fair city to appear before the Crowned Heads of Europe. In other words, it's circus time! Why not make a movie about the circus?

The winning scenario this month is "Circus Daze," dedicated to all the small boys who, though grown up, still remember the thrill of the big top. Most of the scenes are laid in the circus-tent before the start of the show: they can easily be photographed with a fast lens and SuperSensitive film—and you'll find the circus folk a friendly lot, ready to co-operate with you, especially since many of them are, like yourself, amateur movie-makers. So let's go to the circus!

MAIN TITLE: CIRCUS DAZE

Scene 1. Shot through a window. A small boy (Jack), outside, runs up to the window, very excited. He stops below the window, puts his fingers to his mouth and whistles.

Scene 2. Extreme close-up of Jack's face—his hand is still at his mouth, and he is whistling.

Scene 3. Same, from a different angle. Repeat this scene two or three times, each shot from a different angle.

Scene 4. Same as Scene 1. Jack is still whistling, and jumping around excitedly. Another small boy (Bob) approaches the window from behind the camera, walking rather listlessly.

Scene 5. Reverse angle of Scene 4. Close shot of the window from outside. Bob's face is against the glass; he is looking out at Jack, but cannot hear what he says.

Scene 6. Same as Scene 4. Jack, outside, is gesticulating wildly; Bob, inside, stands quietly, obviously not understanding. Jack finally motions Bob to open the window.

Scene 7. Reverse-angle, from outside. Jack is in the foreground, Bob is opening the window in the background.

Scene 8. Close shot of Jack, talking wildly.

Scene 9. Extreme close-up of Jack's mouth, talking.

Scene 10. (It will be very effective if the following four scenes can be double-exposed over the close-up of Jack's mouth.) Angle-shot of a fresh circus-poster, taken from lower left-hand corner, as a small boy might see it. Make this a short flash.

Scene 11. Similar flash of poster, from lower right.

Scene 12. Longer flash of a poster (any theatre billboard will provide this) saying, in large letters TODAY. Shoot from straight head-on angle.

Scene 13. Straight angle showing full circus poster.

Scene 14. Close shot of Bob, in the window. His eyes and mouth snap to sudden surprise and excitement. He signals Jack to wait, and rushes away from the window.

Scene 15. Interior-shot of a door, from extreme low angle. Bob suddenly appears in the doorway, gesticulating wildly, and full of nervous enthusiasm. He is plainly asking permission to do something.

Scene 16. Medium-shot of Bob's mother, sitting in a chair, sewing. She stops her work and listens.

Scene 17. Big-head close-up of Bob, talking excitedly.

Scene 18. Close shot of Bob's mother, she smiles, and nods her head.

Scene 19. Close shot of Bob's hand grabbing a cap from the hat-rack.

Scene 20. Long-shot of Mother, with the door in the background. Bob appears cap in hand. His mother looks up, and speaks. Bob disappears, to reappear hastily putting on his sweater.

Scene 21. He comes up to his mother, who smilingly makes the final adjustment of his sweater, and kisses him. She shakes her finger warningly at him, as he rushes from the room.

Scene 21. Low set-up on front porch, outside of door. Bob's feet rush out and down the steps, three at a time. Pan the camera to follow, so that when Bob reaches the sidewalk, where Jack is waiting, both boys are fully shown. (A 15mm. lens is best for this shot, as it simplifies focusing.) Jack grabs Bob's arm, and the two boys run down the sidewalk, exiting to the right. Half-way out of the picture dissolve to —

Scene 22. Moving dolly-shot (this can be made by placing the camera in a car, driving along the street following the boys on the sidewalk.) It is a medium close shot of the two boys, half running, half walking; both are talking wildly. Bob is listening, wide-eyed and grinning; Jack is pointing. Stop camera movement just before reaching street-corner, and pan to follow the boys as they dash across the street to a circus-lot. Make this shot from an angle that will show the entire circus layout, showing the grounds being readied for the show. Hold until the boys disappear.

Scene 23. Medium long-shot of a typical circus "boss" leaning against a circus wagon, enjoying a cigar. The two boys come in and, standing directly in front of him plead with him. The "boss" shoos them away with a single gesture, hardly noticing them.

Scene 24. Close-up of the two boys, persistently pleading. Make this from a high angle, as the "boss" would see them.

Scene 25. Close shot of the "boss," from a low angle, as the boys would see him. He looks down, amused at the persistence of the little tykes. He half grins, reaches up and strokes his stubby chin; then he laughs, and nods consent.

Scene 26. Close shot of the boys. They grin very widely, and stammer thanks. Dissolve or wipe into—

Scene 27. Close-up of Elephants' trunks drawing water out of a trough. Buckets of water are being rapidly poured into the trough. (Shoot this at 8 frames per second.)

Scene 28. (Also 8 frame speed.) Medium long-shot of the boys, running in relay with waterpails. If you can get this with an Elephant drinking in the foreground, it will be doubly effective. Dissolve or wipe into—

Scene 29. High shot inside horse-stable tent. The boys are busy forking hay and straw. If you can get this with no movement other than that of

(Continued on Page 92)

Full scope
to your
movie
artistry
WITH 16 MM.
FILMING
ECONOMY



Here's the Ciné-Kodak Special equipped with 200-foot film chamber. The periscope-type finder makes possible eye-level sighting with this film chamber in place. 100-foot and 200-foot film chambers are readily interchangeable and so permit changing from Ciné-Kodak "Pan" to Kodacolor or to Ciné-Kodak "Super-Pan" in a few seconds.

CINÉ-KODAK SPECIAL

THE CUSTOM-BUILT
16 MM. MOVIE
CAMERA

*If it isn't
an Eastman,
it isn't a
Kodak*



IT'S a 16 mm. camera only in the size of the film it uses...in the simplicity and convenience of its operation. In all else, Ciné-Kodak Special is altogether new... amazingly versatile...capable of producing advanced cinematic effects comparable to those of the finest 35 mm. motion picture cameras.

Three of the many features of Ciné-Kodak Special are shown here. Others include: a reflex, as well as an eye-level finder, which gives exact field and focus at any distance with any of the Special's lenses; interchangeable film chambers, 100-foot

and 200-foot capacities; one- and eight-frame hand crank shafts; double lens turret for any of six interchangeable lenses; camera speeds ranging from 8 to 64 frames per second.

The cost of the basic model, with Kodak Anastigmat *f*.1.9 lens, 100-foot film chamber, and set of six masks, is \$375. Alterations or adaptations for almost any kind of scientific and technical work will be estimated. For complete details write for the Ciné-Kodak Special Book. It is free on request. Eastman Kodak Company, Rochester, New York.

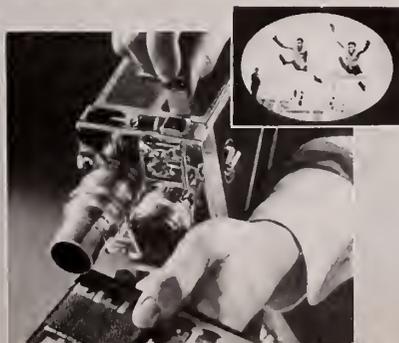


MULTIPLE EXPOSURES

THE Special's winding-back action makes possible a wide variety of double- and multiple-exposure creative operations. As film is wound back, it is smoothly taken up on the supply spool. A film meter, geared to the camera's mechanism, registers in individual feet the amount of film run or wound back.

SET OF MASKS

EACH Special has, as standard equipment, a set of six masks—oval, circle, two vertical and two horizontal half-masks. No bulky mask boxes are necessary—the Special's masks are inserted in a tiny slot between lens and film. Masks of unusual shapes are available on special order.



VARIABLE SHUTTER

THE Special's variable shutter gives complete control of heretofore difficult fades and lap dissolves. To fade out a scene, press the lever from "open" to "closed." To fade in, reverse the procedure. For a dissolve—wind the film back after fade-out, then fade in.



"Digging In" for Trick Angle-Shots

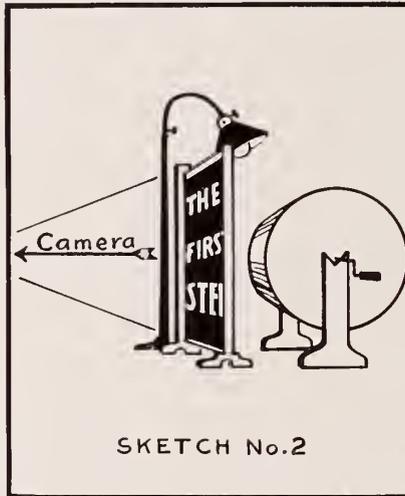
You've seen, in professional pictures, shots in which a speeding car, train or horseman rushes right into the camera, finally apparently running right over it. And you've probably wished you could duplicate such shots in your own films. Well, it's easy!

You simply dig a pit, deep enough to hold the camera (preferably on a tripod) and, if possible, the cameraman, as well, though with the automatic cameras and remote-control devices now available, the camera, once properly set up and wound can be trusted to do its work itself. The camera, to secure the best effect, should not be too deep: the lens should be looking slightly over the edge of the pit, so that it photographs the approach of the object. The object moves straight toward the camera. If you are photographing a man or a horse, you won't need to cover the pit, as either man or horse can easily jump across the hole. On the other hand, if you are photographing a car or a bicyclist, you will have to lay a plank track over the pit, for the wheels to run over. If a cyclist, you will need but a single track, of course: place this right beside the camera, out of the picture, so that the rider can come as nearly as possible straight at the lens, and then pass overhead with, perhaps, only a tiny swerve after the scene itself is made.

Another way to do this—especially with action such as railroad trains, and the like, where you really can't dig a pit, is to put the camera in a low set-up where a long straight stretch of track ends in a curve. Then use a telephoto lens—3-inch or over—and the result will be equally successful. The telephoto lens will, of course, bring the train up into the camera, and if you place your camera correctly, the train will fill the picture well before it starts to curve. The same idea, using lenses of still greater focal length—say, six inches—will enable you to get similar shots of an airplane "taking off" right into the camera.

Recently, I saw an amateur comedy which made excellent use of this idea. The story told of a novice trying to ride a bicycle. The cameraman had dug a pit, and bridged it with a plank, which he placed across the pit, right next to the camera but just out of the picture. When the clumsy rider approached the camera, he seemed to ride right into it. He finally blurred the whole frame; the effect was such every time I've seen the film shown, the audience involuntarily ducks!

The effect of these shots is greatly heightened, too, if you undercrank—



that is, shoot at 12 or even 8 frames per second instead of the normal 16. This speeds up the action, and makes the subject seem to rush faster into the camera. However—don't try this on really fast-moving objects, such as trains, racing-cars or airplanes: it would speed the action so much that they'd move too fast to give the right effect!

ARTHUR CAMPBELL.

ANIMATED TITLES—WITHOUT REWINDING

A very effective trick for making titles is to paint the letters on a pane of glass which is suspended in front of the camera. Behind the glass, place a good-sized drum, which can be revolved, like the glass developing-drums for "Leica" films. Focus the camera on the letters; since the glass is transparent, any design on the drum will show through. Now, revolve the drum, and you will have an

interesting title with an animated background.

An even better use of the same idea is to make the glass title-card in reverse: that is, leave the letters clear, while the rest of the glass is painted a flat black. Then cover your drum with some pattern of high reflective value—say a black-and-white checkered design, or, even better, a similar design made of tinfoil and black or grey paper. Light the drum, but not the title-glass. You will thus get a nice black title, with the letters showing clear and white where the tinfoil reflects the light through them. If you turn the drum, the checkered pattern will give you an interesting, animated title, in which the letters themselves flicker on and off. You can use this same idea for animated inserts of flashing electric signs: if you arrange the drum with horizontal strips of black and silver, and revolve it, your sign will flash on and off very realistically.

Similarly, if you cover your drum with paper graduated from white (or silver) to dead black, you will be able to make very good fade-outs and fade-ins. If the graduation runs spirally about the drum, you will get an interesting fade somewhat like a wipe. You can also use the drum, without the glass, for making "roll-up" titles.

This glass-title idea is capable of infinite variations. For instance, replace the drum with a curtain of strips of tinfoil or white paper, against a black background. Set an electric fan where it will blow these strips, and you'll have another interesting title-effect.

These ideas, with the addition of color, will also give some novel effects in Kodacolor titles, especially since it is now possible to make Kodacolor with Photoflood lamps.

ARTHUR CAMPBELL.

A SYNTHETIC WATERSPOUT

Several years ago, while photographing "The Johnstown Flood," I had to create a waterspout. It takes a few accessories, but it is very simple. You take a square, glass-sided tank (a goldfish-aquarium will do) with an outlet in the center of the bottom. Fill the tank with water, let in from a pipe or a hose placed at the side, so that the water moves in a whirl. The camera is set up on the scene, upside-down, to give reversed action. When you are ready, pull the plug at the bottom, keeping the inlet hose going a bit, so that the water runs out in a spiral swirl. When it is whirling properly, pour some red or black ink onto the surface of the water, and start your camera. The ink will creep down the swirl, and finally outline it sharply. As the ink will photograph strongly black, your picture will show a fine swirling cone, which will excellently represent a waterspout or tornado.

JACK SMITH, A.S.C.

A CONTINUITY FOR FILMING FATHER

(Continued from Page 83)

door, and shoves the pon right in. Fode Out.

Scene 24. Fode in. Close shot of feminine hands at bridge-table. Fode Out.

Scene 25. Fode in. Same as Scene 23. Fother takes the pan out of the ice-box. He still uses the holder.

Scene 26. Medium long-shot in kitchen. Fother comes in with the pon, still holding it gingerly with the holder, and sets it down on the table.

Scene 27. Close-up of the pon. It is so cold that it frosts over with condensed moisture. (You can get the effect of the pon suddenly frosting by filling it with ice-water so that it frosts, and making the scene with the comero upside-down. Half-way through the scene, stop the comero—without moving it—and clean off the pon, so that it is bright, and finish the scene. When you assemble the film, cut this scene out, and splice it in so that it is right-side up.)

Scene 28. Close shot. Fother pulls up his left sleeve, and lets a few drops of milk flow on his wrist. Brr!—it's too cold!

Scene 29. Medium shot, by stove. Fother puts the pon back on the fire. Fode Out.

Scene 30. Fode In. Close-up of feminine hands shuffling cords. Fode Out.

Scene 31. Fode In. Close-up of Boby, drinking contentedly.

Scene 32. Medium-shot of Boby, in crib, still drinking. Fother is orranging a pillow to support the bottle.

Scene 33. Long-shot of nursery. Fother has arranged the bottle so he won't have to hold it; he smiles contentedly, and leaves. Fode Out.

Scene 34. Fode In. Fother is sitting in his choir, reading and smoking contentedly.

Scene 35. Close-up of Boby, crying again.

Scene 36. Close-up of Fother. He looks up, irritatedly.

Scene 37. Medium long-shot of Fother. Resignedly, he lays down his pipe, folds up his paper, gets up, and leaves the room.

Scene 38. Medium-shot of Boby, in his crib, crying. The milk-bottle is empty.

Scene 39. Medium long-shot by crib. Fother picks up the boby—and to his disgust finds suspicious moisture. He carries him gingerly over to the dressing-table, and starts to unpin the dioper.

Scene 40. Close-up of Fother. He is very disgusted.

Scene 41. Medium-shot. Fother gets the dioper off. He looks around for

some place to dispose of it. There is none. He is worried.

Scene 42. Close-up (big head) of Baby—crying loudly.

Scene 43. Medium lang-shot of Fother, dioper in hond. He is desperote. Finally a look of resolution comes, and he crumples it and shoves it into his pocket.

Scene 44. Medium-shot. Fother stands by the bureau, and hunts through the drawers—not a single dioper is to be found! He looks around, still more worried.

Scene 45. Close-up of Boby, crying.

Scene 46. Close-up of linen tablecloth on top of the dresser.

Scene 47. Close-up of Fother. A relieved and resolute look comes into his eyes.

Scene 48. Medium-shot. Fother shoves the flowers, etc., from the dresser-top, knocking some of the things on the floor, and hostilely grobs the cloth.

Scene 49. Close shot of Fother, by the table, trying clumsily to fold the cloth diaper-wise. Repeat this from several angles, with Fother getting more and more clumsy. Fode Out.

Scene 50. Fode In. Close-up of bridge-table, from above. The honds ore still playing. Fode Out.

Scene 51. Fode In. Fother has finally gotten the cloth folded foirly well.

Scene 52. Close-shot of Fother. He sets the cloth down, and reaches for the tolcum powder. He starts to shoke some on the boby, but none will come out. Finally he forces the top off, amid a flurry of powder, which generously covers his face, hoir, clothes, etc., and unceremoniously dumps about half a conful onto the boby. (The boby need not be shown. In previous shots, it has been suggested that he is there, and the audience will imagine that in this shot, which cuts above the level of the baby, that he is still there.)

Scene 53. Fother sets the baby in the crib, and tiptoes out.

Scene 54. Close-up of the boby, asleep. Fode Out.

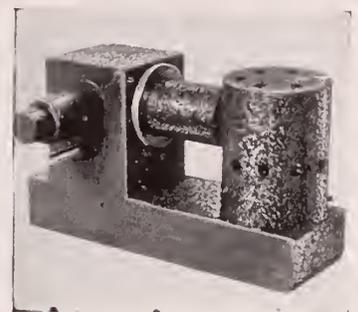
Scene 55. Fode In. Medium long-shot of Fother, getting ready to settle down again. He picks up pipe and poper but does not sit down.

Scene 56. Long-shot of the icemon, coming in the bockdoor, with a large coke of ice. He thumps it down on the floor, obviously making a lot of noise.

Scene 57. Close-up of Boby. He is awake, and cries.

Scene 58. Fother rushes into the nursery, looks at Boby, and picks him up. Fother starts walking the floor.

Scene 59. Close-up of Fother's feet, wolking up and down. Fode Out.



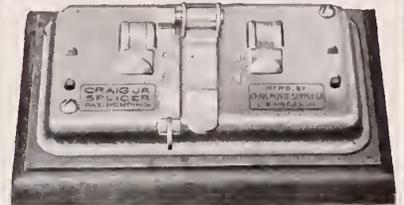
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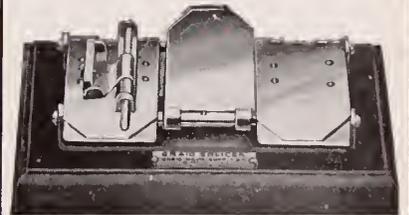
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Turn to the page of "Backyard Movies." Read that little plat over. We gave a 100 ft. roll of Panchromatic Film to the writer of that plat. Watch the Backyard Movie Department each month, see how simple it is to get film free. Then send in your plat. Something simple; something that can be done around the house, in the neighborhood, at the parks, shore or other spots that are usually visited by the ordinary person.

Just give us the story scene by scene; don't try to write a full scenario; make it simple and do not forget a few close-ups.

Send as many plats as you wish, only write each one on a separate piece of paper. Be sure to have your name and address on the same sheet of paper and please write on one side of paper only.

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film free!*

Address your continuities to
EDITOR

American Cinematographer

6331 Hollywood Boulevard

Hollywood, California

TITLE: 57,466 steps later - - -

Scene 60. Fade In. Same as scene 59. Father's feet are still walking, but move slowly. His suspenders trail behind on the floor, and the trousers sag dejectedly. He staps, rubbing his feet against his ankle, as though the feet were very tired.

Scene 61. Medium lang-shat. Father, his back to the camera, sets Baby down in the crib.

Scene 62. Close-up of Baby, asleep once more.

Scene 63. Same as Scene 61. Father turns, and tiptoes away.

Scene 64. Close shot of front door-bell. In the foreground is a woman's purse, with feminine hands rummaging through, obviously hunting for a key which isn't there. The purse is snapped shut, and one hand rings the bell.

Scene 65. Close-shot of Baby, awake and crying.

Scene 66. Medium-shot of front-door, from outside, over the woman's back. The door bursts open, and Father, very bedraggled, and covered with powder, rushes out. He staps abruptly, and his anger turns to relief—Mother is home again!

Scene 67. Long-shot of Mother going into nursery, closing the door behind her.

Scene 68. Father is back in the living-room, and sinks down into his chair, contented and at peace with the world. Suddenly he looks startled, and reaches for his pocket. He pulls out the diaper! More disgusted than ever, he eyes it, and then flings it savagely away. He raises his paper, and once more the smoke puffs up from behind it. Fade Out.

The End.

This film should use between 300 and 400 feet of 16mm. film. Any woman who has ever left her husband to tend to the baby alone can direct it, and embellish it with innumerable touches of realism. And the situations it puts Father in should be ample repayment for all his husbandly sins as a director of photography! If he has the equipment for making interiors, you can fry him under his own lights: if he hasn't, you can fake the interior scenes on a porch, and get the kitchen sequence with SuperSensitive and a photoflood or two in the regular fixtures. Father's living-room scenes can be made in the garden, or on a porch. In fact, the story can be adapted to almost any location, without losing the interest created by the situations. Try it out on your husband—even if you have to borrow a baby for it!

Backyard Movies

(Continued from Page 88)

the boys, shoot at 8 frames per second. Dissolve or wipe into—

Scene 30. Close-up of lion cage, made (if possible) with wide-angle lens between the bars; here is a chance for a beautiful animal shot.

Scene 31. Medium long-shot of animal cage. The boys are shown rapidly raking up around the wagon.

Scene 32. Close-up of Lion. (This is best made with a 1-inch lens.) The lion yawns (roars).

Scene 33. Close shot of the boys: they jump, and look very frightened as the lion roars, but keep on working. Dissolve or wipe into—

Scene 34. Ground shot (made with wide-angle lens) looking up at the trapeze performers practicing. (**Do not show the net.**)

Scene 35. Close shot of the boys spreading sawdust in the ring. Jack stops to wipe the perspiration from his forehead. He glances up, stores, nudges Bob, and paints up. They both look up, open-mouthed.

Scene 36. Closer shot of the trapeze-performers. (Make this with a 1- or 2-inch lens, getting a big picture, following them.)

Scene 37. Close shot, following one of the performers as he jumps down into the net. Still, if possible, avoid showing the net.

Scene 38. Close-up of the boys' faces, registering amazement. Make this a short, telling flash.

Scene 39. Shot up, from under the net, as the trapeze performer jumps down and lands in it. Hold on him as he bounces after landing, and then jumps off the edge, onto the ground. Follow him (this may have to be a separate shot) as he passes the two boys en route to the dressing-tent. Their heads turn and their eyes follow him in mute admiration. Then they turn back to their work. Dissolve or wipe into—

Scene 40. Close-up of monkey-cage. (Here is an opportunity for some amusing action, so hold these monkey shots longer than the others. Pan to one side to show a husky attendant approaching.

Scene 41. The attendant reaches the cage, and looks behind him, motioning someone to hurry up. Pan over to show the two boys staggering into the picture carrying between them a large bag of feed. Dissolve or wipe into—

Scene 42. Inside the dressing-tent. Panning shot (medium close) of several clowns and ringmasters dressing and making up before mirrors.

Scene 43. Close-shot into mirror, over the shoulder of one of the clowns, making up. He is making faces at himself. Pan down and to right to show the boys sitting on the ground, polishing boots. Some shoe-polish gets on their faces. Dissolve or wipe into—

Scene 44. Medium shot of the main entrance. The "boss" comes out, jovial, followed by two dirty and plainly tired boys, who are still smiling brightly. The "boss" pats them on the shoulders, and they scamper off.

Scene 45. Close-up of the "boss."



Pictures above, looking from top to bottom:

LEICA portrait by V. R. Haveman; LEICA aerial photo by C. J. Lewis; LEICA night photo with f:2 SUMMAR speed lens; LEICA indoor portrait by Dr. Henry Takahashi. Above at right, LEICA aerial photo taken at 6,000 feet altitude by C. J. Lewis.

FOG EFFECTS

Sometimes we may need a fog-effect, and have no "Fog Filter" available. A good makeshift is a screen of fine white gauze, placed in the matte-box or filter-holder before the lens, with some light directed through the gauze.

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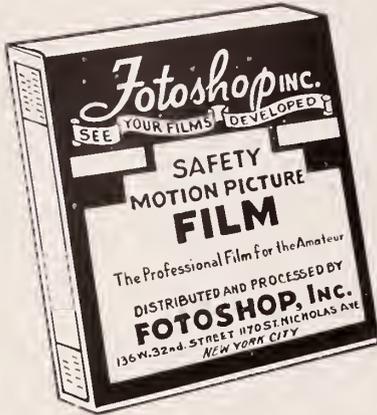
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He grins broadly, watching them, and nods his head in admiration.

Scene 46. Shot over the "boss's" shoulder, showing the boys disappearing in the distance. Dissolve or wipe into—

Scene 47. Moving dolly-shot of feet and legs of the two boys walking tiredly homeward—the reverse of Scene 22. They are tired, but still excited, for they walk alternately fast and slow.

Scene 48. Pan shot, of the two boys' feet walking along. Stop the camera movement at the feet of a girl facing the camera. One pair of boy's feet slows down and stops; the other pair continues. The feet that have stopped register shyness. The other boy's feet return, almost to the others. The boy's feet that have stopped, turn toward the feet of his companion, then again to the girl. The other boy's feet turn and run off; follow with the camera for a short distance, but not enough to show which boy it is.

Scene 49. Low angle on porch steps (from side). A boy's feet enter, and climb laboriously upward.

Scene 50. Similar angle, on porch. The feet pass through the door, which slams behind them.

Scene 51. Interior of living-room; close shot of door. It opens, and Bob enters, not too fast, and, as he carefully closes the door behind him, he sighs.

Scene 52. Close shot of Bob's mother. She looks up, inquiringly.

Scene 53. Close shot of Bob. He is standing before his mother (the shot will be especially good if made across Mother's shoulder). He smiles happily, and digs down into an inside pocket, bringing out two tickets, which he hands to his mother, smiling proudly, and indicating that they are for her and himself.

Scene 54. From the side: close shot as Mother hugs Bob closely to her.

Scene 55. Close-up (big head) of Bob, smiling over his mother's shoulder. IRIS OUT.

The End

Miniature Photography At Night

(Continued from Page 82)

Very effective prints may be made by printing on buff stock and by slightly toning the prints either green or blue. The ideal printing medium for night scenes is the bromoil process, for by it prints possess a color and an atmosphere obtainable by no other process.

Lenses should be well shaded during night photography and all unscreened powerful light sources should be avoided as much as possible. The 50mm. collapsible Summar lens and the 73mm. Hektor lens for the Leica camera are supplied in non-rotating mounts. This will permit these lenses to be more closely shaded by using a rectangular

shaped lens shade. A 50mm. lens rated at f2:0 has only a one-half inch diameter piece of glass to be shaded. This is quite a contrast to lenses of longer focal lengths.

Weather conditions alter the effects obtained in night photography. Rain greatly adds charm to street shots, although the streets have a tendency to appear darker than when dry. Likewise effectual shots may be made after a fresh snowfall. Moonlight aids in boosting up shadow detail.

Subject matter for night photography is too numerous to mention. In fact, photographs can be made under most all conditions where there is sufficient light for the eyes to see clearly. So don't be afraid to use that miniature camera at night.

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Royal Palace; the Royal Opera, fronting on a great square thronged with flower-venders; and many other buildings lure the camerist's lens. The left-handed traffic, with its blue-and-white trams and red motorbuses, the strange signs outside the shops, the department-store interpreters who wear tiny flag-emblems denoting the languages they speak (English and American are counted as separate tongues, if you please!)—all are details one should not miss recording, and which gain tremendously through color.

The great historical park-museum, the Skansen, is an unique open-air exhibit of traditional Sweden: peasant houses, farms, costumes and the like from every quarter, perfectly and accessibly preserved by these folk who have a great veneration for the picturesque past of their land. The Skansen is perhaps one of the best places to film the colorful peasant costumes of old Sweden, and the traditional Swedish folk-dances.

Dalecarlia—known to Swedes as Dalarna—is probably the most picturesque province of the land. Visit Lake Siljan, "the Eye of Dalarna" on midsummer-day, when every house is decorated with greenery, and community maypole dances are held everywhere, lasting often for the whole day—all of which is sufficiently sunlit for color-photography and eminently worth several rolls of film. In this same province is an unique school of the ancient handcrafts—spinning, dyeing and weaving, as they were practiced for centuries. One of the most interesting sequences of "Sweden—Land of the Vikings" was made here; and it should be duplicated in any amateur color-film of Scandinavia. The typically Swedish buildings, red-painted, set among the greenery with the pupils, clad in traditional peasant-costumes of their own making, at their looms, spin-

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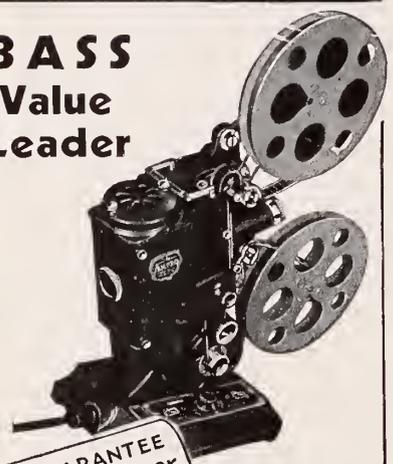
ning-wheels and dye-vats make an absorbingly interesting color sequence.

Another side-trip, well worth filming, is a visit to Visby, the ancient Hanseatic "City of Roses and Ruins" on the Baltic island of Gotland. From the first to the sixteenth centuries Visby was the dominant commercial city of northern Europe, ruled by powerful merchant-princes, whose repentance after occasional lapses into piracy is credited with the responsibility for Visby's sixteen great churches and cathedrals, which still stand, though in ruins. You can obtain some magnificent color-scenes in these ruins, especially if you visit during the performance of the annual historical pageant, in which ancient costumes of the middle ages are worn by the players.

Due to its northern location, much of Sweden is blessed with the true Mid-night Sun, which enables filming—even in natural-color—at any hour; in the more southerly sections, of course, there is a brief twilight during the summer nights, but even so, photography is possible at for later and earlier hours than in this country. Though there is plenty of rain, which keeps things beautifully green, you can count on almost perfect photographic weather—clear, with blue skies and the fluffy white clouds all photographers yearn for. 16mm. processing and supplies are easily available, especially through Eastman's representatives, Hosselblod's Photographiska A.B. of Stockholm and Goteborg, who maintain excellent 16mm. processing plants.

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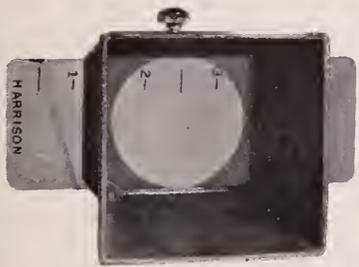
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Mr. Boyle, a former President of the American Society of Cinematographers, is the photographer and producer of the seven-reel natural-color travel feature, "Sweden—Land of the Vikings," recently hoisted to its premiere showings in New York, Chicago, Boston, and other cities as the most successful travel-film of the season.

The Professional Learns From the Eight

(Continued from Page 81)

rolls that even if you carry along a large supply are not bulky, the advantages of the "eight" to the professional become immediately apparent. When one considers that the picture thrown on the screen from the tiny image covers a breadth of fully forty-eight inches with beautiful success, the small camera has no disadvantages to the professional as supplementary equipment.

A cinematographer is happiest when hard at work. If you have ever been away on location with bad weather holding up production, you will know how depressing such days can be to men of ambition. I have found that many fine scenes can be shot using the little "eight," even in the rain. At times the result has been so good we have gone out on subsequent "bad" days and shot rain sequences with our larger equipment as a result of play with the "eight." In this manner the little cameras soon pay for themselves to the professional. Fine tools make for fine craftsmanship. The excellent workmanship in these tiny outfits is on a par with the finest studio cameras, removing any lost doubt from my mind that we might well use this tool to our personal progress and pleasure.

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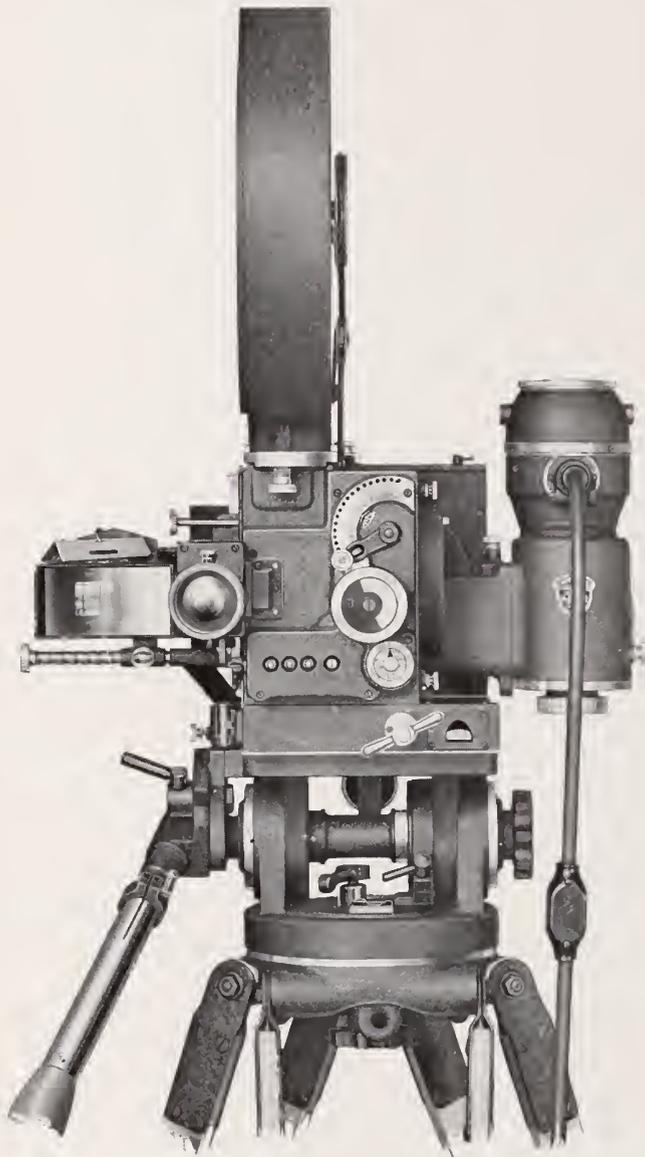
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INEMATOGRAPHER

The Motion Picture CAMERA Magazine

this issue

Development of Silent Camera

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Process Photography

Riddle Me This

... and other features.

JULY, 1934

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What to Read

DEVELOPMENT of Silent Camera by William Stull, A.S.C.....	106
LANGUAGE of Color by L. O. Huggins, A.S.C.....	108
THE PART of the Painter by Oliver T. Morsh, A.S.C.....	109
PRODUCTION Economies with Process Photography . . . by Walter Blonchard.....	110
RIDDLE Me This by A.S.C. Members	112
SOUND on Film for 16mm by Dr. Ing Hons Astorf.....	114
TREND of the Times.....	115

Next Month

- W. C. Miller, noted sound engineer of Hollywood, will discuss the 48 cycle Motor as it is used in motion picture making.
- Rumor tells us that 20,000 Leagues Under the Sea will involve much technical ingenuity in the underwater sequences. We will give you some of the low-down on this picture in the next issue.
- The Evolution of Lighting Equipment will be discussed and something will be told about using color on sets.

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John Arnold, A.S.C., inspecting the DeBrie "Super-Parvo" Silent Camera.

ALMOST seven years ago, the first "Talking Picture" was released. Far at least six years, the motion picture industry has been acutely microphone-conscious, striving to suppress every extraneous noise which might interfere with the recording of dialog. From the start, the cinema camera has been one of the chief offenders in this respect, for the intermittent movement which seems inescapably necessary to cinematography, is an inherently noisy mechanism. The first step in overcoming camera-noise was, of course, altering such obviously noisy parts as gears, bearings, etc., and insulating the camera itself by encasing it in a sound-proof housing. These housings — known variously as "Blimps" or "Bungalaws" — have progressively diminished in size and increased in sound-absorptive efficiency: but they still interfere to a greater or lesser extent with the free and facile operation of the camera.

For at least five years, Cinematographers everywhere have been seeking a really silent camera — one which can be used, uncovered, with any sound system, under any conditions, restoring the full freedom and flexibility enjoyed in the pre-Vitaphone days. For five years, rumors and unverifiable reports have come from engineering laboratories, telling of intensive work being done in developing such cameras. From time to time, improved cameras have been shown, or experimental silent cameras tested. Surely the silent camera must be "just around the corner," despite the tight-lipped silence of the engineers and manufacturers. Yet the months have rolled by, and no such camera has appeared. Cinematographers everywhere are asking, "Where is the Silent Camera? When will it be ready for use? What manner of machine will it be?"

Properly to understand the answer, we must first appreciate the problem facing the designers. The operation of a motion picture camera is based on the use of an intermittent movement which allows the film to remain motionless during the exposure, then quickly moving onward to reveal the next section of unexposed film. The operation

Development

of the mechanism for providing this movement is, it seems, unavoidably noisy, while the movement of the film itself gives rise to a certain amount of sound as well. Moreover, the standards of silence are constantly becoming more exacting, as the sensitivity of recording-equipment is increased. A camera which would have been perfectly acceptable five, four, or even two years ago would be objectionably noisy now that "Wide Range" and "High Fidelity" recording is in general use. Since it is recognized that it takes at least two years to engineer and perfect a studio-type camera to the point where it is ready for production, this constant alteration in silence standards is a very grave handicap.

At present, the measurement of camera silence is expressed as a rating of "minus decibels": that is, its operational noise is of a volume so many units below the level of average speech. Before the introduction of present high-sensitivity recording, a camera with a rating of -35 db would be considered adequately silent. The best of existing "blimps" are rated at -40 to -45 db, which, with modern recording, is barely adequate. According to studio experts, a silent camera must, to meet today's conditions, show a rating of not less than -50 db.

What is actually available today?

Silent camera development has followed two main courses: adaptation of existing equipment, as exemplified in the Fried design; and the creating of absolutely new designs, retaining to some extent the features and appearance of earlier models, as exemplified in the Mitchell and DeBrie designs.

The Fried design is essentially a reconstruction of existing cameras — Bell & Howell or Mitchell — in which the silenced camera is placed in a snug soundproofing case, 12x12x12 inches in size. A special focusing system eliminates any lateral shifting for focusing, thereby permitting a much smaller housing. The magazines are not blimped: they are fitted with beaded moulding, to break up any diaphragm effect, and as they are fitted to the outer case rather than to the camera, they do not transmit either noise or vibration from the camera. Several of these units are being used at the Columbia Studio, with excellent results.

The first of the new designs to be offered by a major camera manufacturer was the Mitchell. This was first exhibited (in an experimental model) before a meeting of the American Society of Cinematographers in June, 1931, and described in the AMERICAN CINEMATOGRAPHER the following month. A refined model of the camera was used by Hal Rosson, A.S.C., in photographing "Hell Below" last year, and described by him in the AMERICAN CINEMATOGRAPHER in February, 1933. Further refinements have been incorporated in this design, and the camera is now in production and use. It incorporates virtually all of the features of the earlier Mitchell cameras, together with a design which tends to minimize noise. The movement is essentially the same as the famous Mitchell "speed movement," but actuated through eccentrics rather than gears. The film-moving claws move into and out of the perforations much straighter and faster than previously, and leave

of Silent Camera Progressing

by
William Stull, A.S.C.

the film at rest for a rather longer period, with a faster pull-down. A series of idling rollers through which the film is threaded tends to minimize the film-slap. A manually adjustable shutter is provided, with a visible indicating-dial at the rear of the camera. The customary four-lens turret is retained, as is the familiar Mitchell focusing-system. The finder is interconnected with the focusing movement of the lens, through a series of cams, so that the finder is focused and compensated for parallax automatically as the lens focus is changed. The motor-mount is integral with the right-hand cover of the camera; motors may be removed or interchanged by loosening four screws and removing this plate. Silence is secured by a layer of cork insulation between the double walls of the camera-case, and by rubber insulation preventing metal-to-metal contact between the camera and magazines, tripod, etc. As Mr. Rosson wrote at the time, this camera is satisfactorily silent for most work except extreme close-ups, or scenes recorded at a very low volume-level.

Recently, an improved model has been undergoing practical tests at the hands of Victor Milner, A.S.C., who used it on "Cleopatra," and Karl Struss, A.S.C., who used it on several sequences of "It Ain't No Sin." This latest model is essentially the camera just described, with some minor changes, such as the addition of an automatic dissolve, enclosed in an extremely compact outer housing, which insulates the entire camera acoustically. All controls—such as dissolve, shutter-adjustment, frame and footage counters, and focusing throw-over—are extended outside of this casing, so that the device need be opened only when threading the camera. The magazines are enclosed in a double, hinged cover, wide enough to allow for their movement in focusing. The turret, however, has been dispensed with in favor of a single-lens design, with the lens mounted on the outer case. The focusing control is through a lever and scale at the rear of the camera, and lens and finder are interconnected as in the previous design. An interesting prism arrangement permits the operator to view the focus-calibrations on the lens from the rear of the camera. The motor-box is hinged, and swings out of the way horizontally, to facilitate changing lenses. While larger than the regular camera, this device is still far smaller and lighter than any type of "blimp," and is said to show an excellent sound-absorption record.

A similar device, experimentally produced by the RKO Studio, was recently described in the AMERICAN CINE-

MATOGRAPHER. In this case, the camera used was, of course, a "silenced" model of the pre-talkie Mitchell, and the housing was leather-covered rather than metal.

Last spring, an experimental model of the Bell & Howell silent camera was shown in Hollywood. Externally, this model was a complete change from all previous Bell & Howell practice, though closer inspection revealed the fact that it centered around a silenced version of the famous Bell & Howell Stationary Pilot-Pin movement. As described in the AMERICAN CINEMATOGRAPHER in March, 1933, this camera is of box form, roughly 10x12x18 inches in size, with standard Bell & Howell 1000-ft. sound-proofed magazines on the top. The casing is double, with the inner casing which carries the movement literally "floating" inside the outer one. Both cases are sound-proofed. Much of the internal gearing customary has been eliminated, and what remains is made of noise-reducing materials, and in some instances cut most unconventionally. Direct drive is obtained through a built-in 48-cycle motor, whose armature is an extension of the camera's shutter shaft. The movement is a refinement of the Bell & Howell pilot-pin movement, silenced, of course, and film-slap is reduced by reducing the size of the loops and by the use of two main sprockets instead of one. The shutter is manually adjustable. A single-lens type of mount is used, the lens being fitted in a universal mounting, and placed in the outer case. The design of this mount pre-selects the proper combs for both focusing and finder-correction movements, so that a single scale is used for any lens or lenses. This scale, and the focusing control, are at the rear of the camera. Focusing is secured by an ingenious design in which the movement is moved slightly backward, while a ground-glass focusing screen and a system of reflecting prisms are inserted. The image is reflected across the camera and to the rear, where it is seen right-side-up and magnified.

Continued on Page 116

The newest Mitchell Silent Camera



The Language of Color

by
L. O. Huggins, A. S. C.

IN PREVIOUS articles we have considered the "Languages" of Line, Tone and Design, with the idea of showing how the lines and tones in a still or motion picture may emphasize the mood or emotion of the scene to enhance the values of the story. There yet remains another "Language" of great importance, and that is—Color.

Imagine yourself standing on the Mohave Desert watching a flaming sunset. The red sun is sinking behind gold and orange clouds. The purple hills are tipped with crimson,—a thrilling sight.

Again imagine yourself beside the shore of a mountain lake where the water is green, and violet mist fills the hollows under the blue-green pine trees,—a restful picture.

Perhaps you do not realize how much these colors affected you. Certain hues in the sunset instilled the feeling of excitement; other colors in the mountain lake gave you the feeling of peace and rest.

If you had seen the sunset, devoid of color, in varying shades of grey, you would have felt little elation from its spectacle. If the colors of the mountain lake were changed by some magic into the flaming colors of the sunset, you may be certain that your feeling of peace and calm would have disappeared instantly.

The total absence of color also has its effect upon you. Can you imagine living in a house which is painted black inside, with grey furniture, and not a single spot of color to break the monotony? You could not live happily in such surroundings of somberness and gloom.

To show the importance of color in our daily life, let us picture a world without color. A white sky, grey hills and foliage, black rocks and tree trunks,—and as for ourselves,—light grey faces and grey clothes. It would be a drab world. Now add color, and the whole scene takes on life and vitality. Golden sunlight greets us as we step out of doors, the green of fields and trees cheers us with its freshness, the violet shadows soften the outlines of the hills. Whether or not we realize the fact, all colors have a definite effect upon us.

With the interest being shown in color by the producers at the present time, and with the knowledge that in the very near future, full-length features in color will be the rule rather than the exception, we feel that this is an appropriate time to discuss the "Language" of Color.

But first let us consider some of the properties of color. The first is "Hue." This is the effect on the eye of a specific wave length of light which results in the impressions we have named Red, Orange, Yellow, Green, Blue, Violet, Purple and Magenta. The term "Hue" has nothing to do with the brilliance or brightness of a color. For example,

VOCABULARY OF COLOR

HUE	EMOTIONAL REACTION	MEMORY REACTION
Red.	Aggressive, triumphant, material, hot.	Flame, blood, war.
Pink.	Love, happiness, joy, youth, daintiness.	Babies, roses.
Orange.	Jolly, energetic, ambitious, progressive.	The sun.
Gold.	Ostentatious, proud, powerful.	Money, riches, palaces.
Brown.	Conservative, sedate, warm.	The earth.
Yellow.	Cheerful, gay, light.	Sunlight, daffodils.
Green.	Fresh, fruitful, free, vigorous.	Leaves, trees, outdoors.
Blue-green	Exotic, mysterious, vague, cool.	Sea, ponds, jade.
Blue.	Spiritual, noble, true, steadfast.	Sky, heaven.
Violet.	Dignified, serious, patient, mystic.	Violets, far hills.
Purple.	Regal, haughty, magnificent, exalted.	Amethyst, "Royal Purple."
Magenta.	Shawy, materialistic.	Rubies, wine, scarlet.
White.	Light, pure, truthful, peaceful, clean.	Snow, "flag of truce," hospitals.
Grey.	Gloomy, retiring, judicious, indefinite.	Rainy days, old age, mist, ashes.
Black.	Severe, impenetrable, frightful, sophisticated.	Death, funerals, night, grief, crime.

Colors mixed with white — Youth, gaiety, informality.
 Colors mixed with grey — Subtlety, refinement, charm.
 Colors mixed with black — Strength, seriousness, dignity.

light-blue, slate blue and navy blue all exhibit the same hue. The next property of color is "Value." This term refers to its lightness or darkness. Light-blue is a high value, because it reflects a high percentage of light; slate blue is a medium value; navy blue is a low value because a very small amount of light falling on this color is reflected back to the eye. The third property of color is "Chroma" (technically termed Saturation) which indicates the purity of a particular hue. A brilliant red is of a high chroma, a brick-red is medium, and a reddish grey is of a low chroma. The nearer a color approaches grey, that is, the less pure it is,—the lower is its chromatic value.

White, grey and black are, strictly speaking, not colors as they exhibit no predominance of a specific wave length of light, but we shall include them in the "Language" of Color.

Each color in the spectrum has its effect upon us. It may be restful or otherwise, according to its hue, value and chroma. Colors also suggest to us certain objects and emotions. Red, for instance literally shouts at us. It is an energetic and aggressive color, at times brutal and angry. Whenever we see a brilliant red color we are reminded, consciously or subconsciously, of fire, blood, war, passion.

Orange is another active color, it is gay and jolly, suggesting ambition and progress.

Gold is ostentatious, proud. The "language" it speaks is very definite. It always reminds us of money, riches, palaces.

Brown is conservative, sober, and reminds us of the earth.

Yellow is a cheerful, bright color, reminding us of light, sun, spring flowers.

Green is a daring, vigorous hue. It is youthful, hopeful, free. It is associated with vegetation, woods, fields, spring and summer, the out-of-doors and freedom.

Blue-green is much more sedate. It is exotic, mysterious and suggests the sea, pools of water, peacocks, jade, turquoise.

Blue always reminds us of the sky. It is noble, pure, loyal, steadfast.

Violet is serious, solemn, patient, sometimes mystic, melancholy.

Purple is pompous, gorgeous, triumphant, regal, being

Continued on Page 117



A set from "Rip Tide."
Note marble walls and stenciled parquet floor.

The Part of the Painter

by
Oliver T. Marsh, A. S. C.

THE most successful motion picture Scenic Artist must not only work in close co-operation with the Cinematographer, but he must have an accurate and extensive knowledge of photography as it affects his work. He must know very accurately the photographic values of color—of different pigments and different materials. The chemical composition of different pigments of the same visual color may often produce vastly different photographic effects, due to different degrees of light-absorption. Similarly, identical pigments applied to different materials, such as wood, cotton, silk, wool, velvet, plush, compo-board, or foliage, may produce entirely different photographic results. These facts, and many similar ones, must be at the finger-tips of the successful Scenic Artist.

Virtually every type of material and paint is used in motion picture work, for he is at one time or another called upon to duplicate every conceivable type of structure. In doing this, he has to apply virtually every type of paint known—including standard oil paints, water-colors and kalsomines, enamels, gold and silver leaf, stains, varnishes, lacquers and plaster-stains—to virtually every conceivable surface: wood, metal, wall-board, plaster and cloth. Moreover, he is as a rule working against time, necessitating the use of the fastest-drying paints possible, often with artificially-accelerated drying. At times, on rush orders, he has had to have a set painted, dried and ready for use within half an hour—and he rarely has more than three hours to allow for drying. The use of quick-drying lacquers, with spray-guns and electric fans and heaters is a great help in this. A vitally important factor in the operation of the Scenic Painting Department is the fact that all of the stages at the Metro-Goldwyn-Mayer studio are supplied with gas, water, electricity and compressed-air lines.

With the coming of sound-films, the technique of set-construction in many studios had to undergo an abrupt change, and the technique of the Scenic Painter had to change with it. Since the early days of crudely-painted canvas drops, motion picture sets had in most instances been constructed out of hard materials—usually wood or

plaster—treated in much the same way as the rooms they were made to represent. This construction, however, proved unsuited to sound, as the solid walls reflected the sound-waves, giving rise to reverberation and bad sound. Therefore, in many instances, a change was made to acoustically porous construction. At MGM, however, we were fortunate in that we had for some years been using soft sets, which we had found to be highly advantageous from every viewpoint; the construction remains virtually unchanged. With the exception of the relatively few sets representing wood-panelled walls (for which we use grained veneer panels) we use cloth construction over wooden frames. As a rule, the cloth is muslin, stretched tightly over rigid wooden frames. This construction is light and inexpensive, and makes it possible to move the sets around the studio without fear of breakage, cracks, etc., as the construction is resilient. The sound-waves pass directly through the cloth, making the sets so built acoustically ideal.

With this construction, we found ourselves faced with the problem of duplicating wallpapers, etc., without sacrificing the desirable qualities of the soft set-construction. Covering the muslin walls with actual wallpaper would not be practical from any viewpoint: accordingly, in place of the plain, unbleached muslin, we use printed fabrics such as calico, chintz, gingham, and the like, sewing the sections together so that the patterns are joined, as they would be in wallpaper, and stretching the fabric over the set-frames in the usual manner. In some spectacular pictures, such as "Rasputin," we utilized expensive brocaded silks, etc., for this same purpose: although the actual cost per yard of these materials is high, we found that—especially since the bolts of such stuffs are unusually wide—the actual cost per foot of such treatment made it the most inexpensive possible method of producing the desired effects.

Many sets require marble panels in either the walls or flooring: the cost of real marble would be prohibitive, as would the problem of shaping it to the requirements of the set, and many other problems of a kindred nature. Many years ago, Ernest Tate, head of the MGM Paint Department, originated the use of "marbleized" paper for this

Continued on Page 116

Production Economies With Process Photography

by
Walter Blanchard

THE "PROJECTED BACKGROUND" process of composite photography, known also in some studios as the "Transparency" and "Photo-Image" process, is generally recognized as an invaluable aid to modern production. It is admittedly a great convenience, permitting the photographing and recording of many scenes which would otherwise be difficult, dangerous, or actually impossible if filmed by conventional methods. The economic value of the process, however, is not recognized so generally save in the more sensational instances where the use of the process eliminates long and expensive location-trips. This is natural, as studio departmental cost-accounts are seldom published or discussed; and, moreover, the economies of such a department rarely appear in such reports, which simply detail actual costs rather than savings (actual or estimated) over other methods.

The writer was recently privileged to study the fiscal report of the Process Department at one of the major studios—a report which proved a revelation of the volume and importance of "projected background" work. For the year 1933, the schedule of this studio called for the production of 58 feature pictures. Of these, some six were "Westerns," made almost exclusively on location, with very few studio-made scenes, and little or no need for any type of composite photography. Of the remaining 52 productions, 51 required the services of the process staff to a greater or less extent, utilizing a total of 658 process shots—an average of 12.9 shots per production. Two of these films were definitely out of the ordinary run of productions: one was decidedly a "trick" film, and required 112 process shots (entirely aside from many miniature, "glass" and optical-printer shots); while the other was an aviation story, with many aerial sequences which could hardly have been filmed in any other manner, and used 72 process shots. Eliminating these two out-of-the-ordinary productions and their 184 process shots from our calculations, we find that among the normal productions made by the studio, there were 49 productions using 474 process shots—an average of 9.7 process shots per production.

At this point, it may be well to define what is meant by "Process Shots," as the term is in itself rather misleadingly broad. Essentially, the process consists of the use of a translucent screen of large dimensions as a background for action photographed in the studio. Any type of foreground set may be erected in front of this screen, and any type of action staged. Upon the screen is projected (from behind) a strip of motion picture film, supplying any desired background—moving or stationary. The projector and the photographing camera are electrically synchronized, so that their shutters open and close in unison, with the result that the image cost by the projector is photographed as a background to the actual action taking place in the foreground:

hence the names, used in some studios, "Transparency" and "Photo-Image." Earlier developments of the process, based on the color-sensitivity of panchromatic film, and utilizing a colored background-film which was run through the camera and printed upon the final negative by colored light reflected from a colored backing illuminated by colored light (usually blue), with the foreground set and action illuminated by light of a complementary color (usually orange-red), are known as "Color-Separation," "Blue Transparency," and "Dunning Process" shots. This method is still used to some extent, though largely supplanted by the more flexible, quicker-operated projection-type shot.

A brief mention of the average costs of process work over a period of years is illuminating, as it shows, with the increase in the volume of work and the enhanced experience and resources of the process staff, the making of such shots becomes steadily cheaper, while their use becomes more effective.

In 1930—the last year in which this studio used the color-separation process—146 process shots were completed for 40 productions, at an average cost of \$314.95 per shot.

The next year—1931—the department standardized on the present type of projected-background shot, and made 340 shots for 33 productions, lowering the average cost to \$184.61 per shot.

In 1932, 503 shots were made for 45 productions, the cost averaging \$140.59 per shot.

Last year—1933—the same department made 658 shots for 51 productions, at an average cost of \$116 per shot.

These figures are stated to include all departmental expenses except the items of lighting, set-construction, film-costs and laboratory-charges, which are figured separately for the entire studio over the period of a year, and pro-rated to each production rather than to departmental budgets. During the 296 working-days of the year, the special-process department completed on an average of three shots per working day.

In this four-year period, the average cost per shot had been lowered by two-thirds—an actual reduction of nearly \$200 per shot. How was this done?

In the first place, of course, the volume, which increased somewhat more than 350 per cent, would in itself materially reduce the average cost. However, the most vital factor is the fact that during these years a large library of background film has been built up. Each background that is photographed is immediately classified and filed away for future use. A cross-indexed card system permits the Department Head to locate immediately any desired background: and a separate file of clippings from these scenes enables them to judge at once the exact nature, angle, composition and quality of any background in the library, as well as enabling the staff to give the director or producer an idea of the backgrounds available for any given scene or action without having to waste valuable time screening reel after reel of backgrounds. In the majority of instances, thanks to this library and its indexes, it has been possible to use background already made rather than going to the expense of photographing new ones. Of the 658 process shots made last year, 308 of the backgrounds were found, already made, in the library. Eliminating the "trick" film already referred to, which required that every one of its 112 process shots be from a specially



A shipboard scene made on the process-stage; the water, hills and sky background being supplied by the process screen.

made, original background, we find that out of 546 process shots made for normal productions, 310 backgrounds come, ready-made, from the library, and only 236 had to be specially made. Many productions required the making of no special backgrounds whatever; the special air story mentioned, for instance, used 72 process shots, and required but seven new backgrounds: the remaining 65 were found in the Department's library.

But just how do such shots aid in production economies? It is of course obvious that in films which, like "King Kong" or "Alice in Wonderland," depend for their making upon trick photography, they are invaluable, and that in many types of aerial and thrill stories they enable the making of scenes which would otherwise be impractical, or even dangerous. Photographic technicians will also appreciate that such scenes as moonlit night-effects, made with filters, are most satisfactorily handled by this method. Scenes in moving trains, buses, taxicabs, and the like benefit from the use of projected background shots, as they would in actuality be very difficult to photograph well, and would present almost impossible conditions for sound-recording. Scenes which require the principal players to appear in foreign lands naturally demand process shots if they are to be made economically. But there are many scenes and sequences which could well be made in the normal manner, yet which are made on the process stage: why is this done?

Either because, by using the background-projection process, the scene can be made more effectively, or because it can be done more economically. Very often, both

factors enter the problem. For example, a recently produced film contained a sequence played on a lakeside, with the characters canoeing. It would be entirely possible to transport the entire company to a suitable lakeside, and film the sequence in the normal manner. But too many economically hazardous factors entered into the problem: the sequence was long enough to require at least a normal day's shooting on the location, with more than two and a half pages of important dialog to be recorded; such a location is always at the mercy of the vagaries of the weather—light and atmospheric conditions hamper the cinematographer, while wind, water-noises, etc. hamper the sound engineer. These factors in themselves might very conceivably so hamper the company as to stretch the single day's work into two days, or even more. There is also the important item of transportation, wasted travelling-time, and very likely of housing the company over one or more nights. At the very least estimate, it would require an unusually long and full day's work to film the sequence on the actual location—and it would be a tedious day's work, starting very early in the morning, and lasting till late at night. It might even prove cheaper to move the company to the location the evening previous, having them spend the night (and possibly the following one) at some hotel, in order to gain more actual working time on the location.

Filmed in the studio, by the projected background pro-



RIDDLE

ME THIS

The Riddle: It has been suggested that the development of a really silent camera would be made easier if the standard taking and projecting speed were reduced from 24 frames per second (the present standard) to 20, 18, or even the old standard of 16. What is your opinion?

WILLIAM A. REES, A.S.C.: I do not believe that any appreciable advantage would result from such a change. At the present speed, we get a smoother picture; and while the slower speed would probably enable us to crowd more action into a given footage, this is offset by the present technique of direction and cutting, which makes for a quick tempo. Moreover, if the speed were reduced, the sound-quality would suffer far more than could be offset by any gains in camera-silence.

JOSEPH AUGUST, A.S.C.: I don't see that anything worth while would be gained by such a change. You must remember that in the old days, before sound was thought of, even though the "standard speed" was 16 pictures per second, most of us were shooting at 20 or 24, in order to get a smoother picture and to compensate for the way the theatres used to crowd the pictures through. When sound came, and forced both cinematographers and exhibitors to standardize on the present 24-frame speed, it was a distinct advantage.

DWIGHT W. WARREN, A.S.C.: I don't believe it would be worth while. The present standard of 90 feet per minute seems ideal from every viewpoint. Also, it is not undesirably fast: I recall that before sound came we nearly always photographed at about this speed, and, in a survey I made of projection in our studio (Educational) and a number of local theatres, I found projection-speeds varying from that up to 105 feet per minute. I think the present speed is entirely satisfactory, and that there could be no appreciable gain from reducing it.

JOHN O. AALBERG, Chief of Sound Projection, RKO Studio: I don't see that there would be anything gained by such a change—and much would be lost. The cost of making such a change would be tremendous and any gains made in reduced camera-noise would be more than offset by losses in sound-frequency. Personally, I have always regarded the present 24 frames per second speed as an ideal compromise.

FREDERIC McALPIN, Head of Sound Dept., Harman-Ising Studio: I can't see any benefit in such a change, and several definite drawbacks. It is well known that most of the noise comes from the intermittent movement: now if we reduce the speed at which this mechanism operates, we will actually tend to increase the camera-noise problem, for the sound will be broken down into a series of distinct clicks. From the sound technician's viewpoint, the ideal (as long as we must have the noise-producing intermittent movement) would be to speed the action until the sound becomes

a sustained hum, which we could "cancel out" much more easily than we could eliminate the clicky-click of a slow-working intermittent.

HAROLD MARZORATI, A.S.C.: Such a change would be tremendously expensive, and, so far as I can see, of little practical benefit. In my experience with high-speed cameras, I have noticed that a properly designed camera varies little in the amount of noise it makes, regardless of speed. The speed cameras used in trick work make a good deal of noise, of course; but if the noise is analyzed, it will be found that by far the greater part of it comes from the gear-boxes used to speed the movement up to eight or ten times normal speed, and that the camera itself makes little more noise at 240-frames than at 24. The problem, therefore, seems one of camera design rather than of speed.

ROY OVERBAUGH, A.S.C.: I see very little against such a change, and many possible advantages. Outside of the initial expense of making the change, it seems to me the result would be clear profit. It is very probable that a slower-running camera could more easily be made silent; and aside from that, there would be considerable savings in film and the like.

STANLEY CORTE, A.S.C.: Regardless of speed, noise is noise—and a camera that is noisy at our present speed of 24 will scarcely be less so at 16. On the other hand, a camera which is satisfactorily silent at 16, should be just as quiet at 24. It is simply a problem of evolving a design or principle which will give us accurate operation without noise: and sooner or later, I'm sure the engineers will do it.

JEROME ASH, A.S.C.: Reducing the speed ought to help. Most of our present cameras were really designed to operate at 16 frames per second, and the present speed of 24 is really over-running them considerably. In the process, a good deal of noise and vibration are developed: of the two, I believe the vibration is the worst offender. If a really efficient method of insulating the cameras so that this vibration would not be transmitted to the tripod, and so to the floor, could be developed, I believe we would be a lot closer to the really silent camera.

GEORGE MEEHAN, A.S.C.: I don't believe the speed has much bearing on the case. A camera that is silent at 16 should be just as silent at 24. Besides, the cost of such a change would probably be prohibitive.

WESLEY C. MILLER, Chief Transmission Engineer, MGM Studio: In my opinion, a speed of 20 frames per second would be an ideal compromise. It would economize on film, and give the cameraman more exposure; at the same time, it would not affect the sound-quality: true, it would cut off some of the higher frequencies—but the cut-off would be well above the range now being utilized. With such modifications as changes in the frame size and positioning, which have been proposed, we could get a much more economical utilization of the film-area, thereby saving enough to go far toward offsetting the cost of the change.

Continued on Page 120

Noted for UNIFORMITY

REVOLUTIONARY new qualities made Eastman Super-Sensitive "Pan" a byword almost overnight. But only day-in and day-out delivery of those qualities over a long period could give this film lasting fame in the motion-picture world. *Uniformity*...the quality that has always characterized Eastman films...has made Eastman Super-Sensitive Panchromatic Negative the brilliant leader it is today. Eastman Kodak Company. (J. E. Brulatour, Inc., Distributors, New York, Chicago, Hollywood.)

EASTMAN *Super-Sensitive*
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Sound-on-Film Technique Recording for 16mm.

by

Dr.-Ing. Hans Atorf

Research Engineer, Tobis-Klangfilm, G.m.b.H., Berlin

THE long-desired substandard sound-on-film talking picture, to serve as a companion to theatrical films, but for Industrial, Educational and Personal uses, is at last materializing. In Germany, as elsewhere, the most popular substandard film size is 16mm. wide, with perforations on both edges. This format is retained for sound-on-film use; but by perforating only one side, we have left an area, hitherto utilized by the perforations, suitable for carrying a sound-track 1.65mm. wide. This immediately offers an improvement over professional sound-on-film practice, which could not sacrifice the perforations, and was forced to diminish the picture-area to accommodate the sound-track. In the professional standard, it will be recalled, the film is 35mm. wide overall, with a sound-track 2.45mm. in width at one side of the picture, between it and the perforations.

Both of the methods professionally used for sound-on-film recording may be used for substandard recording. Both the Variable Area and the Variable Density types have been tried, but in Germany the Variable Density method has been given preference. (Note: This is exactly apposite to American practice, where Variable Area recording dominates the 16mm. field. Ed.)

With either type of recording, the film-speed used in substandard practice is lower than is the case with standard film, being only 18.3 cm. per second against 45.6 cm. per second with 35mm. As a result, the striations comprising the recorded sound waves are placed much closer together than in the larger size. A note of 437 cycles per second ("A") for instance, recorded on standard film gives a wave length (or separation between alternate dark or light striations) of:

$$\frac{45.6}{437} = 1.05 \text{ mm.}$$

while the same sound recorded on 16mm. has a wave length of only:

$$\frac{18.3}{437} = .42 \text{ mm.}$$

*Translation from "Filmtechnik," Berlin.

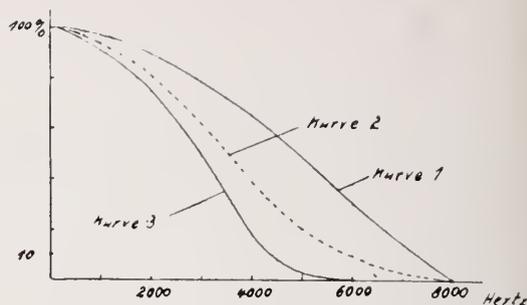


Fig. 1: Influence of slit width, Curve 1; slit width of recorder, .0023m. Curve 2; slit width of recorder and of projector, .0023m. Curve 3; slit width of recorder, 10023m., of projector, .0030.

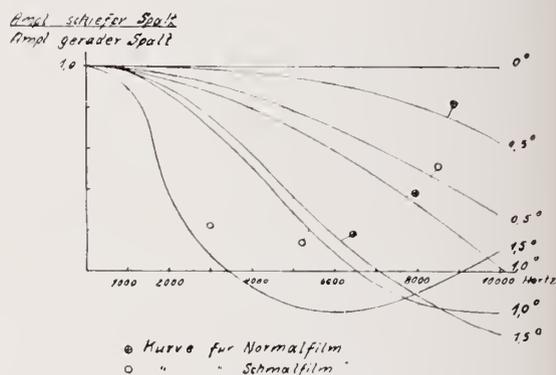


Fig. 2: Influence of Deviation of the slit from a straight position.

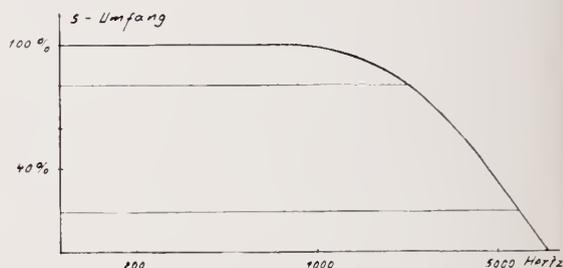


Fig. 3: Revolving power of film material relative to frequency range.

To express it more simply, the distance between two striations recorded on 16 mm. film is the same for 8000 cycles as it is on 35 mm. film for 2000 cycles.

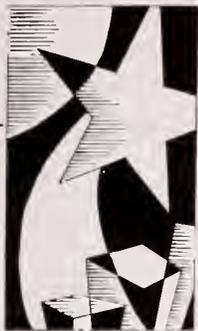
This naturally results in a considerable series of difficulties.

Both recording and reproduction of sound-on-film records is done through a slit of definite width. With increasing frequencies, the slit width causes a linear distortion of the recorded amplitude, in such a way that, eventually, the slit width may become equal to the "wave-length" between two striations, thereby cancelling out the sound impulse; in such a case, if recording, no sound would record, or in reproducing, nothing would come from the loud-speakers.

For example, if the slit width in a recorder were equal to .0023mm., a frequency of 8000 cycles could not be recorded. (See Fig. 1, Curve 1.)

For both optical and physical reasons, it is impossible to use a slit smaller than .001 to .0012mm., and even such a

Continued on Page 119



Electography

● A new departure in photography without a camera is termed Electography, according to "Camera," a magazine published in Germany. It is claimed some wonderful results have been obtained with this new method. In many instances it is proving of wonderful help to advertising men. Designs and patterns are created by placing metallic objects of some sort, such as paper clips, pins, etc., on the emulsion of either paper or film. This of course takes place in a dark room.

By connecting one of the metallic objects to an electric wire a shock goes through the pin or whatever is placed on the plate. You cannot see the rays with your eyes, but they affect the emulsion. After developing the plate shows all of the little electric rays or halation, or whatever you may want to call them, are photographed and usually create a very weird and interesting pattern.

Distartograph

● An English invention, the Distartograph lens, according to the British Journal of Photography, is receiving considerable attention from international cinematographic publications. It is claimed this lens is based on an entirely new principle and is very easily attached to any existing lens mount. The effects secured with this lens are said to be very humorous. It is the contention that English producers are considering short comedies produced entirely with this new lens.

Colored News Reel

● The Colored News Reel is at last a reality, according to "Lichtbildbuehne," a European cinema publication. It is claimed a well known British news weekly will present their entire newsreel in color. The color process used is reported to be the Dufay system. The advantages of this process are claimed to lie in the fact that no special equipment is needed by the cameraman.

Flickering Stars

● During the filming of Harold Lloyd's latest picture, "Cats Paw," the cameraman used his ingenuity to obtain the effect of stars flickering in the sky.

TREND of

THE TIMES

Little sheets of tinfoil were attached by one corner to a large board. These pieces of foil covered the entire board. In front of this a glass the same size as the board was placed. This glass was painted black with a myriad of small holes in the black paint. When the lights were placed on the foil only and a fan turned on so that they fluttered in the breeze, the effect of blinking stars was secured on the film.

Esperanto Talkie

● Claiming there are millions of people in this world who speak and understand the international language, Esperanto, a Belgian producer is said to be making a propaganda picture in which the entire cast will speak Esperanto. It is the contention that by reducing the dialog to a minimum even those who do not understand Esperanto can intelligently follow the story by observing the action.

Filming Famous Paintings

● According to "Le Cineopse," a French photographic publication, the government of France is making a series of propaganda shorts showing the contents of the world famous Louvre Museum. Seemingly there is a possibility of making these shorts in color.

As everyone knows the Louvre is filled with art treasures and by this means many people who would never have a chance of visiting this historic place will have an opportunity to view many priceless works of art.

Official Fire Films

● According to a French publication the Parisian Fire Brigade has been furnished with a motion picture production department. It is the duty of this department to make a complete record of all major fires. The records thus obtained are used for reports and training recruits. It should be mentioned that the Parisian Fire Brigade is a military organization and a part of the French army.

Director Turns Inventor

● When a motion picture director turns inventor, that's news. Karl Lamac, a well known European director, invented a new color process which is thought to be based on an entirely new principle. What this principle is the "Lichtbild-

uehne," a German publication, does not say, but the publication speaks very enthusiastically of the system and promises technical data in a later issue.

Are They Silent?

● Recent reports of new blimps, new methods of silencing cameras in America, brought forth sarcastic comment from some of the foreign cinematographic press. However, tests made in America of some foreign cameras prove that they are not on a par with American made cameras which do not claim silence. Again a foreign paper reports absolute silence. We shall see.

Sculptured Images

● An alleged new process for obtaining a sculptured image through motion pictures is credited to Japan, according to Popular Mechanics. History will undoubtedly show that a gentleman by the name of W. Englemann of Chicago invented the same process several years before the Japanese system.

This system consists of a rotating motion picture camera that takes about 400 images of the sitter in a few seconds.



The actual bust is carved out by a photographic arrangement that follows the outlines of the image. The only difference, according to some authorities, between the Japanese and the American process is that the former enlarges the images, cuts them into strips and then mounts them together.

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DEVELOPMENT OF SILENT CAMERA PROGRESSING

Continued from Page 107

The most recent to appear in Hollywood is the DeBrie "Super-Parva," which has already found favor abroad. Following traditional DeBrie practice, this camera is box-form, with internal 1000-ft. magazines: it measures 19½x14x10½ inches. The principal elements of the standard DeBrie mechanism have been retained, including an automatic dissolving shutter, which operates in 4½ feet, with a device by which the film can automatically be rewound 72 frames for lap-dissolves. Focusing is through a tube passing through the center of the camera, between the magazines. It is possible to focus directly on the film (a method much favored by European cinematographers), or to follow the action on the film during the shot. For ground-glass focusing, the operation of a small lever slides the film and gate to one side, while an accurately-placed ground-glass screen slides into place. The movement includes pilot-pins and an intermittent pressure-plate, while the main driving-gears are silenced, and run in an oil bath. The lens-maunt is the standard DeBrie type, protected and sound-proofed by a hinged optical-glass cover. The motor is placed inside the camera, between the magazines. Several of these cameras are in use in Eastern studios.

From abroad came further reports of progress toward silent cameras. Georges Benoit, A.S.C., writes very encouragingly of the "Eclair" silent camera, which he has used on several productions, while the "Cinephon" camera, made in Czechoslovakia, is also said to be excellent. But it remains for a German inventor, whose name, unfortunately, has not reached us, to experiment with an entirely new idea in camera construction. His design is entirely operated by vacuum! The intermittent movement is replaced by a vacuum drum (probably similar to that used in the Reagan-Day Synchronizing Machine recently described). This drum is pierced with a series of tiny holes, and contains an automatic valve which applies and releases the vacuum, so that the film is held in place by suction, and so moved, then released during the exposure. It is claimed that this method is sufficiently strong to permit operation at speeds up to eight and ten times normal. As the actual driving force of the camera is compressed air, the camera itself should be extremely quiet; nothing is known about the method of synchronization, or air-supply, however, though it is stated that the exhaust is practically noiseless. It is understood that this camera is now in the course of construction. Certainly, it opens up a

promising new field for silent-camera research.

Silent-camera development, therefore, is obviously not at a standstill. It is progressing—behind locked doors, perhaps—but still progressing. It is beginning to emerge from the laboratory stage to that of practical, studio tests. From there it is safe to predict that it will, before long, reach practical fruition. The progress thus far revealed is really gratifying, in view of the fact that the requirements have been constantly changing as sound-recording equipment and technique advanced, and likewise in view of the fact that for nearly four decades the prime consideration in cinema-camera design has not been silence, but operating efficiency. Any one of the cameras described would be satisfactory for all purposes only a short time ago; and with the intensive research now going on in the manufacturers' laboratories, these existing designs should soon receive the final impetus needed to give us the desired, truly noiseless camera.

The Part of the Painter

Continued from Page 109

purpose—a development now universally used in all studios. This "marbleized" paper is produced by floating paint, on a tank of water, and floating the sheet of paper over this: as any school boy who has tried the experiment knows, if the paper is properly handled, when removed and dried, the result is a paint-pattern virtually indistinguishable from real marble. This paper is applied like wallpaper to sets, and varnished, to secure the glistening polish of marble.

Parquetry floorings are spectacular, but they have heretofore proven difficult and expensive to reproduce for film use. The real thing, of course, is out of the question; and ordinary stencils are not only difficult to apply to large surfaces, but must be held together by "ties," which must be painted out afterward by hand. Recently Tate has evolved a new method of producing parquet effects, which is speedy and economical, and does away entirely with "ties." The required design is painted, in stencil form, upon fine balting-silk, with the parts to which the paint is to be applied left clear. This silken stencil is then placed over the floor-surface we wish to color, and a very thin paint flowed over it. This paint is carefully spread over the stencil with a rubber spreader-blade, and passes through the unpainted sections onto the floor, leaving the design as clearly as though stencilled, and without the objectionable "ties." The process may be repeated as many times

THE LANGUAGE OF COLOR

Continued from Page 108

as desired, giving an infinite range of patterns.

Another problem recently solved by the Scenic Pointing Staff was that of successfully and economically carpeting large sets. Regular carpeting is prohibitively expensive; the usual substitutes—burlop, etc.—are not visually or photographically satisfactory. We, therefore, tried the experiment of making a carpet of monks' cloth, dyed to any desired shade. It has proven completely successful, and highly economical.

John Stumor, A.S.C., Injured

● John Stumor, A.S.C., had a miraculous escape from serious injury recently when he fell from a camera-car speeding at 40 miles per hour during the making of a scene for "The Criminal Within."

Cinematographer Stumor received numerous cuts, bruises, and a sprained ankle in the accident, but he is reported as recovering rapidly, and completing the picture, supported by a cone and bandages.

Chas. Boyle with Camera Supply

● Chas. Boyle, A.S.C., has taken over the executive duties associated with the studio department of the Camera Supply Co. of Hollywood.

Boyle is a first cinematographer of many years standing in the industry and has a wide acquaintance in the studios of Hollywood.

associated with the well known "Royal Purple," the color of the robes of ancient kings.

Magenta is a showy color, but vulgar and materialistic.

Red, orange and yellow form a group called the warm or active colors. They have a stimulating effect upon us. On the other hand are green, blue and violet, which are called the cool or retiring colors.

As we have mentioned, black, grey and white are not colors but they also have a definite effect upon us. Black is severe, somber, impenetrable, sophisticated and is associated with night, grief, funerals, and the unknown.

Grey is negative, quiet, judicious, solemn, gloomy, reminding us of twilight, rainy days, old age, mist.

White represents knowledge, mercy, purity, truth, coolness, and reminds us of winter, snow, flog of truce, cleanliness.

White mixed with colors suggests youth, gaiety, informality, freshness and coolness.

Grey mixed with colors represents more restraint, refinement.

The mixture of black with colors speaks of dignity, reserve, seriousness, stability.

Now, you ask, why do these certain

colors represent certain emotions as we have pointed out? The answer will be found in any textbook on psychology, under the power of association and suggestion. We always associate the sky with the color blue, and the sky in turn suggests heaven. These two steps are



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handled as one in the mind and the re-
 sult is;—We see the color blue—we
 think of heaven and all its attributes.
 If we look at a bright green color, we
 think of green leaves, trees, fields, and
 following this train of association to its
 logical conclusion, we think of outings,
 picnics, strolls thru the cool woods,—
 freedom.

Do you remember as a youngster,—
 you were sent upstairs to bed. It was
 dark and black and you thought of gob-
 lins and all sorts of terrors. We may
 have outgrown our childish fears but
 nevertheless this definite association of
 black with the unknown, the mysterious,
 has persisted in our minds. Today when
 we see black this subconscious memory
 often recalls those emotions of chil'd-
 hood.

The list of colors and their associa-
 tions presented above has been compiled
 by interviewing many people and ob-
 taining their reactions to all the colors.
 One particular individual may have dif-
 ferent reactions to certain colors but the
 above list represents the average.

Now for the important step in our
 "Language" of Color:—We have shown
 how certain colors suggest certain
 moods or emotions. In our picture, be it
 still or cinema, we have a story to tell,—
 we have a mood or emotion to express.
 To film a convincing scene, everything
 must be in harmony with the certain
 mood expressed in the story; the dia-
 logue must be in keeping, as well as the
 background music; the action must be
 fitting; the sets must be in accord as
 well as the costumes; the photography
 must conform to the story values. In the
 judicious use of color we can express a
 complete range of emotions and associa-
 tions which will enhance the value of
 our story.

Production Economies With
 Process Photography

Continued from Page 111

cess, the same sequence could be filmed
 equally well, and with but a fraction of
 the cast in time and money. Shooting
 would start on a studio stage at nine in
 the morning, instead of loading the cars
 at five or six A. M. for a long and tiring
 drive. In all probability, the sequence
 could be completed by the middle of the
 afternoon—or even earlier — enabling

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the company to move at once to the next sequence. Retakes, if any were needed, would be simple and inexpensive, while the chances of retakes from photographic or recording troubles would be virtually eliminated. It would be difficult to estimate the actual saving achieved through making such a sequence by process shots rather than by taking the company to the actual location: but it is safe to state that the entire cast of filming the sequence on the process stage would be considerably less than the single item of transportation at such a location.

Sound-on-Film Technique Recording for 16mm

Continued from Page 114

slit, due to diffusion, bending-effects, reflection and refraction will function in a recorder like a slit .0020 to .0022mm. in width. For these reasons there exists a definite limit with regard to the frequencies which can be recorded on 16mm. film. At present, the limit is about 8000 cycles.

The same considerations likewise apply to the reproduction of sound records made on 16mm. film. In addition, a fresh difficulty is encountered inasmuch as the volume decreases proportionately to the decrease in the width of the slit used in the sound-head.

It is also known that in case the slit is not placed accurately, and in a straight position, this will result in a marked loss of high frequencies. It is, therefore, vital that the slit be carefully adjusted before either recording or reproducing.

In the case of 35mm. film, a deviation up to one degree will not be harmful; with 16mm. film this tolerance may not exceed an angle of .5 degree. A deviation of 1.5 degrees will limit the frequency-range to a maximum of only 2000 cycles. (See Fig. 2.)

A further difficulty is encountered due to the limited resolving power of the printing material. (See Fig. 3—resolving power of positive film.) To reproduce music and speech satisfactorily, the recorded frequency-range must extend up to at least 5000-6000 cycles. It is, therefore, necessary to compensate the loss in amplitude at higher frequencies caused by insufficient resolving power, as shown in Fig. 3.

The best possibility of doing this seems to be in the re-recording method; that is, re-recording an 16mm. film from a 35mm. playback print, in the original recording of which the higher frequencies have been favored by the use of a correspondingly tuned amplifying system. For this and several other reasons, the re-recording method of producing 16mm. sound-on-film records is preferable to any form of optical reduction.

The Klongfilm G.m.b.H., of Berlin,

BRING BACK A MOVIE RECORD



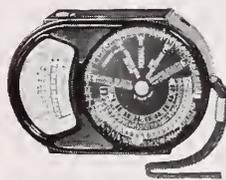
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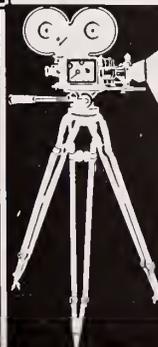
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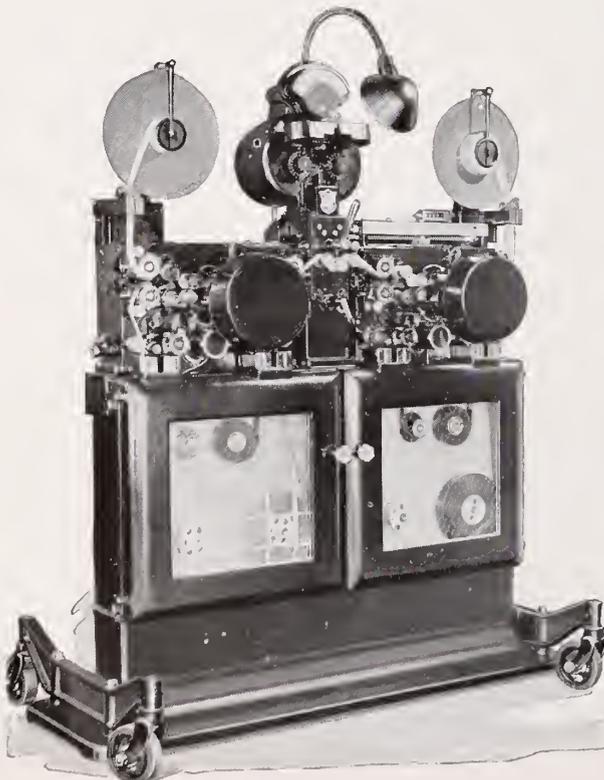
has recently completed a highly efficient re-recording camera for this purpose. It is at present widely used in Europe for electrical reduction of 35mm. sound records to 16mm films.

Riddle Me This

Continued from Page 112

BURTON MILLER, Ph.B., Transmission Research Engineer, Warner Bros. Studio: I believe that the disadvantages of such a change would rather more than offset any possible gains. While it is entirely possible that at a slower speed there would be some lessening of camera-*naise*, this would be obtained at an excessive cost in sound-quality as well as decreased smoothness in the picture. Disregarding the extreme high frequencies which are theoretically possible with present equipment and methods, but rarely really recorded or reproduced, a reduction in speed from 24 to even 18 would cost us one-third of the high frequencies which are actually used. Up to date, the history of sound has been a steady struggle for the higher frequencies, which — to put it simply — "make things sound natural." Reducing the speed would put our sound back to the standard of 1930, at least. This seems too high a price to pay for a slight reduction in camera-*naise*, which in itself can surely be had without cutting the speed.

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AMATEUR MOVIES

this issue

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Double Exposure

Supplementary Lenses

Backyard Movies

. . . and other features.

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AMATEUR MOVIE SECTION

Contents . . .

HERE'S HOW by A.S.C. Members	126
LET'S Play Getting Married by Arthur Campbell.....	127
CINETRICKS . . . Double Expasure by Wm. J. Grace.....	129
ACTION of Supplementary Lenses.....	130
FILTER Your Clase-Ups by Gilbert Warrentan, A.S.C.....	132
SHOOTING Sixty Thousand Caribau by Gearge J. Lancaster, A.S.C.....	133
AT HOME with Yaur Candid Camera by Clarence Slifer, A.S.C.....	134
BACKYARD Movies . . . Prize Winners.....	135

Next Month . . .

- Imitating the studios in 16mm — making backgrounds for your miniature pictures. Jerry Ash, A.S.C., will tell you how he did this with his 16mm camera.
- You will be given some new angles on negative-positive 16mm film. This type of film is growing in popularity more and more.
- Another Backyard Movie selected from the many being sent in by Amateurs. Also a complete continuity that can be made by any amateur.
- Wm. J. Grace will give another Cinetricks article in his usually interesting manner.

PROFESSIONAL Criticism of the Amateur picture is a part of the service offered by the AMERICAN CINEMATOGRAPHER. Many are not aware of this. Hundreds of pictures have been reviewed this past year by members of the American Society of Cinematographers for the Amateur.



HERE'S HOW

by A. S. C. Members

the car headlights did not show up. How can I get the picture I want?

—CLINIC, New York.

DEAR CLINIC:

"Here's How" is glad indeed to answer your questions. You used good judgment in coming to "Here's How" with your questions. You naturally would want the greatest cinematographic authority in the world to sponsor the answers in view of the fact that you will use the questions in a contest. You are aware that you could not have asked any greater authority than "Here's How," as it has at its command the knowledge of the greatest cinematographers in the world.

You will note that each question has been answered by an unquestionable authority, a member of the American Society of Cinematographers, men who stand very high in the ranks of our cinematographers.

As your letter was seemingly an open letter, Dear Clinic, "Here's How" presumed that you wanted it to answer your questions through its department.

Here are the correct answers, Dear Clinic:

IN MY indoor pictures, while they seem clear enough and well exposed, the subjects do not seem to stand out from the background. What can I do to improve this condition in my indoor shots?

—CLINIC, New York.

The answer to this can be expressed in two words: "back light." Arrange your lighting so that, in addition to the front-light, another lamp (or lamps) cast a fairly strong beam on the subject from above and behind. This gives an outlining high-light on the head, shoulders and arms, which effectively separates the subject from the background. This effect is sometimes called "rim-lighting" or "edge-lighting," and is one of the most important secrets of modern cinematographic lighting.

—Dovid Abel, A.S.C.

I WANT to get a night effect, showing a car driving along the road with the headlights brightly lighted. Having heard that the "A" filter gives a night effect to pictures taken in the day-time, I tried the shot with this, but didn't get the results I wanted because

To get such a night-effect, you must, of course, use Panchromatic or Super-Sensitive film, the "A" filter (or even a heavier red filter), and underexpose considerably. In order to show the headlights, your car should be coming very nearly straight into the camera, and the regular, diffusing headlight lenses (or reflectors) removed, and replaced by clear ones, so that the light comes out in a strong beam instead of diffusing over the road. More powerful bulbs in the lamps will also help: the strongest generally available are rated at 52 candle-power, and should pick up well. Professional cinematographers, when making such shots, often put an extra storage battery in the car, wiring it into the circuit with the car's regular battery, in order to have added power; in addition, they sometimes use several bulbs in each headlight. In a recent article in the AMERICAN CINEMATOGRAPHER, mention was made of a method by which James S. Brown, A.S.C., secured such an effect without re-wiring. He replaced the lens of the headlight with tightly-stretched tinfoil, which acted as a reflector, and cast a strong beam of light into this with reflectors or mirrors. However, this would be difficult for the average amateur movie-maker, who can be assured of reasonably good results if the car approaches straight into the camera, with clear lenses, rather than diffusers, in the headlamps, and — if possible — more powerful bulbs.

—John Arnold, A.S.C.

ON several medium long-shots of ladies in white dresses, against a dark foliage background, I have secured results in which the actors were so badly overexposed as to be almost unrecognizable "white silhouettes." I use what is admitted to be one of the best exposure meters on the market which, in other circumstances, is uniformly dependable. In what respect is the meter (or my technique) at fault?

—CLINIC, New York.

In all probability, your meter gave an accurate reading of the scene as a whole: but it was only an over-all reading, which did not take into consideration the fact

that you were shooting for the people. The reading was, therefore, a mechanically accurate compromise between the exposure required for the dark background (which evidently predominated in area) and the white-clad ladies. The result was that the subjects were badly overexposed, while the foliage was probably slightly underexposed. Either take a separate reading—quite close to the subjects—or cut your exposure one stop from the meter's reading. A green filter might also help, by lightening the rendition of the foliage.

—Clyde de Vinno, A.S.C.

I HAVE read that a filter will make clouds stand out. I tried a 4x filter one day when the sky was full of clouds, and I could not notice any very great improvement. Wherein have I failed to do the right thing — if I have?

—CLINIC, New York.

A color-filter makes clouds "stand out" by absorbing part, or all, of the blue light from the sky, thereby darkening the sky in your picture, and making the clouds stand out prominently. If the sky were a pale, "washed-out" blue, as sometimes happens, the filter will not darken it so noticeably, and accordingly, the clouds will not stand out so prominently. This may have happened in your case. It is more probable, however, that you were using Panchromatic — or,

Continued on Page 141

A good example of backlighting





Let's Play Getting Married

by
Arthur Campbell

WHEN children imitate "grown-ups" the result is always amusing — if the imitation is spontaneous and natural! Here is a continuity in which the kiddies can have a lot of fun playing at getting married. And the grown-ups can have as much fun filming and screening the story. It is simple and easy to film: you need only three children — a little girl and two boys — but you can use as many juvenile "extras" as you may wish. The whole thing can be filmed in any back-yard or garden, with no special technical equipment or skill. Try it!

"LET'S PLAY GETTING MARRIED!"

The Cast

Jane
 Jimmy, her brother.....
 Bobby, a neighbor.....
 Mother
 Neighborhood Children

Scene 1. Angle-shot of the top of a fairly high wall

or fence, shot up from a low set-up. A big ball is seen bouncing up and down behind the fence. Show two or three bounces, with the ball falling back behind the fence each time.

Scene 2. The top of the fence, from a more normal angle. The ball comes up again, and this time bounces over the fence. Pan the camera down with the ball: it lands between a little boy and a little girl (Jimmy and Jane). Jane is sitting on the ground, playing "jocks," and Jimmy is sprawled out nearby, reading the funnypaper.

Scene 3. Close-up of Jane: she looks up in surprise.

Scene 4. Close-up of Jimmy: he, too, looks up surprisedly. Make these two scenes short.

Scene 5. Medium long-shot (full figure) of the two children. The ball lies between them. They look up toward the top of the wall.

Scene 6. Close shot of the top of the wall. Bobby rises his head over the wall: he has found an old tap-hot, rather crumpled. He looks down toward the children.

Scene 7. Long-shot, showing the two children at the foot of the wall, and Bobby's head looking over the top. Bobby gravely tips his hat to Jane, and smiles. She picks up the ball, gets up and hands it back to him.

Scene 8. Close shot of Jimmy, intently looking at the paper, in which there is a large picture of a wedding group.

Scene 9. Close-up of Jimmy: he looks up — an idea is being born. He looks over toward the other two children.

Scene 10. Close-up of Bobby, grinning down at Jane.

Scene 11. Close-up of Jane. She is embarrassed, but pleased at Bobby's attention. She smiles shyly, and steals a glance up at him.

Scene 12. Close-up of Jimmy: he turns his head, looks down at the paper.

Scene 13. (Insert) Close-up of the newspaper picture of the wedding-group.

Scene 14. Close-up of Jimmy. He looks up — he has a big idea! He turns to the other two and speaks:

TITLE: "Let's play getting married! Bobby can be the groom — Jane the bride — and I'll be the minister!"

Scene 15. Close shot of Bobby and Jane: they grin and nod approvingly. Bobby's head disappears.

Scene 16. Long-shot. Jimmy and Jane run out of the picture.

Scene 17. Long-shot, looking down a sidewalk. A neighbor boy wanders down the walk into the camera. As he gets close to the camera, he stops and looks off to the left.

Scene 18. Long-shot: the sidewalk is in the background, with the neighbor boy walking along it. Jimmy and Jane run into the foreground; they see the boy, and stop. They shout to him, and he, too, stops.

Scene 19. Close-up of Jimmy, shouting:

TITLE: "We're gonna have a wedding — get the gong!"

Scene 20. Medium-long-shot (from opposite angle) of Jimmy and Jane. They run on out of the picture. (Keep the direction of their movement the same — preferably from left to right in all these scenes.)

Scene 21. Same as Scene 17. The neighbor boy hurries off.

Scene 22. Medium-shot of a window (from outside). Jimmie comes past with a strange assortment of clothes in his hands, followed by Jane, similarly burdened, with one hand on her lips indicating silence.

Continued on Page 138

"IF ALL the double exposures used today on the professional screen were laid end to end . . . etc.," would be a suitable BELIEVE IT OR NOT for Mr. Robt. L. Ripley. Indeed, the universal use of double exposures in motion pictures today places this type of Cinetricks at the unquestioned head of the list.

One of the first mistakes the fledgling still photographer makes is that of forgetting to wind the film or pull the pack tab after each exposure, with the result that two pictures are taken on the same film area. This same "mistake," however, is purposely made by the highest paid professional workers, and when properly and intelligently done, the screen effect accomplishes a psychological effect quite necessary to the story.

The repetition has cast a tinge of triteness on its truth, nevertheless the observation, "The motion picture is the concrete representation of the mental processes of imagination," shrewdly explains the growing success of photographic story-telling.

The human mind has the facile power to flit from place to place, from subject to subject, from period to period, ablating space and time. Facile though this phenomenon, the human mind does not suddenly jump the hurdles of space and time; there is a smooth, albeit rapid, waning of the present mental picture overlapping the waxing of the next picture. Seldom does one picture suddenly disappear to be replaced as suddenly by the next, unless events are being reviewed mentally in quick flashes.

Not more, then, should a screen story abruptly change from one scene to the next. Motion pictures are as much a psychological impression as they are visual records of the animated appearance of things.

I don't know just when professional producers first realized the importance of this basic principle, to-wit, the idea that motion pictures should be built to appeal to the mind as to the eye. But from the moment that realization of this important psychological principle came, from that moment motion pictures were lifted out of the novelty class to the high plane of a medium of expression unparalleled. In the last few years, so much study has been made along this line, that certain experiments have gone the limit. The illusory effects attributed to the Russian school, and called by a French name, **montage**, may be quite over the heads of most of us, but it does indicate the intensive study and effort to precipitate solid, concrete examples of the possibilities from vaporous ideas.

But whether or not you care to apply **montage** to your own filming, by all means consider the preponderance of authority in the cine field recommending double exposure transitions wherever possible. Simple or pretentious, scarcely a film can do without some double exposure effects.

When the Cinetricks "double exposure" is mentioned, most of us assume that ghost work is the only real phase of the procedure, and since few are the opportunities for ghost scenes, we forget the rest of the work. A lonely bachelor sees in the smoke of his faithful pipe the beautiful faces of fair damsels in his life. That sort of thing. Actually, this sort of double exposure work constitutes about 2% of the total, so it is relatively unimportant. Forgetting for the moment these larger double exposures, let's talk about the more common use of double exposures — lap dissolves and wipes.

Laps and wipes constitute the great bulk of double exposure cine work, yet few amateurs have tried to use them in their filming. Perhaps the biggest stumbling block is the lack of proper tools with which to do the work.

Professional cameramen seldom make their own laps and wipes these days, because every camera and the sound recorder must be brought up to synchronous speed before the screen action is started. The effects are built in by the

Cinetricks---

laboratory technicians with optical printers. Amateurs, of course, do not have such facilities, because of the reversal film they use. Effects must be built into the amateur film as it is photographed. The degree of pretentiousness to which he may carry his double exposure work depends on his equipment and his ingenuity.

There are only two standard American amateur cameras built so that film may be backed up or rewound right in the camera. One is the new Victor and the other the Cine-Kodak Special. It is quite possible, however, to install means on certain other standard cameras, such as is illustrated with this article, for rewinding film in the camera.

It is possible, although sometimes rather inconvenient, for the amateur to take his camera into a darkroom, unthread the film, pull back the estimated amount of film involved in the double exposure, and rethread it. Practically all 16mm cameras using the standard spools may be rethreaded in the darkroom, but I strongly advise against attempting this operation with the 8mm Cine-Kodaks. It is not impossible, but very difficult to unthread and rethread one of these little cameras in the dark. Try it sometime. The Packette camera, if the magazine could be put in upside down, would be very handy for rewinding the film in the magazine, although only for short lengths. If long lengths were rewound, jamming would very likely occur and the film would be spoiled.

"You can't have your cake and eat it, too," describes the compromise you must bow to at present in rewinding film. It is impossible to rewind more film than the spring motor will allow. When the motor has been wound up by the manual rewind mechanism, that's all the film you rewind. You quite naturally enjoy the convenience of a simple spring motor to drive your camera. But you must also suffer at least some inconvenience in rewinding film in the camera, for no amateur camera has appeared with a de-clutching arrangement. With the Special, of course, the film magazine may be removed and the motor allowed to run down for longer rewinds. All cameras at present, however, wind up the spring as the film is backed up.

A simple subterfuge may be employed, of course, even with cameras on the market today and with those to which this rewinding means may be added. When the film has been backed up as far as the spring motor will allow, unthreading the film and allowing the motor to run down will make it possible to rewind still further. This has been done in certain cases, to my knowledge, and very satisfactorily.

If you contemplate the purchase of a camera equipped for rewinding film, or if you are thinking about having your present camera so remodelled, don't let this slight limitation stand in your way. Out of a thousand double exposures, probably not one will be longer than one springful. Dissolves and wipes will be the greater portion of your work.

Now for the mechanics of the simpler and more widely used phases of double exposures — lap dissolves and wipes. In numerous publications and texts on the subject I have read that the standard dissolve or wipe takes place in three seconds. If the professional screen is to be taken as a standard, however, you will find that this is too long. In pictorials, the maximum seems to be two seconds, while 95%

Explaining Double Exposures

by
Wm. J. Grace

of all dissolves and wipes is about $1\frac{1}{2}$ seconds. At the normal amateur standard speed of 16 frames per second, this means 24 frames are involved in laps. Using 16mm film, this is about 7 inches; using 8mm, about $3\frac{1}{2}$.

It is quite necessary that wipes be accurately rewound frame by frame. Laps are almost as particular. For this reason, the camera should be equipped with a frame counter or a counter which registers footage to the tenth of a foot.

Using a camera equipped for standard work only, then, the amateur must learn to smoothly close down the lens diaphragm in a given time, take it to a darkroom and back up the film the required amount, and open up the diaphragm on the following scene at the same rate of speed as he closed it on the last scene. This is not at all impossible to learn to do rather well.



In order to make the actual rewinding of film in the camera easier, a camera so equipped will of course be more convenient to use, and if it is equipped with accurate footage or frame indication means, excellent work may be done.

The ultimate in convenience and accuracy, of course, is possible if some automatic device is built on the camera so that a fading "plate" or wipe "plate" is moved before the lens in synchronism with the travel of the film. The optical printers of professional studios are so built, as is the Rewind-Dissolve shown installed on the Cine-Kodak K accompanying this article. The effect plate is moved across a slot before the lens and is geared to the camera and controlled by a release button. A footage counter shows footage in tenths of a foot.

In conclusion, may we review the reason for double exposure work. If a little extra thought will improve our handiwork, if a few more ounces of effort are expended to make something better, is that work to be considered as unnecessary? Will we be satisfied with ordinary results when, by dint of application of better tools and some ingenuity, perfection may be that much closer? The most noticeable flaw in most amateur filming is the glaring absence of out-of-the-ordinary effects. And yet, simple as are some of them, any motion picture is bettered by the intelligent application of one or more Cinetricks. Our single hope is that this series of articles on the making of trick work will be the inspiration to amateurs the world over to make better films, to know how and why certain effects may improve their product, and last but not least, to derive even more pleasure from movie work.

Making a Fading-Glass

A very handy method of making fades — and lap-dissolves, too, if your camera will wind back — is a "fading-glass." This is simply a fairly long piece of glass, graduating from absolute opacity at one end to perfectly clear glass at the other. In use, the glass is placed directly in front of the lens, and moved across so that, for a fade-out, you would begin with the clear area in front of the lens, and finish with the opaque section completely obscuring the lens. For the best results, the glass should move in some sort of a frame, such as some of the filter-holders available.

An easy way to make a fading-glass is to take an ordinary photographic plate (the size of the plate will naturally depend upon the length needed for your fading-glass), and expose it to white light, under a slide which is slowly moved across the plate, so that one end gets maximum exposure, and the opposite end none at all. Then develop this plate — using a good developer, and developing until maximum density is reached at the dark end. Then fix, wash and dry the plate in the usual manner, and your glass is ready: it can then be cut to whatever size you wish.

A variation of this is to expose the plate completely, thereafter developing, fixing and washing as usual, so that you get a perfectly black deposit all over the plate. Next, place the plate in an inclined position in a developing tray, and apply any reducing agent, with a bit of cotton, swabbing progressively upward. This can be done so that the silver deposit is entirely removed from the lower end of the plate, and graduates from there to the upper end, from which none of the deposit has been removed. An excellent reducer to use for this is the well-known "Farmer's Reducer," which is composed of a 20% solution of plain hypo, to which a little 10% solution of potassium ferricyanide has been added. Any photographic reducer will do for this purpose, however — including the various commercial ready-mixed reducers.

ARTHUR CAMPBELL.



Fig. 3

Editor's Note: The article in our May issue, "Nature Photography with Cine-Kodak," has brought so many inquiries relative to the use of the supplementary lens that we are printing here that portion of Mr. McFarlane's paper which deals with that porticular lens.

THE amateur camera lens is not designed to focus on objects closer than two feet. The supplementary lens is not only the simplest method of focusing for shorter distances, but also has a decided advantage, since the indicated f aperture of the camera lens is still valid, even for very short distances. Thus, the same aperture setting is used for the photography of small objects as for distant objects, and Kodacolor photography is quite practical, provided the supplementary lens is large enough to avoid cutting off the marginal rays.

The action of the supplementary lens is shown in Figure 1. When the camera lens is focused for infinity, the focal length of the supplementary lens required is equal to the distance of the supplementary lens from the object to be photographed. This is independent of the focal length of the camera lens. The supplementary lens may be regarded as creating a virtual image at infinity, for which the camera lens is focused. The light proceeding to any one point in the film plane, forms a parallel bundle between the camera lens and supplementary lens. The degree of separation of these two, therefore, does not affect the focus: the spacing of importance is that between the supplementary lens and the object. The supplementary lens must not be so far from the camera lens that part of the image-forming light is cut off, as shown in the lower diagram in Figure 1. As regards the optical quality required in the supplementary lens, for object distances down to eight inches, simple spectacle lenses of the Bausch and Lomb "Celex" double convex type have proved satisfactory, even with Cine-Kodak lens apertures of $f. 1.9$. The theoretically preferable type is plano-convex, with the plane side facing the object. For subject distances shorter than eight inches, a camera lens of the required focal lengths given in Table II are available from Bausch and Lomb as motion picture objectives. Still camera anastigmats of suitable focal length may be used.

CONSTRUCTIONAL DETAILS

The details of a preferred construction are as follows: The distance d (Fig. 2) at which the object should be photographed is the same as the distance from the eye at which the object is held for viewing, provided the field size resulting is large enough. Field sizes are given in Table II. A distance of ten inches has been found satisfactory for many small objects, such as flowers, small animals, large insects, etc.

Action of

The proper supplementary lens can be mounted easily with cellulose cement in a wooden upright, using a stepped circular hole made by an expansion bit. This lens is mounted close to the camera lens, and so that its center is on the camera lens axis. A decentering error of 1-16th inch is not objectionable. The wire frame is not placed exactly at the plane of sharp focus, because it has been found impossible to surround all objects with the frame. It is therefore set 1-12th inches closer to the camera. Experience has shown that the estimation of the field position and limits offers no difficulty with this arrangement.

The frame, of wire $\frac{1}{8}$ th inch in diameter, is made to exceed the field limit by about $\frac{1}{4}$ inch on all sides. The ends of the wire are secured to the base **B**, and cleat **C** holds the frame in place. The frame is bent so that its geometrical center is on the camera lens axis. If one side of the frame appears in preliminary pictures, the frame may be shifted or bent as required. In order to attach the camera to the base **B** a hole is drilled for a screw (e. g. a $\frac{1}{4}$ -inch machine screw will serve) to engage with the tripod bushing of the camera. This hole is so placed that the camera rests against the blocks **PP** to assure replacing it exactly. The blocks **PP** are placed on the side shown to permit easy winding and reloading.

If desired, the supplementary lens mount may be hinged at the base, to remove it for distant photography, with which the frame does not interfere.

The accessory known as the "Cine-Kodak Titler" can be used in the manner outlined. The easel which takes the title card forms the frame, and does not show in the picture. The focus comes exactly at the frame, and the field size is $2\frac{1}{2} \times 2\frac{3}{4}$ inches. This is rather small for most subjects.

The fourth class of subject in nature photography, that is, things we examine through a magnifying glass, can be photographed up to X10 magnification with the same type of device, as shown in Figure 3. The supplementary lens in this case is a 25mm focus anastigmat.

This magnification, X10, has been found unnecessarily high for many subjects, and manipulation is somewhat awkward. An attachment for X5 magnification is more useful and more usable, and is best accomplished with a 50-mm anastigmat used as a supplementary lens. This lens must be somewhat greater in diameter than the camera lens, to avoid cutting off the edge of the field, as shown in the lower diagram of Figure 4.

The construction of this attachment is beyond most amateurs, but the required mounting can be made by any machinist. A filter cell may be built into the mounting, which may then be attached to the camera in the manner of a filter. The anastigmat used as a supplementary lens must be mounted with its front facing the camera. The wire frame, of spring steel wire, is adjusted so that the image of a distant object, created by the supplementary lens alone, falls in the plane of the frame. A final adjustment is made with the attachment on the camera, by photographing a pin in and near the plane of the frame,

Supplementary Lenses

by
J. W. McFarlane
 Research Dept., Eastman Kodak Co.

and adjusting the frame according to the result. Care must be taken to keep the subject in the plane of the frame, since the depth of focus, given in Table I, is quite small.

Excellent Kadacalar pictures have been taken at X5 magnification using a 50mm f. 1.9. matian picture objective as a supplementary lens.

Concerning the third class of subject, small objects which cannot be approached; it is difficult to apply the simpler type of Cine-Kadak to this work. A long focus lens must be used to obtain a sufficiently large image of the distant small object, and the long focus (telephoto) lenses supplied are focussed by estimating the subject distance. In this work this distance is 20-100 feet, which is much shorter than that figuring in ordinary telephoto work. The depth of focus for near subjects is so small with long focus lenses that it is impractical to focus by estimation. The Cine-Kadak Special, however, is quite well suited to this work, as any of the lenses supplied may be focussed critically by means of the built-in reflex finder. It is therefore easy to obtain sharply focussed pictures with the long focus lenses required.

In making nature photographs, care must be exercised in the choice of subject. The most important thing, in fact the only reason for the existence of matian pictures, is interest, and the interest must be a moving one. Consequently, matian pictures of flowers with nothing happening, are not of much interest. If, however, the picture is a time-lapse one of the flower opening, or a bee working on it, or its functions are being demonstrated, it is another story. On the other hand, small animals and insects produce very interesting pictures. The most difficult part is to get them to act, and this is one of the fascinations of this type of work.

Nature photography with the Cine-Kadak is a combination of two hobbies, the oldest hobby and the newest. The earliest records left by prehistoric man show his interest in the world around him; his drawings made on the walls of caves are evidence of this. All through the ages men have interested themselves in the study of plants, animals, insects, and birds—studying their lives and habits, and as a hobby, it has always been satisfying. On the other hand, the newest hobby, excluding fads, is the making of amateur matian pictures. This hobby is about ten years old, and the other about twenty thousand. And so we have a union of hobbies, one from the old Stone Age, another, machine created, an outlet for man's primitive and modern interests, in the creation of matian pictures of the natural world.

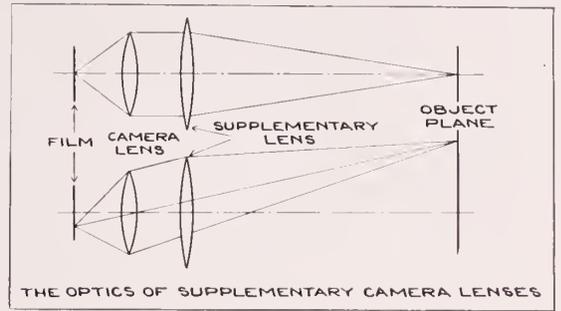


Fig. I

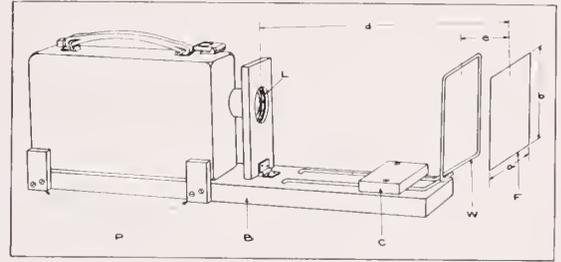


Fig. II

TABLE I
 Depth of Focus
 Radius of disk of confusion=0.0025cm.

Subject distance for 25mm lens with supplementary lens	Overall Angular Magnification	Magnification on film*	Depth at f.5.6 at f.1.9*	
			cm	mm
Inches	x 0.5			
20	x 0.5	x0.05	24.0	8.0
10	x 1	x0.1	5.8	2.0
5	x 2	x0.2	1.4	0.5
2	x 5	x0.5	0.23	0.08
1	x10	x1.0	0.057	0.02

* These data apply to camera lenses of all focal lengths.

TABLE II
 Data for 16mm cameras with 25mm lenses, and 8mm cameras with 12.5mm lenses.

Photographing Distance d	Field Size bxa	Displacement e	Supplementary Lens L
Inches	Inches	Inches	
39	12x16	6	1.0 dioptre
19½	6x 8	3	2.0 dioptre
13	4x 5¼	2	3.0 dioptre
11¼	3¾x 4½	2	3.5 dioptre
10	3x 4	1½	4.0 dioptre
8	2¾x 3¾	1	5.0 dioptre

Spectacle lenses
 150mm focal length } Camera
 100mm focal length } era
 75mm focal length } Ana-
 50mm focal length } stig-
 25mm focal length } mats

Filter Your Close-ups

by
Gilbert Warrenton, A. S. C.

DID YOU ever try using a color-filter when making close-ups? Try it! In many instances filtering will improve close-ups tremendously. Most amateur cinematographers (and photographers, too!) overlook this use of filters. They seem to regard color-filters as a sort of "one-purpose" accessory: a useful tool for photographing landscapes, and especially for bringing out cloud-effects. True enough, filters are primarily intended for this purpose — but they can be very useful indeed in making close-ups, and in much other general work.

In a close-up, the thing we are most interested in is the face; especially in the way our picture renders the skin-texture, and what it does to make-up, facial blemishes, and the like. Here is just where the filter helps! Proper filtering will give a more natural skin-texture, smooth out wrinkles, fill in shadows, and make the make-up (if the subject is feminine) appear more natural.

Look at the upper picture, for instance. It was made on Panchromatic film, without a filter. How many times have you made a close-up of one of your friends — a nice, well-composed, well-lighted shot — and suffered the disappointment of hearing the friend complain, "Oh! My skin isn't as bad as all that — and look at those wrinkles!" And yet, in all probability, your camera reproduced truthfully what it saw. Between the critical quality of modern lenses, and the color-sensitivity of modern emulsions, the camera sees things in far greater (and often more unfavorable) detail than do our eyes. It picks up any imperfection in skin-texture, coloring, or make-up, and magnifies it on the screen. It often exaggerates wrinkles that are virtually invisible to the eye. In other words, it shows things too well — too truthfully. In order to get a pleasing picture, we must often fool the camera. That is why a professional portrait photographer always has his negatives carefully retouched, and a professional cinematographer always has his actors wear make-up. For the same reason, professionals nearly always use at least a slight diffusion on their closer shots.

Now, these remedies aren't usually possible for the amateur. You can't retouch a motion picture film. Neither can the family filmer insist that his victims don studio make-up. It is possible, of course, to use a diffusion filter with amateur cameras, but for a number of practical and technical reasons, this is none too satisfactory in standard filming. So filtering is the most logical remedy.

Now, look at the lower picture. It was made on Panchromatic film, with the same camera, and a "G" filter.

What has happened? First of all, the picture is given a softer general quality. Part of this is due to the filtering action, and part to the added glass surfaces of the filter; at any rate, the quality is appreciably softer and more pleasing. The skin-texture is much more natural — and, incidentally, more pleasing. And where are the wrinkles? They are practically erased! Another thing, too: notice that the shadows are appreciably lightened — an important consideration in close-ups made in the sun, cross-lighted. Also, the rendition of the lips (made up as usual, with ordinary lipstick) is lighter, and more natural.

The use of a filter helps, indirectly, in our effort to concentrate attention on the face. Normally, in making close-ups out-of-doors, we work with the lens stopped down to a fairly small opening: accordingly, the depth of focus is considerable — especially with 16mm and 8mm cameras — and the background is usually in fairly sharp focus. This is often a disturbing element, particularly so if there is much movement in the distance. Using a filter, the lens must naturally be used at a larger aperture, which decreases the

Continued on Page 141





Shooting Sixty Thousand Caribou

by
George J. Lancaster, A. S. C.

FOR THREE DAYS I rowed and drifted down the mighty Yukon. I was searching for the great herd of caribou saan due to swim the river in their yearly migration northward.

"There's a story," the editor said. "Go up there and get it!" So it was that I found myself in a small skiff, floating down-stream on the great river of the North. I had a camera, several thousand feet of film — and an idea. Just an idea, mind you — not a story: I knew that the immense herd of caribou was due to cross the Yukon, but that was all. It was up to me to make the story with my camera!

My search had narrowed down to a hundred-mile stretch of river: somewhere in those hundred miles of wasteland, thousands of caribou would have to swim across to reach their summer grazing-grounds in the Arctic. Down-stream I paddled, day after day, always watching — and hoping — for some sign of the herd. Not a caribou in sight! So I loaded skiff, cameras, and all onto a river-steamer, and headed back to repeat my trip.

Then, suddenly — caribou! Thousands of them —

swimming and milling in the river, pushing and crowding on the banks. Over sixty thousand of them! What a sight — and what a picture! I got busy at once.

First, I set up my cameras on the lower deck of the steamer, and got some conventional long-shots, to show the way the herd was fording the river. Then I moved to the upper deck, and ground out many more scenes of the animals, splashing and swimming in the river, and crowding on the banks. The boat was approaching the herd, so I got some nice moving shots as we drew near. As we came closer, it was necessary for the boat to heave to, for the river was literally jammed with swimming caribou; we couldn't get through. That gave me an opportunity to make closer shots of the animals. I moved to the upper deck, and ground out medium-shots and close-ups from all angles. Here, my telephoto lenses gave good service. I made close-ups of the beasts swimming toward the camera, away from the camera, and passing right across the picture.

So much for the swimming! I had established that fact: now for some shots on land to show the herd entering and leaving the water. The skipper accommodatingly set me ashore, and again I started out with long-shots. Then, with the telephoto lenses, closer and yet closer shots of the herd and of individual animals: coming toward the camera head-on, and at a three-quarter angle; passing the camera; and going away from me at both three-quarter and straight "tail-on" angles. Next, I climbed a tree, Eyema in hand, and got a shot of the herd passing below me. I made this shooting straight down on them. Then more close-ups and extreme close-ups of heads coming right into the lens. Next, I crouched on the ground and made close shots of nothing but the hoofs and legs plodding along the trail. Then more extreme close-ups of heads and antlers, passing across the picture.

In all of these shots, I took particular pains to keep the direction of movement always the same — that is, from right to left. This is important, for if you don't keep your movement consistent, your audience will be confused: they won't be able to tell whether there is one herd, or several, or if the beasts are all going the same way.

Now I had shot the caribou from all angles — long-shots, medium-shots, and close-ups; "tie-ins" and reverse-angles; shots of the herd as a whole, and of groups and individuals; in three-quarter light and back-light; and everything from a bird's-eye view to a worm's-eye view. Plenty of footage for the editor to choose from. And now I was back on the boat, homeward bound, with the main part of my assignment — the caribou — the punch of the picture — "in the box." But one cannot make a picture with only one bare idea, no matter how much footage, or how many angles, he may have. What would the audience want to know, that I could answer with my camera?

How did I get into the Yukon? What did it look like? And perhaps a thousand other questions. I could answer that well enough!

So I went to work and showed them how the old river-boat looked: the big, bearded river-pilot at the wheel; the firemen throwing cord-wood into the fires; the steam-gauges; the pistons that drove the old stern-wheel packet, and finally the big paddle-wheel churning the water to cream, with the caribou-herd still swimming in the distance. I even showed the picturesque old French-Canadian cook peering out of his galley, a huge carving-knife in one hand, while he thoughtfully stroked his unshaven chin with the other. Even I knew what he was thinking about — and so



Tap: Home portrait, 1/5th sec. Summar lens at f.4.5, Dupant Superpan, 2 photoflood lights and two 100 watt lights. Bottom: Candid Party Shot, 1/100th sec. Hektor Lens at f.6.3 on Dupant Superpan Diffused sunlight.

At Home With Your Candid Camera

by
Clarence Slifer, A.S.C.

A NUMBER of years ago, while going over some old books of the Civil War period that I had just purchased, I found this polite invitation:

"Yoursself, and those of your household, are especially invited to call at my DAGUERREAN ROOMS, at Haynes Hall, and examine my specimens with a view to satisfy yourself that I am prepared with all the conveniences for making FIRST CLASS LIKENESSES !

"My long experience and practice with master workmen has enabled me to overcome all those chemical difficulties, that prevent the mass of traveling artists from making clear and bold pictures. By my process likenesses are made equally perfect in clear and cloudy weather.

"Please call at your earliest convenience.

"Yours Truly,

"J. F. CRANCE."

What a transition photography has undergone during the intervening seventy odd years, since the issuing of that invitation, and now! Why, even at the present time, improvements and innovations in photographic apparatus are

taking place with such amazing rapidity as to keep interested even the most blasé of cameramen.

Once again, only this time in a modern guise, yourself and those of your household are especially invited to obtain clear, bold, FIRST CLASS LIKENESSES. Gone, of course, is the old "traveling artist" and his Daguerrean apparatus. Today you are the "artist" and your apparatus is the modern miniature camera with its simplicity and amazing performance. With little effort you make photographs under conditions which our Daguerrean friend would hardly have had the courage to prophesy as some day being feasible.

Those "chemical difficulties" which were so troublesome to the "traveling artist" offer no obstacles to you. You have your choice of many excellent prepared developers. Also the processes of developing and making enlargements have been so simplified and systematized that even the kitchen of a small apartment can readily serve as a "laboratory." However, if the cook should firmly put her little foot down and stop any such appropriation of her kitchen, or should you not wish to indulge in the sport of making good enlargements, there is always a nearby photofinisher who specializes in miniature work.

The weather, which once figured so prominently in the scheme of things, is now reduced to playing the minor role of "set-dresser." For pictures can now be made under most all natural conditions. Snapshots indoors and at night, too, are as easily made as those outdoors in bright sunlight. Fast lenses, film of superb color correction and speed, and inexpensive Photoflood lights combine to give you the utmost enjoyment from your Leica, at home.

Pictures in and about the home are always convenient for you to make. The preparations are few and simple. Should you wish to make snapshots indoors at night or on a dull day, the only preparation is the replacing of the bulbs in a couple of bridge lamps with Photoflood bulbs. A tripod for the camera is unnecessary. The camera is used with the same flexibility as it is outdoors. With this simple preparation, we are ready to make those intimate, life-like, unposed pictures of Mother, Dad, the wife, the kiddies, and others. Charming pictures made in natural and familiar surroundings. Pictures, that in after years will be so valuable in recalling pleasant memories. With the miniature camera, we are developing a new conception of photography; a photographic realism.

There are many ways in which your candid camera may well serve you at home. The economy with which your camera makes pictures, and its elimination of blanks and double exposures, allow you to make many more pictures than would be possible with a larger camera and still balance the photographic budget. Among the many pictures that can be made at home, are portrait studies, the 90mm lens being ideally suited for this work. Candid snapshots can be made at parties and of friends when they drop in for an evening visit. Interior and exterior views of your home are always desirable, and for these, the wide-angle 35mm lens will be helpful in tight spots. Nothing more need be said about making an abundance of camera studies of the children. Even lively youngsters at play are a cinch for this modern method of photography.

Photograph your subjects while they are engaged with their pet hobbies, as miniature shipbuilding, painting, stamp collecting, or just plain old fashioned mud-pie making. Another valuable use for the Leica is the copying of rare old family paintings and photographs. In fact, copying in itself can become a hobby. Thus, a collection of

Continued on Page 136



BACKYARD MOVIES

● R. B. Haines, this month's winner, contributes an unusually timely story which is none the less a true "Backyard Movie." It combines interesting, believable action with both comedy and dramatic suspense, in a continuity which should be very easily filmed. Here it is—try it!

"STICK 'EM UP!"

Cost of Characters

Junior....a typical boy—age 8 to 12 years
 Joe.....his playmate
 Mother
 Father
 A Burglar.....A tough character,
 carrying burglar's tools and a revolver

Scene 1. Long-shot. The story opens with Junior and Joe trying to make a much broken-down toy automobile and a wagon have a good smash-up in the back yard. They soon become disgusted and start to look at a newspaper lying in the yard.

Scene 2. Close-up of Junior, pointing to a picture in the newspaper, with Joe looking over his shoulder.

Scene 3. INSERT: Close shot of newspaper picture of a captured gangster and his guns.

Scene 4. Medium-shot. Joe looks up from the newspaper, and in true gangster fashion points his finger at Junior and says, "BANG!" Junior instantly grasps the idea, and likewise "shoots" Joe.

Scene 5. Long-shot. The two boys jump to their feet, "shooting"; Junior retreats out of the picture, followed by Joe.

Scene 6. Long-shot. Junior steals cautiously around the corner of the garage (or, better still, a workshop) where Dad is working. His finger is extended, still "playing gun." He starts to "shoot" at Joe (out of the picture), but stops, looks at Dad, then at his hand, and abruptly enters the shop.

Scene 7. Medium-shot. Junior asks Dad to make him a pistol and sub-machine gun like the gangster had.

Scene 8. Dad tells Junior to go and play—he's too busy.

Scene 9. Junior reaches up on the workbench for a drawing-knife or any

Movie Film Free

R. B. Haines of Los Angeles gives us a practical idea for the use of the 8mm or 16mm camera. Here is an idea that everyone will find practical. Haines, of course, gets the roll of Panchromatic film. Read his suggestion over—see how simple it is, but how practical. Then try your hand at winning a roll of film free. Send your suggestions to the Editor.

sharp tool—he's going to make a gun himself.

Scene 10. Dad looks up from his work: he sees what Junior is doing, smiles, and goes over to help.

Scene 11. Medium-shot. Dad is working on a wooden gun, while Junior and Joe watch intently. DISSOLVE TO:

Scene 12. Medium-shot of Mother (in house), locking up the family silver.

Scene 13. Closer shot of Mother putting jewelry and rings into a strong-box.

Scene 14. Medium-shot of Mother, trying the catch on a window. She carefully pulls down the shade, and walks out of the picture.

Scene 15. Close-up of Mother, talking earnestly over the phone.

TITLE: "—only yesterday Jones' house was robbed in broad daylight. We've got everything locked up —!"

Scene 16. Medium long-shot in workshop. Father is putting the finishing touches on a wooden pistol. On the bench lies a completed wooden sub-machine gun. Junior is critically telling Dad just how the pistol should be made.

Scene 17. Close-up of Father, trying to be patient under Junior's exacting supervision.

Scene 18. Close-up of the toy pistol in Father's hands. DISSOLVE TO:

Scene 19: Medium long-shot of a white wall. A threatening shadow of a man enters the picture—the shadow falling on the white wall.

Scene 20. Medium-shot of the Burglar, advancing up an alley, straight into the camera. He walks furtively, and pauses to glance into each backyard he passes.

Scene 21. Medium long-shot in the workshop. Father has finished the pistol, which he hands to Junior, while Joe

takes the machine-gun. The two children rush out of the picture, "shooting" as they go. Father looks after them, smiling, and then goes back to his work.

Scene 22. Long-shot of Junior and Joe playing gangster in the backyard. They have all the flourishes of real "tough guys."

Scene 23. Long-shot in the alley: the Burglar is seen approaching; he pauses at a gate close to the camera.

Scene 24. Junior, pistol in hand, approaches a window of his house. (To be most effective, this window should be partially screened by shrubbery, supposedly not visible from either the garage or the rest of the yard; also handy to the alley.)

Scene 25. Long-shot of Mother in the kitchen, preparing a meal. She is nervous and apprehensive.

Scene 26. Same as Scene 23. The Burglar enters the gate.

Scene 27. The Burglar approaches the same window shown in Scene 24, but from a different angle.

Scene 28. Same as Scene 24. Junior turns about and goes back, looking for Joe.

Scene 29. Close-up of the Burglar at the window. He is prying off the screen, and carries a revolver in one hand.

Scene 30. Quick flash of Father at work.

Scene 31. Quick flash of Mother in the kitchen.

Scene 32. Flash of Joe, with his gun.

Scene 33. Close shot of Junior, against side of house. He enters from the same direction he was going in Scene 28, then turns about and again heads toward the window.

Scene 34. Long-shot, by the window. The Burglar is at work, and in the background, Junior rounds a bush. He sees only the Burglar's back, and rushes up with his "gun" extended.

Scene 35. Close-up of Junior. (If possible, show Burglar's back to one side of foreground.) Junior shouts: "Hands UP!"

Scene 36. Reverse-angle of Scene 34. The Burglar, startled, jumps, dropping revolver and "jimmy," and puts up his hands.

Scene 37. Close-up of Junior. He registers surprise, then recognition of the fact that the man is a Burglar. Then he glances down.

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BACKYARD MOVIES

Continued from Page 135

Scene 38. INSERT: close-up of the Burglar's real pistol, lying in the grass.

Scene 39. Long-shot: Junior drops his wooden pistol, and snatches up the Burglar's dropped weapon. Then he backs off, out of the picture.

Scene 40. Close-up of the Burglar's face: he looks surprised, but savage. He glances down.

Scene 41. INSERT: Close-up of Junior's dropped toy pistol.

Scene 42. Close-up of Burglar, very angry.

Scene 43. Long-shot of Junior, backing away. He is getting frightened — quickens his pace, then turns and runs. A moment later the Burglar runs into the picture (from behind camera).

Scene 44. Close-up of Junior (big head). He yells. Make this a short flash.

Scene 45. Flash of Father, stopping his work. He jumps up and runs into camera, quickly filling the frame.

Scene 46. Flash of Mother in the kitchen: she hears and is frightened.

Scene 47. Long-shot. The Burglar is gaining on Junior.

Scene 48. Long-shot, near the garage. The Burglar is almost upon Junior, but as he reaches out to grab him, he trips over the toy wagon and falls. Pan the camera to follow Junior as he reaches the garage and hands the gun to Father.

Scene 49. INSERT: Close-up of the real gun in Father's hand, pointing toward the Burglar (not shown) in a menacing manner.

Scene 50. Medium long-shot of the Burglar, picking himself up, with his hands in the air.

Scene 51. Long-shot: Father holds the Burglar at bay, and Mother and Joe run into the picture. DISSOLVE TO:

Scene 52. Medium long-shot of Junior and Joe, again playing in the yard, with a new auto and wagon. Both have a pistol strapped to each hip, and on the wagon and auto are mounted shiny toy sub-machine guns. On each boy's chest is a toy "Police" star.

Scene 53. Close-up of Junior, plainly showing the "Police" badge.

Scene 54. Long-shot from inside house, or from another angle in the garden. Mother and Father are in the foreground, watching the boys at play. They register complete approval. FADE OUT.

THE END.

If you have the opportunity to do so, you can add a very interesting sequence

after Scene 51, showing the Police radio-car system in action — sending the message, the officers picking it up, the radio-car speeding to the house, and arriving to arrest the Burglar. This could be followed by scenes showing the policemen congratulating the boys, and pinning the badges upon them.

The film, as written, can be made in any neighborhood, and the cast is easily assembled. If necessary, Father could double for the Burglar, keeping his face away from the camera in all his scenes in this part. If your own backyard is not adapted to all of the scenes, the script is written so that you can use several different yards for the various scenes: when assembled, they will give the impression of having been made in a single yard — if you choose your angles right. The interior scenes, if necessary, can be eliminated, and the few really important ones (Scenes 15, 25, 31 and 46) transposed to porches, etc.

R. B. HAINES,
Los Angeles, Calif.

At Home With Your Candid Camera

Continued from Page 134

such prints would give the highlights of the year's news. Great fun can be had at costume parties by making quaint old silhouettes by photography. In fact, many new and interesting uses of the camera about the home will be found, from time to time.

The Eastman Kodak Company publish a book which is full of valuable information for the amateur who wishes to use his camera to the full advantage, at home. It is sold at cost and the title is HOW TO MAKE GOOD PICTURES.

So if you have only used your miniature camera on week-end excursions, or because the camera has a high-speed, focal-plane shutter and a telephoto lens, shot most of your film on hair-raising speed stunts, or if your time has been occupied in other fields of photographic endeavor, don't overlook the picture opportunities at home. Your home photographs may not be as awe-inspiring or be hung at any of the salons, like the others, but they will be infinitely more charming and valuable to you.

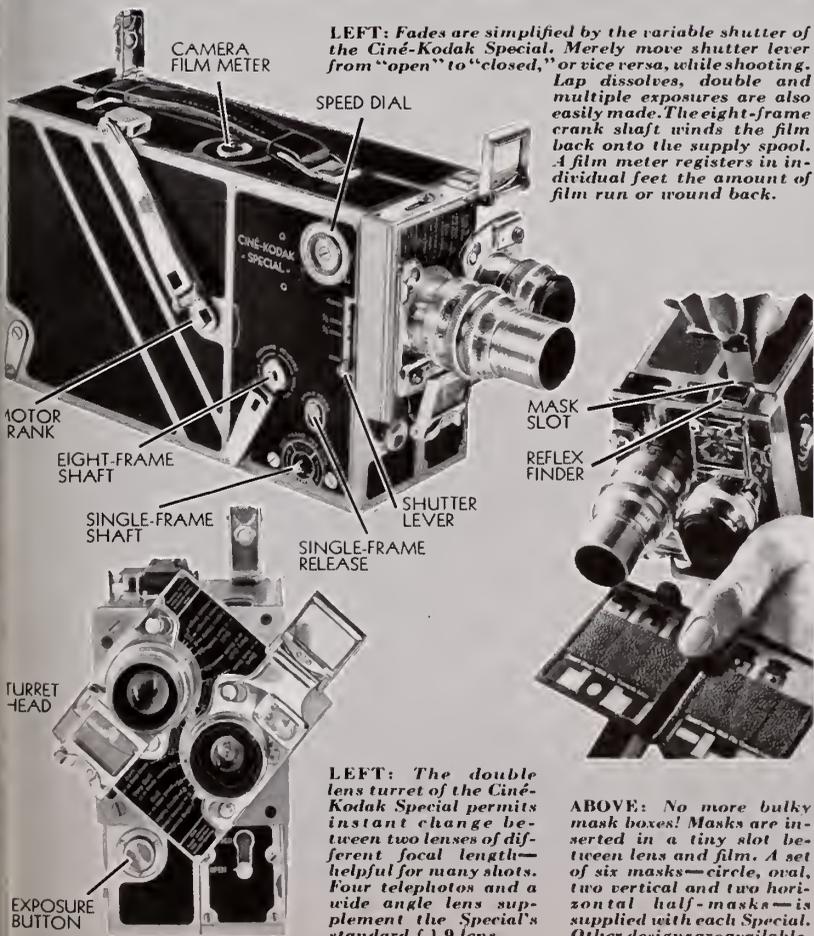
Perhaps, even someday they will be treasured like the quaint old daguerreotypes of grandfather with his beaver hat and sideburns and of grandmother with her hoop skirts. They, too, were what the traveling Daguerrean artist simply described as, FIRST CLASS LIKENESSES!

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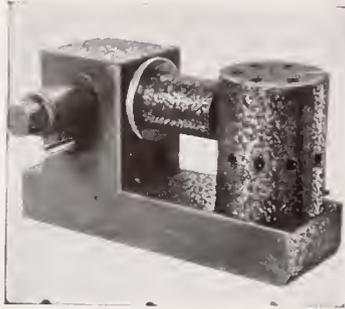
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Let's Play Getting Married

Continued from Page 127

Scene 23. Long-shot of a house door: Jimmy and Jone come out, tiptoeing, and walk toward the camera.

Scene 24. Long-shot in a garden — preferably with some trees. The two children enter, and deposit their loads on a bench. Three or four neighbor children — boys and girls — enter, and all start to examine the loot.

Scene 25. Close shot of the little girls getting the bride ready. One of them is pinning a window-curtain on her head for a veil; another is helping her put on some make-up. A third girl gives her a hand-mirror. She looks at herself in it.

Scene 26. Close-up of Jane's face in the mirror, smiling. If possible, use a cracked mirror.

Scene 27. Medium shot of neighbor boys helping the groom dress, putting on an old dress coat, straightening the top-hat, etc. One of the little girls brings an enormous flower, which she puts in his button-hole.

Scene 28. Close shot of Jimmy, getting ready for his role as the minister. He has on some old horn-rimmed spectacles, and on old, dark coat of his father's, white gloves, etc. One of the boys is trying on one of Father's dress collars — backwards. Another hands him a battered old umbrella, and Mother's big cook-book for a prayer-book.

Scene 29. Long-shot of the group, putting on the finishing touches. A neighbor boy comes waving a harmonica. The children greet him enthusiastically.

Scene 30. Close-up of Jimmy, speaking:

TITLE: "Can you play the Wedding March on your mouth-organ?"

Scene 31. Close-up of neighbor boy, nodding happily.

Scene 32. Long-shot of the group. They form a wedding procession; with the little musician leading, playing his harmonica. They wind around, and end up in front of Preacher Jimmy and Bridegroom Bobby.

Scene 33. Close-shot of Jimmy, as the little bride and groom stop in front of him. He pushes his spectacles down on his nose, and opens his "prayer-book." As he starts to "read," he suddenly sees something in the background, and stops, looking frightened.

Scene 34. Longer shot of the same: all the children stop, turn, and look embarrassed toward the camera.

Scene 35. Medium long-shot: Mother approaches, carrying something behind her.

Scene 36. Close shot of the minister: he is hiding his "prayer-book" under the seat of his pants.

Scene 37. Close shot of the bride:

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she rubs her behind as though in anticipation of an encounter with a hairbrush.

Scene 38. Quick pan (close angle) of the group — all looking embarrassed.

Scene 39. Medium long-shot: the children (backs to camera) are in the foreground, watching Mother, who enters center, straight into the middle of the group.

Scene 40. Close-up of Mother: she pretends to frown, and then her expression changes to a broad smile.

Scene 41. Same as Scene 39. Mother brings out a bag of cookies and a box of candied popcorn. She speaks:

TITLE: "Here's the wedding-feast!"

Scene 42. Close shot of the children, opening the cookie-sack and the candied popcorn.

Scene 43. Close-up of Jimmie: he holds the popcorn-box, and his hand is deep in it. Suddenly he brings out a ring.

Scene 44. Close shot of Babby and Jane. Jimmie (out of the picture) hands Bobby the ring, and Bobby slips it on Jane's finger.

Scene 45. Long-shot of the group, busy eating the food Mother has brought. Mother is standing there, smiling, and pouring out glasses of lemonade. FADE OUT.

THE END.

This story can be made very easily, anywhere. You can confine it to the three children and Mother, or make room for as many neighbor children as you wish. Plan your locations and properties in advance, so that you can concentrate on getting the pictures of the children while they are interested. As a rule, you will find that you can give the children one rehearsal, and then shoot the scene: often you'll be able to shoot two or more scenes together, at a single "take," separating them when you edit the film. Don't waste your time — and the children's patience — by trying to make the inserts in their proper place: you can get them later. Don't make the mistake of over-directing the children: just give them a good idea of what you want, and let them do it their own way — it will be more amusing. This also applies to costuming, the bride's makeup, etc. You can work in a number of added shots in costuming and wedding sequences to take advantage of any "business" that you may think up, or that the children themselves may suggest. Remember, in making these added shots, as well as in filming the story as a whole: get plenty of close-ups, and keep the figures even in the longer shots as large as possible.

A very good idea for the making of this story would be to make it as a part of a costume party for the children, having them all come dressed as grown-ups: make it part of the fun of the party, rather than work. And remember, you can always get the un-costumed shots at an earlier or (preferably) a later time.

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**MINIATURE PHOTOGRAPHY
AT NIGHT
(Correction)**

As the "f" value of a lens is found by dividing the focal length of the lens by the diameter of its stop, it is obvious that at f2:0, a 50mm lens would be 25mm or one inch in diameter and not one-half inch as it appeared in the June

issue of this magazine. Fortunately, this oversight did not destroy the intent and purpose of the paragraph: i.e., to show that the short focal length lens on the miniature camera is more easily shaded than is the longer focal length lens on the conventional type of camera. (A 6-inch focal length lens at f2:0 would be 3 inches in diameter.)

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Shooting Sixty Thousand Caribou

Continued from Page 133

did everyone else who saw the picture: "Fresh meat, ba' gash! Nice, spring caribou—hey?" Just that little gesture conveyed the thought and a situation. I made a close-up of the old cook with his silent smile, and the great wrinkles in his forehead. This showed pleasure, and anticipation: but it didn't indicate that he was a cook. So I had him in his galley, stirring a pot, and slowly shaking his head in despair. At this point, I made a lap-dissolve back to the caribou, as the ship moved away from them, and faded out. I was ending the sequence, and leaving the location. Next, a short fade-in of the ship dacking at White Horse, where I was to board a train for civilization. Here was where I wanted definitely to end the picture: but what to do? Sunsets were old and conventional; what else definitely indicates the end of a day? Well, after a hard day's work or a long tramp in such a country, you feel tired. I felt that way myself—ah, there was my idea! Into the smoker I went. There was my cast, already assembled: a group of picturesque, grizzled old saurdaughs: I was lucky to catch one just dropping off to sleep; two or three others snoring away comfortably; and a few others in add, cramped sleeping-positions. A perfect fade-out.

The picture was released in one 1,000-foot reel. I had shot between three and four thousand feet of film to get it, so that the editor might have plenty of scenes to choose from in building his picture. In making such a picture—and this applies just as forcefully to any type of scenic or travel-film, professional or amateur—the important thing is to get **everything**—every action, every location, every angle—while you are on the spot and shooting. You can't, as a rule, go back and pick up the shots you've missed: and even if you could, it would be more costly than expending a few hundred feet of film extra for safety.

The picture was, of course, made in 35mm; none of the scenes in the picture were over twenty feet long, and most of them were shorter. This doesn't seem very long; but it was long enough to show what I had to show, and short enough to keep the action moving quickly. The important thing was to have enough different angles to show everything very clearly, and, by the variety of angles, to keep the story moving quickly. The same technique can well be used in 16mm or 8mm. In 16mm, for instance, the scenes can be kept under five feet in length—many of them only three or four feet—and if you have plenty of different angles, you'll have a more interesting picture than if you had fewer and longer scenes, made from less inter-

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esting angles. And, by angles, I don't necessarily mean those tricky Russian angles, where your perspective is distorted by an odd viewpoint! Simply the normal succession of long-shot, medium-shot, close-up and extreme close-up, showing the action from different view-

points — approaching, passing, and receding. Don't forget the closer shots, and the different viewpoints: make your footage short on any one scene — but get plenty of short shots of the situation from different angles. You'll be surprised how it will pep up your travel-films!

FILTER YOUR CLOSE-UPS

Continued from Page 132

depth of focus. This tends to throw the background more or less out of focus, subduing it, and forcibly concentrating the attention on the face of the subject. Naturally, this is doubly true of close-ups made with longer focus lenses, which are always preferable for closer shots.

But — what filters shall we use for improving our close-ups?

This — as always when filtering — naturally depends upon the type of film you are using.

If you use Ortho film, you can choose from the K-1, K-2, Aero 1 and Aero 2 filters — all of which are yellow.

If you use the more nearly panchromatic Plenachrome, you may add to this list the K-3 and "G."

With regular Panchromatic film (negative or reversal, and including Cine-Kodak 8mm film) you may choose from any of these filters, and, for extreme cases, add the 23-A to your list.

If you use SuperSensitive Panchromatic film, you will find the yellow "K" series of little value, so your list will include the Aero filters, the "G," 23-A, and perhaps even the 25-A.

These, however, are the possible filters: the list can be narrowed down considerably. For instance, with Ortho film, the K-2 or Aero 1 should be preferable. For Plenachrome, the Aero 2 or "G." For regular Panchromatic, the "G" is probably the best all-around filter, while with SuperPan, either the "G" or the 23-A will give delightful results.

In using the red filters (23-A, 25-A, and so on) you will have to avoid using them on subjects with unusually florid faces, as the red filter will sometimes lighten a red face objectionably. On the other hand, a red filter may often be used to advantage to lighten unpleasantly red areas — not only toning down crude make-up in women, but frequently being able to virtually erase the blighting red scars and birth-marks seen on some faces.

Similarly, these filters can do interesting things to certain shades of hair — especially the more reddish shades. Naturally, the red filters will lighten these shades considerably — often to the point of making hair which, to the eye, seems dark, photograph light. On the other hand, such hair can often be darkened almost jet-black by using a green filter. The green filters, however, are very little

help in most close-up work, as they give a virtually orthochromatic rendition — which is just what we are trying to avoid.

Under some special conditions, filters are almost imperative for close-ups. For example, Glenn R. Kershner, A.S.C., has told me that while he was photographing the Labrador Eskimos, with Commander McMillan's Arctic Expeditions a few years ago, and also more recently, natives of the South Seas, he used either an Aero 2 or a "G" filter continually, to keep the coppery-brown skins of the natives from photographing too dark.

The best rule for this sort of filtering, in the kind of work most substandard cinefilmmers do, is to choose one filter — such as the Aero or "G" for most modern emulsions — put it on your lens, leave it there, and virtually forget it. Use it as an integral part of your camera-and-lens equipment. You'll be surprised how it will improve all of your shots — and especially, the close-ups.

Here's How

Continued from Page 126

even more likely, SuperSensitive — film. On these, especially the latter, the 4x yellow filter (designed originally for Ortho film) would make little, if any impression. With modern, panchromatic and SuperPan emulsions, you will need a redder filter, which holds back more of the blue. A filter such as the "G" or the "23-A," or even heavier, is indicated. —Daniel B. Clark, A.S.C.

I HAVE been told that any given stop, for instance, f:4.5, has the same value, no matter what the type of lens is on which it appears. I have a one-inch and a three-inch lens, yet I notice that when I set the diaphragm of the three-inch lens at f:4.5, the opening is much larger than the opening indicated at f:4.5 on my one-inch lens. Why is this? Doesn't the larger opening on the three-inch lens let in more light? Certainly the actual opening of the diaphragm is larger on this lens.

—CLINIC, New York.

The opening itself is larger, but the amount of light that reaches the film is the same, due to the greater focal

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length of the three-inch lens, and the law of inverse squares. The indicating number, "f:4.5," indicates the ratio between the diameter of the opening and the focal length of the lens. The focal length is always regarded as unity, so the aperture-number "f:4.5" for any lens really means "1:4.5," and is actually a part of an equation, which, in full, is: "focal length : diameter of aperture = 1:4.5."

Substituting in this equation the focal lengths of any lenses, we see that, in order to maintain the proper mathematical balance, the size of the aperture must increase in the same proportion as the focal length is increased. Obviously, therefore, any given aperture on a long-focus lens will be larger than the same stop on a lens of shorter focus, but it will have the same relative (and photographic) value. You will recall, incidentally, that most German lenses are rated as "1:4.5," etc., rather than "f:4.5." —Joseph Walker, A.S.C.

I HAVE been told that good travel films can be made with practically no panoramas. To me, this does not seem logical, for I cannot get enough views in my films without panoramas. What do you think?

—CLINIC, New York.

For the best results, panoramas should be held to the minimum, if not entirely eliminated. You always get a better picture if you use a stationary shot, with good composition. Also, the human eye does not see so well when the picture is in motion—as in a pan—so you will show more by using a number of short, well-composed static shots than by trying to show the whole thing in a longer panoramic shot. Your picture will likewise have more interest and force with a variety of shorter, more diversified shots.

—John W. Boyle, A.S.C.

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Volume XV JULY, 1934 Number 3



What to Read

STUDIO Comero with 270 Degree Shutter by George Schneidermon, A.S.C.....	152
CAN WE Have Lighter Lights? by Oliver T. Morsh, A.S.C.....	153
USE OF Miniatures in Process Backgrounds by Vernon L. Wolker, A.S.C.....	154
PHOTOGRAPHY of the Month.....	155
HOME Mode Photo Album by Robert J. Bronner, A.S.C.....	156
RIDDLE Me This by A.S.C. Members.....	157
TEST Laboratory Soves Time.....	158
MOTOR Speed Control Shutter.....	158
IDEAL Miniature Laborotory by Clorence Slifer, A.S.C.....	159

Next Month

● Several pieces of new and interesting studio equipment will be described for the first time. . . . Men belonging to the A.S.C. have had some interesting roving commissions during the post few months. They have returned from the Seven Seas. We shall try to have them tell you their interesting stories.

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THESE PHOTOGRAPHS REFLECT OUR INTEREST IN LIGHT CONTROL



1. A polished metal or mirrored glass surface gives accurate light control

ALTHOUGH an incandescent lamp can be used bare for photography, its light is made infinitely more effective by properly designed reflectors.

As these photographs suggest, the nature of reflecting surfaces plays an important part in determining the light control provided by reflectors. Notice what happens, as illustrated in photograph No. 1, when light strikes a polished metal or mirrored glass reflector. Such a surface provides most accurate control of light as it reflects the light in a definite direction. On the other hand, a surface that is practically matte, such as porcelain enamel, as photograph No. 2 shows, diffuses the light in all directions and permits little control. While, as photograph No. 3 shows, a semi-matte surface, such as treated aluminum, gives a spread of light, in a definite direction with controlled diffusion.

These facts about light control, fundamental in illumination and in cinematography, have been keenly studied by General Electric's engineers and scientists. Along with a basic knowledge of how to produce the lighting effects cinematographers use so successfully, these facts aid in developing new Edison MAZDA lamps to meet motion picture requirements. They also guide us in improving existing types of Edison MAZDA lamps and in helping you obtain full effectiveness from these lamps.

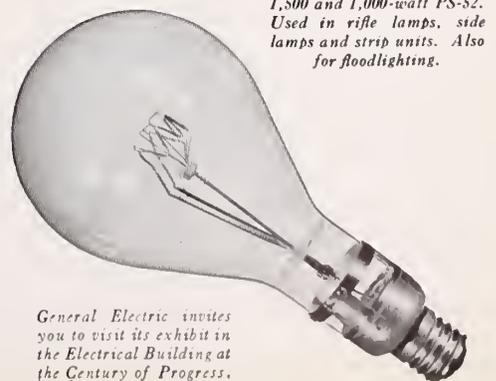
Coupled with the hundreds of tests, checks and inspections which Edison MAZDA lamps undergo, this study provides another reason why studios from coast to coast use Edison MAZDA lamps for every lighting need—from set lighting to process work. General Electric Company, Nela Park, Cleveland, Ohio.



2. A matte surface permits little light control



3. A semi-matte surface gives controlled diffusion, plus direction



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lamps and strip units. Also
for floodlighting.

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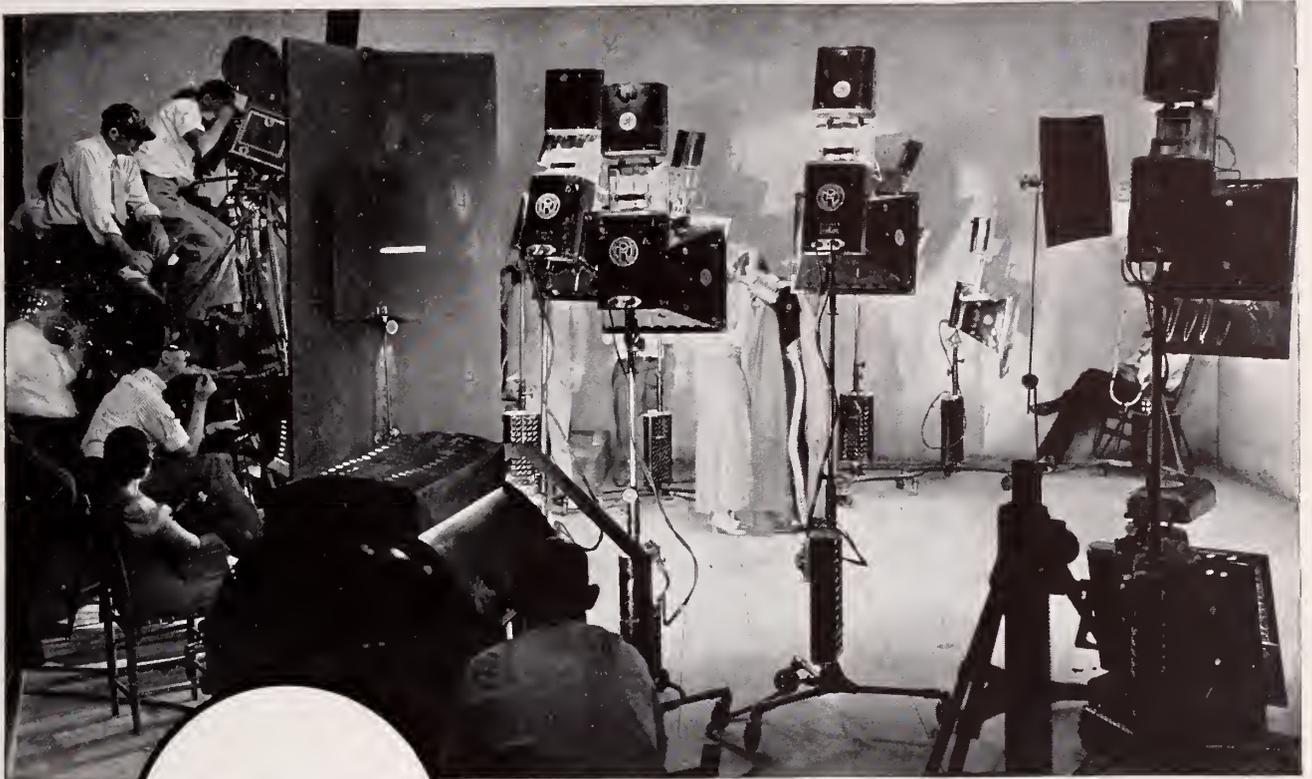
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Scene from "La Cucaracha." A Technicolor Picture. Made at RKO Studios. Photographed by Ray Rennahan.

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Studio Camera with 270° Shutter

by
George Schneiderman, A. S. C.

THE CAMERA machine-shop of the Fox Studio is just completing the production of a camera which will, I am confident, revolutionize studio cinematography. It is a 270° studio camera; that is, a camera fitted with a shutter having a maximum angular aperture of 270°, and a movement which is, in design and operation, virtually the reverse of conventional practice. For some years I have cherished the theory that such a camera would be of inestimable benefit to the cinematographer, and this camera is now taking shape according to my specifications, to be used on my next production. The project is being executed under the engineering supervision of Grover Lohbe, of the Fox mechanical department, and both design and construction are being handled entirely by the studio forces.

Before going into any discussion of what we may reasonably expect such a camera to accomplish, it may be well to inquire why, if such a design is at all desirable, the idea was not long since incorporated into studio equipment. To my mind, this is due largely to the fact that it is only relatively recent that trained engineers have been interested in the problems of the cinema. Once Edison had made the Kinetograph a practical proposition, he turned his energies largely into other channels. From then on, the mechanical development of the motion picture became largely a matter of chance, and camera design was almost exclusively in the hands of highly skilled mechanics, rather than of trained engineers. When such engineers as A. S. Howell, A.S.C., and George Mitchell entered the motion picture industry, a considerable tradition had grown up around the design and functioning of cinematography. This they proceeded to stabilize, but, apparently reasoning, as well they might, that much, if not all, of this tradition had a sound, logical basis, they refrained from making radical alterations in the basic design practice. Accordingly, we are only now beginning to question many of the practices which they then accepted as basic and more or less unalterable.

The particular case in point is the theory that the greatest efficiency is obtained if the cycle of a cinema camera's shutter and film-movement are so synchronized that the movement of the film may be relatively slow, with a minimum of acceleration and deceleration. Using a rotating-disc shutter, this would necessitate that the greater part of the arc be closed, to allow the maximum of time for the film-travel. This was, undoubtedly, desirable in the early days, when the design of film-movements was not so advanced as today, and when the film-base itself was



George
Schneiderman,
A.S.C.

notably less sturdy. Since then, however, advances have been made in film-manufacture and camera-design which, I believe, eliminate this need. For many years we have successfully used high-speed cameras for slow-motion and miniature shots. These cameras operate at speeds up to—and even exceeding—eight times normal, thereby imposing upon the film strains for in excess of anything that would be encountered in normal-speed work with the shutter and movement cycles reversed.

Therefore, in my new camera, the shutter is almost exactly the reverse of those used in present-day equipment, while the design and operation of the film-movement is also a direct reversal of accepted practice. In the majority of production cameras today, the maximum angular aperture of the shutter is 170 degrees, and the closed sector subtends an angle of 190 degrees. In my camera, the shutter-opening is 270 degrees, and the closed sector 90 degrees. In conventional practice, the time-cycle is almost equally divided between the time the film is at rest for the exposure, and the period devoted to its movement between the exposures—with the latter period having the advantage by slightly less than 10%. In the new design, this will be more than reversed, with the film at rest for 75% of the time, and completing its movement in the remaining 25%. In addition, we are placing the shutter as close to the film as is physically possible, giving us as close an approach to a true focal-plane shutter as is possible with the rotating-disc type of shutter.

Now, what do we expect this camera to do in actual use? Obviously, of course, the increased opening will materially increase the exposure received by the film. Upwards of 50% more light will reach the film at each exposure; this will naturally permit us to use less light on the set, and to get more natural effects. Since the majority of cinematographers are today using a minimum of actual light-sources this advantage would probably be realized by using smaller units—500-watt globes where we now use 1000-watts, 2000-watt where we now use 5 kw, and so on.

Continued on Page 162

Can We Have Lighter Lights?

by
Oliver T. Marsh, A. S. C.

WHEN SuperSensitive film was introduced to the camera profession, its proponents seized upon its greatly increased sensitivity to incandescent light, and forecast that it would make possible the development and use of smaller, lighter lighting units. This, it was truly stated, would facilitate production, requiring less time and labor in lighting, and give us more clear room on the stage in which to work.

Over three years have gone by since this emulsion made its bow. It is universally used. Yet we are today using essentially the same lighting equipment we used then; in most cases, our equipment dates back even to the first days of Panchromatic films. Except in a very few minor instances, new developments in lighting equipment are conspicuous by their absence. We are using equipment which was designed for use with the earliest panchromatic emulsions, while the emulsions in use today are at least 50% faster to artificial light. It would seem logical, therefore, to expect that the lighting equipment of today could be simplified proportionately. What can be done?

From the cinematographer's viewpoint, it would be eminently desirable to have smaller, lighter units for the "floor lighting." However, this saving in weight and bulk should not be achieved at any sacrifice of illuminating efficiency.

From the viewpoint of the designer of lamps, such improvement is possible, but the problem is complicated by the fact that the incandescent lamp, as we know it today, is quite as much of a heat-producing machine as a light-producer. With the high-intensity globes required for studio use, ventilation is a very important problem. The manufacturer must also consider the question of possible sales, a problem markedly aggravated by the existing depression. To be commercially practical, it would appear, any new equipment must be a very radical improvement over anything already existing.

The lamps most used for "floor lighting" purposes are the twin-bulb "broadside" and the "Rifle," for general lighting, with small condenser-spotlights, "baby spots," "Lupes," and the like, for occasional special effects. It is obviously in the floodlighting equipment that the greatest

improvement is possible. The requirement for this type of equipment is a wide-spread beam, covering a horizontal and (if possible) vertical arc of about 60° with extremely uniform light-distribution. The high intensity of either mirror or condenser type spotlights is definitely undesirable for this use, which demands an even, soft light.

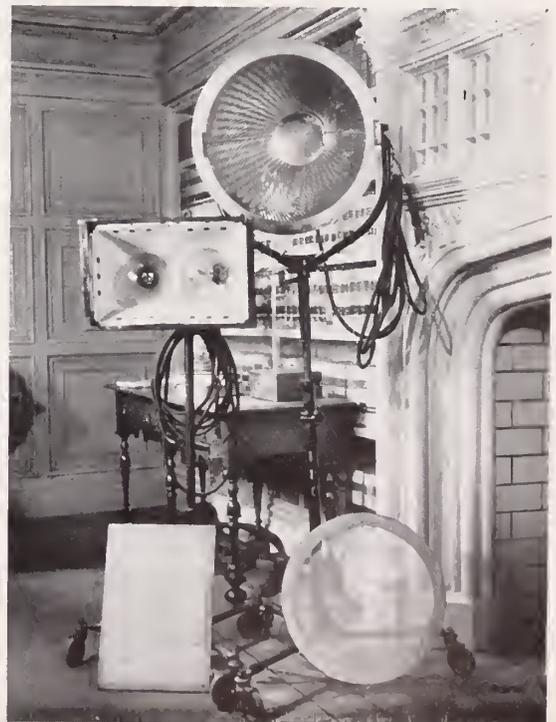
The actual light-sources most frequently used in "broadside" and "Rifles" are 1000-watt, pear-shaped bulbs. No decrease in strength is desirable; and although the high-intensity principle of the Photoflood and Mavieflood bulbs tends somewhat to reduce the heat, by lessening the infra-red (heat) emanation, I do not personally look to this for the solution, as this principle not only tends to lessen the useful life of the bulb, but also lessens the carrying power of the light emitted.

The solution seems therefore to be purely a matter of improved mechanical and optical design in the lamps themselves. The field, range and quality of the light should at least maintain the present standard, and it seems probable that the type and form of the light-source—the bulb itself—will also probably remain constant, though undoubtedly a physically smaller bulb would be advantageous.

Yet even without reducing the size of the bulb, it should be possible to make considerable savings in the size and weight of such units. Reflectors could be made, not only of lighter metals, but also, with more painstaking and scientific design, of more compact dimensions and greater efficiency. Due to the fact that relatively small bulbs are used in these units, the problem of ventilation and heat-dispersion is not nearly so great as in the case of the larger units, while the fact that the bulb in a floor-lighting unit is not so completely enclosed as in a spotlight, further simplifies the matter. Double construction will still be necessary, of course, but if the design is based on a small, compact reflector, with or without the benefit of a bulb of smaller dimensions, the outer shell could still be made much smaller than in most existing units.

The mounting and carriage, while reduced already to very nearly the minimum dimensions, might well be lightened considerably by the use of some of the more recently

Continued on Page 164



The two types of lighting unit most frequently used for floor lighting. Right, the "Rifle" lamp; left, the twin "Broadside" unit. Photo by Robert W. Coburn, A.S.C.



At top, photo of a miniature railroad train. At bottom, as it was used for a background plate in the production.

Use of Miniatures in Process Backgrounds

by

Vernon L. Walker, A. S. C.

Head of Camera Effects Dept., RKO Studio

TO MANY cinematographers and other film technicians, a miniature is a miniature, and a process-shot is a process-shot; and never the twain shall meet. Yet actually, the two may often be combined to great advantage. Very often, a script will require some scenes or sequences to be enacted before a background which, even though made with the conventional projected background process, could hardly be made satisfactorily or economically

without the use of miniatures. For example, a recent production at this studio had a sequence laid in a New York railway station in the year 1870. It required, not alone the station itself, but a moving railway train of the period. Of course, for important action, it would be possible either to build an actual train, or possibly to adapt modern rolling-stock rented for the purpose: but in either case, it would be prohibitively expensive.

Instead, we built a miniature train, and photographed it in a miniature station-set. This film we then used as a background-plate for use, like any normal projection-background, behind the real action, with a small and inexpensive foreground-set. The result was absolutely satisfactory, and the entire sequence was completed at a cost of less than one-tenth of the expenditure that would have been required for building a full-scale train alone.

Similarly, the use of miniatures for background-plates can often eliminate much danger, and enable us to get "thrill" action which would be difficult, if not impossible, to stage in any other way. In another recent film, the script called for a scene showing several of the principal players at an airport, while a big airliner crashed close by on the flying-field. It would be virtually impossible to film such a scene satisfactorily in the ordinary manner, far, aside from the effect upon the players and their work of such close proximity to an actual crash (of course, no retakes would be possible!), the element of danger would be much too great. Even filming the crash itself in actuality, and using this as a background-plate, would be not only expensive, but prohibitively dangerous. Therefore, we staged our crash in miniature, and utilized the resultant film for the background-plate—and the scene was made perfectly, with no risk to anyone, and at a tremendous saving.

In another production, "Lucky Devils," the script called for some "thrill" action showing a player in a small boat shooting some treacherous rapids, while other players, in the foreground, looked on from the shore. Here, again, the element of danger, and its psychological effect on the players, entered. Moreover, to actually find such rapids, and to transport either a full company, or only a skeletonized background unit to work on such a location, would bring the expense up to unnecessary heights, and needlessly lengthen the production-schedule. Accordingly, we constructed our rapids in miniature. The action of the boat shooting the rapids was, naturally, an easy thing to film in this way, and the resulting film gave us a background-plate which enabled us to film our foreground action perfectly, with no risk or delays, and relatively small expense.

A further advantage to the use of a miniature for the background-plate was that, by shooting simple shots of the miniature rapids from the right angle, and without the boat, we were able to make excellent process scenes showing the player in the boat, in close-up. Yet another sequence in the same film required the player to enact several scenes in the churning water at the foot of a high waterfall. Such action would, of course, be highly dangerous to the player, if a fall of any size were used—and worthless if only a small cascade were shown. The Director and Recordists would be under disadvantages. But using a background-plate of a miniature waterfall simplified all of these problems, and enabled us to positively control every factor, so that the result was far more satisfactory than could have been possible by any other method.

Everyone who saw "Flying Down to Rio" will remember the sequence in which a squadron of planes flew over the

Continued on Page 162



PHOTOGRAPHY

of the MONTH

"THE WORLD MOVES ON"

Fax

Directing Cinematographer: **George Schneiderman, A.S.C.**
Daily Variety (June 29, 1934): "—dreadfully gargeous phatography—" "—and Schneiderman's camera wark is superb."

The Film Daily (June 30, 1934): Phatography "A-1."

"MURDER IN THE MUSEUM"

Progressive

Directing Cinematographer: **James Diamond, A.S.C.**
The Film Daily (June 27, 1934): Phatography "Fair."

"THE MERRY FRINKS"

Warner Bras.

Directing Cinematographer: **Arthur Edesan, A.S.C.**
The Film Daily (June 27, 1934): Phatography "Gaad."

"SHE LOVES ME NOT"

Paramaunt

Directing Cinematographer: **Charles Lang, A.S.C.**
The Hallywaad Reporter (June 30, 1934): "Charles Lang, as usual, contributed A-1 phatography."
The Daily Variety (June 30, 1934): "Charles Lang has phatographed handsamely—."

"STAMBOUL QUEST"

M-G-M

Directing Cinematographer: **James Wang Hawe, A.S.C.**
Daily Variety (July 2, 1934): "—and the camera wark of James Wang Hawe is outstanding in especially creditable technical conbributions."

The Hallywaad Reporter (July 2, 1934): "James Wang Hawe's camera wark, as always, is warth mentioning, with a particular nasegay far his lighting of Lay."

The Film Daily (July 7, 1934): Phatography "A-1."

"THE NOTORIOUS SOPHIE LANG"

Paramaunt

Directing Cinematographer: **Al Gilks, A.S.C.**
Hallywaad Reporter (July 2, 1934): "The phatography is standard."

Daily Variety (July 7, 1934): "—which Al Gilks has excellently phatographed."

Matian Picture Daily (July 9, 1934): "Gaad phatography."

"LADIES SHOULD LISTEN"

Dauglas MacLeaun production far Paramaunt

Directing Cinematographer: **Henry Sharp, A.S.C.**
Daily Variety (July 5, 1934): "Camera is well handled by Henry Sharp."

"PARIS INTERLUDE"

M-G-M

Directing Cinematographer: **Milton Krasner, A.S.C.**
Hallywaad Reporter (July 6, 1934): "—with the exception of the phatography which is much taa gaad far it."
Daily Variety (July 6, 1934): "Phatography by Milton Krasner was up ta Metro standord."

"THE SCARLET LETTER"

Majestic

Directing Cinematographer: **James S. Brown, Jr., A.S.C.**
Hallywaad Reporter (July 6, 1934): "James S. Brawn, Jr.'s phatography is the best asset the picture has."

Daily Variety (July 6, 1934): "—and has been very well phatographed by James S. Brawn, Jr."

"ELMER AND ELSIE"

Paramaunt

Directing Cinematographer: **William Mellar, A.S.C.**
Daily Variety (July 6, 1934): "William Mellar's phatagrahy is flawless."

Hallywaad Reporter (July 11, 1934): "We suggest they keep the sang and the phatographer, William Mellar, and let the rest of the thing ga."

"BORN TO BE KISSED"

M-G-M

Directing Cinematographer: **Ray June, A.S.C.**
Hallywaad Reporter (July 9, 1934): "Ray June's phatagrahy is splendid."

Daily Variety (July 9, 1934): "—and handsamely phatographed by Ray June."

"SHOOT THE WORKS"

Paramaunt

Directing Cinematographer: **Leo Tover, A.S.C.**
The Film Daily (July 7, 1934): Phatography "Gaad."

"THE HELL CAT"

Calumbia

Directing Cinematographer: **Benjamin Kline, A.S.C.**
The Film Daily (July 7, 1934): Phatography "Excellent."

"ONE NIGHT OF LOVE"

Calumbia

Directing Cinematographer: **Joseph Walker, A.S.C.**
The Film Daily (July 6, 1934): Phatography "Grade A."

Continued on Page 160



Shot on Infra D. Film with a 72 filter by George Lancaster, A.S.C. Hills in right hand center are 14 miles distant.



Fig. 1

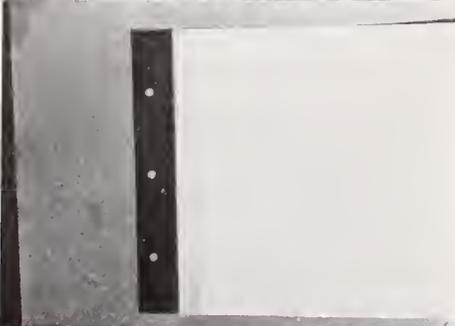


Fig. 2



Fig. 3

Home-Made Photo Album

by
Robert J. Bronner, A. S. C.

UPON my recent return from a 33,000-mile cruise around the world I was confronted with the problem of printing and assembling an extremely large number of negatives.

I had so many that I realized it would take several albums of five or six inches in thickness were I to use the present method of mounting and pasting in several hundred 4x5 and 3 1/4 x 4 1/4 prints.

I wanted to get away from the old style of mounting on the block pages of the present style album.

I felt if I could put them up in book form like a photographic magazine, yet retain the original prints on each page it would make a compact and descriptive album and tell the story of the cruise in pictures with captions typed beneath each picture would make a better looking album and be up to the latest of any album now on the market and more unique in style. Fact is, I wanted something different in albums of my own making.

After giving the matter considerable thought I succeeded in carrying out my problem in the following manner.

I purchased the top and bottom covers of a soft Italian florentine leather binder. Inside the covers I shellacked a panel of deep blue velvet, to prevent any scratching of the covers against the prints.

I then purchased a cheap 7x9 cardboard covered photograph album from a ten cent store from which I extracted the fifty block leaves and discarded the cover.

The block leaves I cut in strips of 1"x7" each. This gave me several hundred strips.

Next I purchased a few dozen 8x10 dry mounting tissue, which I also cut into strips of 1 1/2"x7". I also bought three aluminum metal posts and one gross of Azo 8x10 matt finish, single weight paper.

That was all the material I required and I was now set to carry out my idea of what a photo album should look like, especially one that covered so much territory in pictures as I desired to put in it. The above purchases all cost me less than five dollars.

My negatives were of two sizes all taken with Graflex cameras, 4x5 and 3 1/4 x 4 1/4.

Before printing I cut masks to fit the two different sized negatives from one 8x10 masking chart. Each mask being cut to accommodate two negatives of either size; also extra masks for two of the same size each.

In cutting the masks a larger margin was allowed on one end for the purpose of binding and make all prints uniformly set on each page as shown in picture No. 1.

You will also note in the picture that the pages all remain flat without any curling of the corners or curvature of the pages.

A little difficulty may be encountered while trying to print two negatives of varying density on one page, but this may be overcome satisfactorily by decreasing the amount of light under the weaker negative or by inserting various thicknesses of tissue between the diffusing ground glass and the printing plate under the weaker negative, thus balancing the density of two negatives.

After the prints were made and dried, one-half inch was trimmed from each side of the length of the 8x10 page, thereby making the page 7x10.

All pages were then arranged in the order of my travels around the world. Of places and countries visited, commencing at Hollywood, California, to New York, thence to Havana, Cuba, through the Panama Canal, across the Pacific to the South Sea Islands, Australia, and stops at various islands enroute, such as Java, Bali, Ceylon, Arabia, Egypt, Italy, France and back across the Atlantic to New York.

Titles, captions and general description being typewritten beneath each picture on each page, two pictures side by side being printed on a page.

On the opening page in gold is shown a world map, and around it in gold English typed letters is printed, "A World Cruise In Pictures."

Continued on Page 166



RIDDLE

ME THIS

The Riddle: Several studios have recently experimented with colored sets. What is your opinion of the value of color in sets—and what type of set do you prefer to work with?

HARRY FISCHBECK, A.S.C.: I feel that color in sets can be of considerable advantage to the cinematographer. A number of years ago, before the days of Panchromatic film, I used sets tinted a warm, slightly reddish, green, with great success; recently, an "Now and Forever," I have had a number of lavender sets, which I found very satisfactory. The particular shade used—really a blue with a faint admixture of red—gave a beautifully warm grey on the screen, and by controlling my set-lighting, throwing more or less light on the walls, I was able to secure an unusually wide range of gradations, from deep black to very light grey.

LEO TOVER, A.S.C.: Definitely, I prefer grey sets. If the walls of a set are tinted a soft, intermediate grey, the cinematographer can paint upon them with his lights, getting a wide range of tonal rendition, and with the added advantage of being able at once to see exactly how the set will reproduce, without worrying over color-sensitivity or color-rendition of film and lighting.

BEN WHITE, A.S.C.: Of course, I prefer grey sets. A cinematographer can work faster and more accurately with them, and get any effects he wants. In black-and-white pictures, we really have only three actual shades in the final product: black, white, and grey. If the set is already painted the right shade of grey, we can save a great deal of time, and get better results than if it were colored, for the color would photograph as same shade of grey, anyhow.

HENRY WILLIAM GERRARD, A.S.C.: By all means, grey sets. You can control the tonal rendition of such sets with your set-lighting, and eliminate all guesswork about color-rendition or light absorption. I have several times found colored walls very deceptive as to light-absorption: they generally absorb an utterly disproportionate amount of light, and make light-effects difficult, even impossible. This unduly high absorption necessitates more lighting units, more current, and more time in arranging the lighting.

DAVID ABEL, A.S.C.: Except where the nature of the action may make it advisable to use same color for its psychological effect on the players, I greatly prefer grey sets. Recently the studio tried some experiments with pink walls, in one of my pictures: I found them most unsatisfactory. Where a set is to be rendered as white, however, I like a very pale blue, which photographs as white, but without halation. Of late, there has been a dangerous tendency among Art-Directors to make sets—especially modernistic ones—with deeply overhanging cornices, which make good lighting an unnecessarily difficult problem.

RICHARD TOWERS, A.S.C.: A capable cinematographer can naturally handle settings of any color. However, I believe that more attention should be paid by Art-Directors

to planning sets so that neither color nor pattern conflict with the costumes of the actors, or form disturbing elements in the composition, and to facilitate the work of the cinematographer. In this respect, I personally prefer cream-colored walls, as I have found them most satisfactory under the widest range of condition.

SID HICKOX, A.S.C.: Until there is fuller cooperation between the Art-Director and the Cinematographer, I'll be satisfied with almost any shade that isn't too dark. I have found that colors whose pigments are "earthy"—the umbers, etc.—almost always reproduce as they appear visually, while dye-pigments are very uncertain photographically. For general use, I believe that grey walls are the best.

WILLIAM A. REES, A.S.C.: I prefer "French Grey"—that is, pale grey with a faint touch of blue. This permits plenty of scope in lighting, shadow-effects, and the like, without any of the disadvantages of either extremely light or extremely dark sets. Light—especially white—sets, I have found, reflect every bit of "spilled light," especially in panned long-shots, making it very difficult to light the players properly and at the same time maintain your set-lighting effects. Dark sets—whether actually black or merely dark-toned—drink up light like a thirsty camel, so that much extra time and current are consumed, and many additional lamps required, while the problem of lighting the players is made more difficult.

FAXON DEAN, A.S.C.: I prefer a soft cream-color, or egg-shell. This allows one to govern the tonal rendition by his lighting, while avoiding glare and undue light-absorption.

GEORGE SCHNEIDERMAN, A.S.C.: With the resources of present-day emulsions, etc., at his command, the cinematographer can effectively handle sets of any color. My own experience has shown that the best results are to be had with rooms decorated exactly as such a room would be in actuality. Within reasonable limits, the coloring of sets can go a great way toward developing and enhancing the proper mood-response in the actors. Therefore, I feel that since modern emulsions make it practical for a cinematographer to handle sets of any color, he should be willing to do so.

Continued on Page 163

The lavender set referred to by Harry Fischbeck, A.S.C. The walls of the set are lavender, while the plaster moulding and pillars are ivory-tinted.





The test-laboratory of Warner Bros. Studio Camera Dept. Note developing and fixing tanks, with light-proof covers, inset in right-hand bench. Photo by Charles Scott Wellbourne, A.S.C.

Test-Laboratory in Loading-Room Saves Time

● Mike McGreal, head of the Camera Department at Warner Bros.-First National Studios, has just completed a miniature laboratory for the handling of camera tests, which should greatly increase the efficiency of the department. The test laboratory is located just off the camera department's loading-room, and has facilities for developing strips of 35-mm motion picture film up to twenty-five or thirty feet in length, as well as for making still enlargements from single frames of film.

"Our studio," states McGreal, "is faced with a peculiar problem: shooting is carried on in three widely separated studios in Burbank and Hollywood; the major part of the organization is centralized in the main plant in Burbank, while the laboratory is located at the Warner Sunset Blvd. lot, in Hollywood, several miles distant. Much valuable time can be lost in transportation between these points, and often it is decided, on this account, not to make tests which would prove a valuable safeguard. With this new laboratory, conveniently located right in the camera department,

we can turn out photographic tests (negative) in less than twenty minutes, and even give the director of a large and expensive scene or dance-number an 8x10 still enlargement of a single frame within half an hour, thus giving him proof that his scene will be photographically all right, and enabling him to dismiss large groups, without fear of having to recall them for retakes.

"The test laboratory is in charge of my assistant, Cecil Myers, and under the direct supervision of Fred Gage, A.S.C., Laboratory Superintendent for the Studio. Mr. Frank Murphy, head of the Electrical Dept., aided greatly in the realization of the project.

"The dark-room is entered through a light-trap from the loading-room, and consists of a long, narrow dark-room, with a smaller room, entered through a light-tight door, at the farther end. The dark-room is fitted with benches along both walls. On the right side is the developing equipment: miniature tanks are set into the bench—one for developer, and one for hypo; these are covered with light-tight, hinged covers which close

flush with the bench-top. The tanks will each hold three racks, each of which will hold about thirty feet of film. Between these tanks is a sink, into which the racks may be placed while the film washes in running water. At the far end of the bench is room for the trays used for developing single-frame enlargements.

"The opposite bench is used for loading and unloading operations, and carries the enlarger (made from an 8x10 still camera, fitted with a special back and film-carrier) and its easel. The light-source for the enlarger is in the further room.

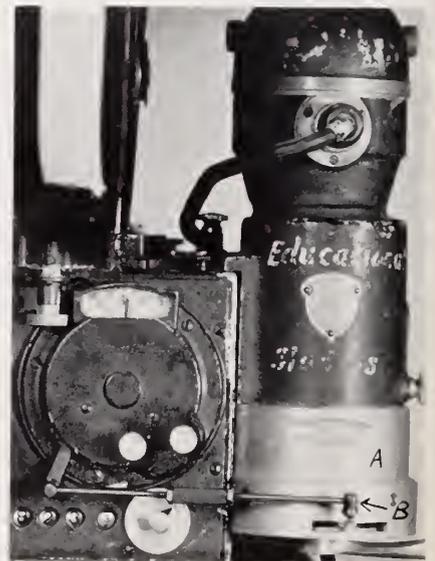
"Fresh solutions are brought from the studio laboratory every day, and maintained always at the laboratory's standard temperature and strength, enabling us to absolutely duplicate the results of Gage's normal development procedure."

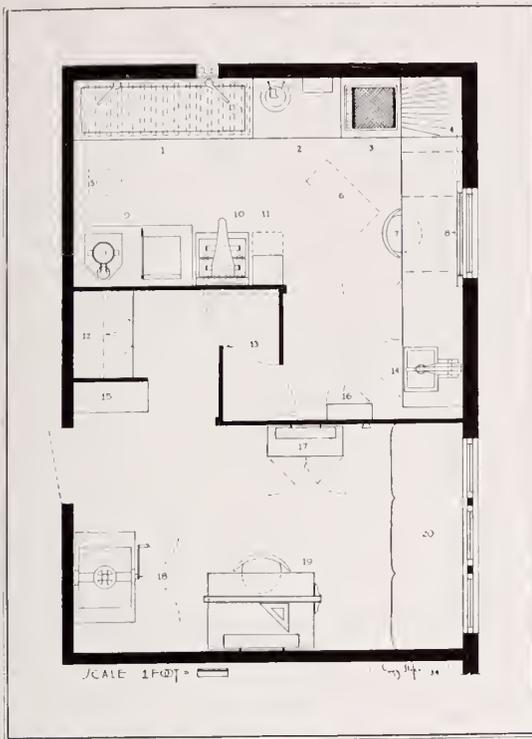
Motor Speed Control Shutter

● Dwight Warren, A.S.C., Chief Cinematographer for Educational Pictures, has perfected an automatic shutter-opening and motor-speed interlock for use with Mitchell cameras and motors. This device fills an important need in the production of comedies and action pictures, as it permits changes of camera speed during the making of a scene, automatically compensating for the change in exposure by reducing or increasing the

Continued on Page 164

The Warren speed-shutter change interlock. Hausing "A" fits over bottom of motor; rod "B" connects with shutter adjustment; both are controlled by lever seen at bottom of motor-housing.





Ideal Lab for Miniature Photography

by
Clarence Slifer, A. S. C.

IN KEEPING with the progressiveness that is so apparent in Miniature Photography, herewith is presented a plan of a model laboratory. This room in which photographic processing is carried on, is not called a dorkroom, simply because that word is a misnomer. It is not dark, for at all times, with the exceptions of when loading magazines or developing tanks, there is an abundance of light: properly filtered light for printing and daylight for other operations.

Removed is the stigma that the word dorkroom has implied. This model laboratory is not a poorly ventilated closet, under the cellar stairs, but is a room planned for comfort, convenience, and practicability. All of which are conducive to better photographic work and the full enjoyment of miniature photography.

From the plan, it will be noticed the room is divided into two main divisions; the laboratory proper and the study. The laboratory, to take care of all photographic work from glossy prints to the advanced pictorial processes. The study, to serve as a place for working out photographic problems

or as a place where you may argue with friends about the gammas, the poraphenylenes, and the reticulations of photography, without having your sanity questioned by other members of the household or being relegated to that esteemed position now held by butterfly-chosing professors.

The essential features of the model laboratory are:

1. A shallow wooden sink provided with removable slats for tray supports. Its six-foot length easily handles three trays up to 16"x20" in size. Swing-foucets practically "cover" the entire sink. Above the sink are shelves for stock solutions, etc. Below the sink, are racks for trays, box for waste, and space for miscellaneous equipment. In the wall, above the right end of the sink, is a light-tight ventilator. This ventilator withdraws all hypo or chemical fumes arising from developing or toning prints. Also at this end of the sink, is a light fixture containing a day light bulb. The light from this fixture is concentrated down upon the hypo or toning tray, and is actuated by a foot switch. This permits examining prints for tone or contrast without drying the hands. The safe-light used for observing the developing of prints, has two degrees of brilliance: dim and bright. The bright light is controlled by a foot switch and is used only for limited periods of print examination. For cleanliness, liquid soap and paper towels are a part of the sink equipment.

2. A film developing bench especially equipped for miniature negative developing. The importance of agitation in small film processing is recognized by the inclusion of an electric agitation machine in the laboratory equipment. Also provided is a negative viewing box (a white light behind opol glass). Affixed to the glass are gamma films of different densities for use in judging the progress of development. (See Systematized Miniature Development, December 1933 issue of this magazine.) An ice chest for cooling solutions may be placed under the bench.

3. A print washing machine preferably of the Kodak rotating type. This provides a quick, efficient, and thorough means of washing prints with little handling.

4. A drain-board for prints after they have been removed from the washer.

5. A holder for paper towels and a shelf for the radio (the companion in the laboratory). Indicated here, is a stool, as much printing may be carried on while seated.

6. A double, indirect safe-light for general room illumination.

7. A long cabinet of an exaggerated desk-like appearance, with shelf or cabinet space above. Underneath the left end is a set of drawers for keeping Bromoil brushes, points, and other materials. Space is provided for leg-room when seated before the portion of the bench at the window. Here is an ideal place to work upon Bromoils, spot or color prints, retouch enlarged negatives, etc. Underneath the right end of the bench, are frames with stretched cloth-net for laying prints upon, to dry.

8. A sliding light-tight shutter for the window.

9. A cabinet-bench for a miniature negative enlarger of the Leitz Focomot or Valoy type. The enlarger is controlled by a foot switch, thus leaving both hands free for "dodging." This freedom is further enhanced by the use of a metronome for timing prints audibly, during difficult exposures. At other times a large electric clock serves the purpose. On the wall, back of the enlarger, is an Illumination Control Rheostat for use with a Photo-flood lamp, when enlarging upon chloride (contact) papers. Light-tight drawers are in the cabinet, for the storage of photographic paper. To the left of the enlarger, is a print trimmer. To facilitate print trimming, the edge of the print

Continued on Page 162

PHOTOGRAPHY OF THE MONTH

Continued from Page 155

"CITY PARK"

Chesterfield

Directing Cinematographer: **M. A. Andersen, A.S.C.**

The Film Daily (July 6, 1934): Photography "Good."

"CROSS STREETS"

Invincible

Directing Cinematographer: **M. A. Andersen, A.S.C.**

The Film Daily (July 6, 1934): "Good."

"BARRETT'S OF WIMPOLE STREET"

M-G-M

Directing Cinematographer: **William Daniels, A.S.C.**

Hollywood Reporter (July 13, 1934): "The photography of William Daniels is the photography of William Daniels—which means the best."

"HAT, COAT AND GLOVE"

Radio

Directing Cinematographer: **Roy Hunt, A.S.C.**

Hollywood Reporter (July 13, 1934): "Roy Hunt's camera work is most effective throughout."

"HAPPY LANDINGS"

Monogram

Directing Cinematographer: **Archie Stout, A.S.C.**

Hollywood Reporter (July 14, 1934): "Photography okay."

Daily Variety (July 14, 1934): "—excellently photographed—"

"MAN WITH TWO FACES"

First National

Directing Cinematographer: **Tony Gaudio, A.S.C.**

The Film Daily (July 12, 1934): Photography "A-1."

"CALL IT LUCK"

Fox

Directing Cinematographer: **Joseph Valentine, A.S.C.**

The Film Daily (July 12, 1934): Photography "Good."

"MURDER IN THE PRIVATE CAR"

M-G-M

Directing Cinematographer: **James Van Trees, A.S.C.**

The Film Daily (July 12, 1934): Photography "Good."

"RETURN OF THE TERROR"

First National

Directing Cinematographer: **Arthur Tadd, A.S.C.**

The Film Daily (July 11, 1934): Photography "Good."

"I HATE WOMEN"

Goldsmith Productions

Directing Cinematographer: **Ernest Miller, A.S.C.**

The Film Daily (July 11, 1934): Photography "Good."

"WHOM THE GODS DESTROY"

Columbia

Directing Cinematographer: **Benjamin Kline, A.S.C.**

The Film Daily (July 13, 1934): Photography "Good."

"THE FIGHTING ROOKIE"

Mayfair

Directing Cinematographer: **James S. Brown, Jr., A.S.C.**

The Film Daily (July 13, 1934): Photography "Okay."

"THE OLD FASHIONED WAY"

Paramount

Directing Cinematographer: **Benjamin Kline, A.S.C.**

The Film Daily (July 14, 1934): Photography "A-1."

"DANCING MAN"

Pyramid

Directing Cinematographer: **James S. Brown, Jr., A.S.C.**

The Film Daily (July 14, 1934): Photography "Good."

"SERVANTS' ENTRANCE"

Fox

Directing Cinematographer: **Hal Mahr, A.S.C.**

The Hollywood Reporter (July 19, 1934): "Hal Mahr photographed beautifully."

Daily Variety (July 19, 1934): "Photography was excellent throughout—"

"HOUSEWIFE"

Warner Bros.

Directing Cinematographer: **William Rees, A.S.C.**

The Daily Variety (July 20, 1934): "Camera work is flawless—"

The Hollywood Reporter (July 20, 1934): "—and William Rees' photography is an outstanding asset for the picture."

"FOUR WALLS"

M-G-M

Directing Cinematographer: **Lucien Andriot, A.S.C.**

Daily Variety (July 20, 1934): "Photography is good."

"NOW AND FOREVER"

Paramount

Directing Cinematographer: **Harry Fischbeck, A.S.C.**

The Hollywood Reporter (July 20, 1934): "Harry Fischbeck's photography is so lovely that Carole Lombard has never looked more beautiful."

"TREASURE ISLAND"

M-G-M

Directing Cinematographers: **Hal Rosson, A.S.C., Ray June, A.S.C., Clyde DeVinna, A.S.C.**

The Hollywood Reporter (June 23, 1934): "And for the photography that leaves a series of indelible beautiful pictures in your mind, thank, Ray June, Hal Rosson and Clyde DeVinna."

Daily Variety (June 23, 1934): "Marine stuff is strikingly pictured as part of excellent camera work by Ray June, Clyde DeVinna and Hal Rosson."

Motion Picture Daily (June 26, 1934): "Scenic and photographic values of old England and scapes are well done."

"HERE COMES THE NAVY"

Warner Bros.

Directing Cinematographer: **Arthur Edson, A.S.C.**

The Hollywood Reporter (June 27, 1934): "Arthur Edson's photography is okay, but stunning effects that might have been gotten are entirely covered by stock shots."

Daily Variety (June 27, 1934): "Camera work of Arthur Edson also deserves high honors for interesting angles, novelty shots and scope."

The Film Daily (June 28, 1934): Photography "Fine."

"OF HUMAN BONDAGE"

Radio

Directing Cinematographer: **Henry W. Gerrard, A.S.C.**

The Hollywood Reporter (June 28, 1934): "For those interested in good picture making, there is superb photography by Henry Gerrard and special effects by Vernon Walker."

Daily Variety (June 28, 1934): "Photography is good."

The Film Daily (June 27, 1934): Photography "Fine."

"KISS AND MAKE-UP"

Paramount

Directing Cinematographer: **Lean Shamray, A.S.C.**

The Film Daily (June 30, 1934): Photography "Fine."

"BABY TAKE A BOW"

Fox

Directing Cinematographer: **L. W. O'Connell, A.S.C.**

The Film Daily (June 30, 1934): Photography "Good."

Geraus Recovering

"Rudy" Geraus, manager of the Camera Supply Co. Ltd. is recovering in the California Lutheran Hospital from his recent severe attack of appendicitis.

Brilliant PERFORMANCE

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THE USE OF MINIATURES IN PROCESS BACKGROUNDS

Continued from Page 154

city, carrying dancing girls on their wings. This, of course, could hardly have been filmed without the use of projected-background process: and here, too, miniatures played an important part. Several of the shots were made using a background-plate showing miniature planes, with miniature charines on their wings, behind a real plane, with real dancers in the foreground. The effect could hardly have been achieved in any other way.

Naturally, the reverse of this procedure is possible—and has, in many instances, proven equally useful. For example, suppose we wish to show living actors in (not merely in front of) a set which can most economically be made only in miniature—let us say, a factory of the future. We build a full-scale set for the extreme background of our shot, and shoot our action and dialog with the actors immediately in front of this set. We photograph it exactly as though for a normal scene: but there is, of course, no trace of the foreground we want. This film is then made into a background-plate. In the meantime we have constructed our foreground—in miniature. At the desired point—just forward of where we want the people—we place a translucent screen, of the right size to give us the perspective we want. Upon this we project the background-plate we have made of our actors, and the resulting composite shot gives us our people walking around in the miniature set, which careful attention to the laws of optical perspective has magnified to give the illusion of natural size.

This has actually been done in several instances, with pronounced success. It is even possible to carry the process several steps farther: the background-plate showing the people can itself be a process-shot, with its background-plate made from a miniature (this, too, has been done) and the entire composite shot can, itself, be used as yet another background-plate, and inserted either in another miniature, or into full-scale action, by the projection process.

From this, it will readily be seen that the projected-background process has few limitations. The foreground action need not by any means be full-scale, nor need the background be full-scale; in both extremes, miniatures can be used to great advantage in cases which require them. Moreover, the process-screen part of a composite shot may include anything from a very small portion of the set—such as the viewing screen of a television receiver, or a window—up to virtually the entire area of the picture. To my mind, the use of miniatures as o-

vital adjunct to this process is only beginning to be appreciated: it offers endless possibilities, not only as a means for filming fanciful action unobtainable otherwise, but (which is more important) as a very positive aid to economy, efficiency and safety in routine production.

Ideal Lab for Miniature Photography

Continued from Page 159

trimmer is illuminated by a light, sunk in the cabinet.

10. An 11"x14" contact printing machine, which is used for printing enlarged negatives and also strips of Leica film, for proofs.

11. A film loading and negative filing desk.

12. Chemical closet, for chemical storage and mixing. In the lower part of the cabinet, is a bin for hypo crystals and a fixture for supporting a five-gallon

bottle of distilled water. Due to its location, chemical dust in the laboratory is eliminated.

13. Light-tight entry to the laboratory, affording easy access and ventilation. The partitions fold back, whenever it is desirable.

14. Dry mounting press, for mounting photographs.

15. Bookshelves, for those indispensable photographic books and magazines.

16. A light-tight film drying cabinet, six feet high. Air is drawn in, thru silk screens, from the study, thus minimizing the nuisance of dust. The cabinet may also be used for drying hyper-sensitive film.

17. A cabinet for camera equipment. Upon this cabinet is an easel for holding prints to be admired or glared at. A conventional, picture-illumination fixture is used for light.

18. A Bromoil transfer press and a cabinet for card stock etc.

19. Desk-like drawing table with long fixture for diffused light above.

20. Long, comfortable window seat.

The plan of this model laboratory is based upon the knowledge gained from a number of years' experience in many photographic "darkrooms." So turn back and study the plan over, for perhaps you may find some ideas for your Ideal Laboratory for Miniature Photography.

STUDIO CAMERA WITH 270° SHUTTER

Continued from Page 152

This would immediately increase the naturalness of our light-effects, simplify lighting, as it would bring visual and photographic effects into closer parity, and greatly reduce the heat cast on the actors by the lights.

But I believe that this is only a small part of what this design will bring us. A more important, and more readily noticeable result should be a far steadier picture, with the last remaining traces of "flicker" eliminated. Up to date, the greatest part of the flicker-reducing development has been in projector-design: surprisingly little has been done about attacking the problem through the camera. By photographing the picture with the film at rest for 75% of its cycle, we should eliminate the photographic causes of this flicker.

Furthermore, with the greater shutter-aperture, and the re-positioning of the shutter closer to the film, we should definitely eliminate the "bleeding" effect now seen in panoramic shots. In "follow-shots," where the camera panoramically follows moving people or objects, we should secure much more nearly the effect heretofore obtained only with the specialized Akeley camera, with its 230° focal-plane shutter. In other

words, the object being followed will remain clear and sharp, while the background moves behind in a smooth blur. This effect more nearly approximates the effect of natural vision, for, as is well known, the human eye is virtually blind when in motion, and when following a moving object, it can clearly see only that object, while the background fades into restful unimportance. This will naturally eliminate, too, the highly unpleasant "picket-fence" jumpiness seen in so many panoramic shots. This should greatly benefit photo-directorial technique, for it will enable us to use panoramic shots in many instances where we are now forced to "dolly" the camera in order to minimize this undesirable effect.

The camera being used for this experiment is a standard Mitchell camera. The shutter and movement are being completely rebuilt to make use of the principle just outlined, but the camera will retain the essential features of the Mitchell. The shutter-aperture will, of course, be adjustable, so that apertures less than the full 270° may be had when needed. It is to be hoped that ultimately a complete camera may be designed and built, to allow on even fuller utilization of the principle.

Riddle Me This

Continued from Page 157

RAY BINGER, A.S.C.: I like light sets. Of course, there are certain types of story—mystery melodramas, and the like—where darker sets are preferable; but for general use, I prefer white sets. Granted that you have a good laboratory behind you, white sets give you the greatest freedom in lighting, and the most pleasing results on the screen.

HENRY SHARP, A.S.C.: For general, all-around use, I prefer grey sets. However, it is often desirable to have some degree of color in the set, for its psychological effect on the director and players. For instance, I have recently photographed a force-cameo, "Ladies Should Listen," in which much of the action was played on cheerful-toned reddish sets. With careful handling, these sets can be made to give effects very similar to monotone grey ones, but—as with any color—the coloring makes them very deceptive. If one is not careful he can be fooled by the dramatic brilliance of the color, and find that, instead of reproducing as light as he actually sees it, the set goes very dark, while, on the other hand, it is equally easy to overlight a colored set. This makes the arrangement of your "key" set-lighting a more difficult and lengthy



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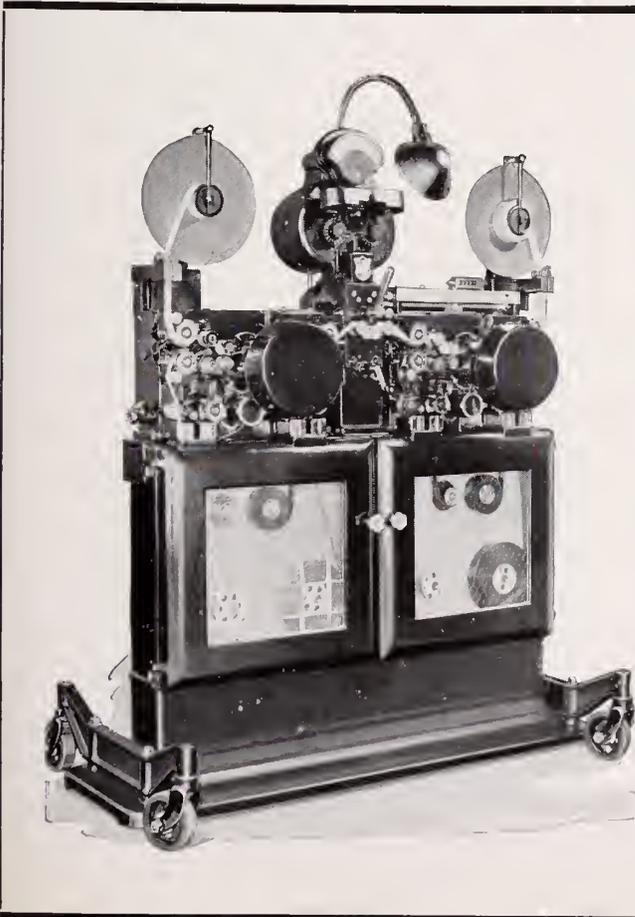
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process than it should be; therefore, I prefer monotone greys wherever possible.

JACKSON J. ROSE, A.S.C.: Wherever possible, I prefer light grey, as it offers the greatest freedom in lighting. Pure white sets are more difficult to light be-

cause of the way they reflect "spilled light"; dark sets make it difficult to light the players properly. Therefore—light grey sets!

MILTON R. KRASNER, A.S.C.: I prefer soft white, wherever possible. It avoids glare, yet gives one a finely reflective surface upon which to point with light and shade.

OLIVER T. MARSH, A.S.C.: Coloring in sets affects too many people to be treated solely from any one angle. The psychological aspects—the reactions of the players and director to different colors in

the set—may well be as important as the purely photographic phase. Joon Crawford, for instance, does her best work when wearing predominantly blue costumes, and is actively miserable in certain other colors, which may even mar her performance. It is the same with sets, for we are more conscious of color in rooms than in clothes. Therefore, so long as the lines and moods of a set are photographically correct, I feel that with present-day emulsions, we should be able to adapt ourselves to the set, rather than selfishly forcing the players to adapt their color-reactions to the camera.



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CAN WE HAVE LIGHTER LIGHTS

Continued from Page 153

developed alloys. There is, however, a definite minimum in size for such parts, if they are to withstand the hard service incident to studio use. Moreover, there should be some concentration of weight in the base to assure stable balance.

But—what is actually done in this direction? Is progress at a standstill?

Emphatically, no. While little actual production of new units is going on, the leading manufacturers have none the less been carrying on continued research

toward the development of such units. The engineers of Mole-Richardson, for example, have recently perfected a new twin-arc "broadside," which, while intended primarily for use in three-color natural color cinematography, is also somewhat of an advance in the general design of lighting equipment. It is considerably lighter than previous arc-broadside, and has a more even feed, in which the two arcs are fed separately, rather than, as in previous designs, by a single mechanism. The same firm has been experimenting with new types of reflectors, as well. One of the most promising is a matte-aluminum surfaced type, which could, according to Peter Mole, be built into a single-lamp unit comparable to the present "Rifle" type, and effect a 50% saving in weight, and a considerable saving in bulk. This design is fast approaching completion, and promises to result in a floor unit, intermediate between the present "Rifle" and "broadside," which should be of great value. The same firm is conducting extensive experiments with other types of reflectors and reflecting-surfaces, including aluminum- and rhodium-plated types.

A recent development, too, is the Newton light, which, while intended primarily for commercial and still photographic purposes, shows promise for certain studio purposes.

Motor Speed Control Shutter

Continued from Page 158

shutter-opening. It was developed from an earlier invention of Warren's, a similar motor-shutter interlock for Bell and Howell equipment, which had become universally used by photographers of comedies and action pictures prior to the advent of sound.

Due to the arrangement of the Mitchell camera and motor, the present device is much simpler than the earlier design. It can be fitted to any type of Mitchell motor in less than an hour, and once



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fitted it is instantly detachable, or may be left as a semi-permanent fitting.

Essentially, the device consists of a tubular housing mounted on the lower end of the Mitchell motor. A collar is fitted to the motor's speed-control knob, and, in turn, fits into an adjustable socket in the interlock, which in effect continues the shaft of the motor control to the lever seen at the bottom of the housing. Upon this shaft is fixed a special cam, in which slides a roller operating an arm connected with the regular Mitchell shutter-control. As the speed of the motor is changed, this connecting rod, actuated by the cam, operates the shutter control, accurately compensating for the changed exposure.

The device compensates for the entire range of speed-changes permitted by Mitchell motors (usually from 24 frames per second down to 4 frames per second.) Means are provided for compensating for variations in shutter or motor response, which often varies between individual equipments. As the device consists of only a few parts—housing, cam-and-lever assembly, and connecting fittings for motor and camera—it is simple and sturdy. It may be easily disassembled, and the design permits reassembly only in the correct way. The cam—the heart of the device—is of steel, specially ground and hardened. Mr. Worren has used this device on several of his most recent productions.

Agfa May Move

• According to reports current in trade circles, the Agfa Raw Film Co., distributors of Agfa negative and positive films, may shortly occupy new quarters on Hollywood's "Film and Laboratory Row"—

Santo Monica Blvd. It is expected that the firm will construct its own building. Verification of this report is expected to follow the return of C. King Chorney, new head of the Agfa distribution firm, from his trip to the factory at Binghamton, N. Y.



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Home-made Photo Album

Continued from Page 156

On opening the album one starts at the beginning of the cruise, and continues to the end, reading the captions and seeing the pictures at the same time.

Photographer friends who have examined this album have termed it, "Unusually unique, and nothing like it in existence to their knowledge."

That is one advantage in using white paper in an album of this kind, where the actual print paper is used as pages. There is no need of my explaining where such or such a picture was taken or what it represented.

In order to overcome the problem of binding the pages (pictures now), so each page would be hinged to avoid the usual rigid or curled edges, the plan that worked best I carried out as follows:

The black paper strips 1"x7" and the dry mounting tissue strips 1 1/2"x7" I had cut up as previously mentioned, I joined together by placing one inch of the dry mounting tissue over the black one inch strip, leaving a half-inch margin for a page to be attached to.

I tacked each strip on separately then ran a hot iron over to melt the tissue down on the black strips.

Having accomplished this I then took the pages, page for page, laid the remaining half-inch of the dry mounting tissue over the edge of the page and tacked it on, being careful to leave a sixteenth of an inch opening between the black strip and the page to allow it to work freely like a hinge. See picture No. 2.

In tacking the mounting tissue on to both the black strips and the pages the most convenient tool I found to use was a lady's curling iron. I found this held a steady heat and would not cause the mounting tissue to stick to it, like it does to other hot irons.

In fact, so useful did I find this curling iron for the work, I finished the job with it by merely rolling the curling iron slowly over the tissue after it was tacked on, which melted it down firmly to both the black strips and the pages.

Three holes were then punched through the covers and the black strip ends of the pages, screw posts forced through, all securely fastened and the album was finished, worthy for any pair of eyes to gaze upon. See picture No. 3.

The album completed has one hundred and seventy pages with three hundred and forty photographs and is less than two inches thick. All being in white background borders and titled, the white borders setting off the photographs much better than if they had been mounted on black or brown mounting leaves.



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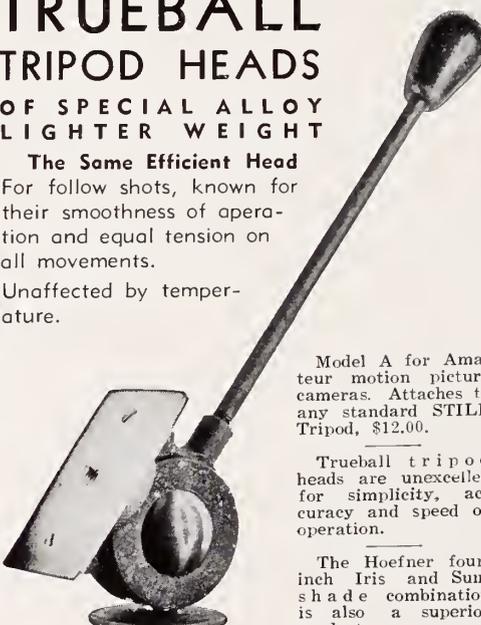




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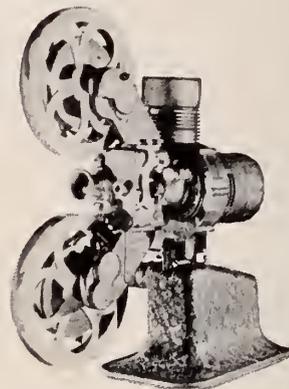
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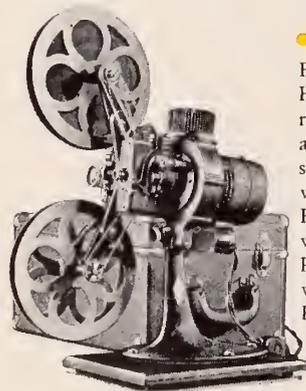


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AMATEUR MOVIES

this issue

Process Backgrounds for 16mm
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Scenario of the Month . . .
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AUGUST, 1934

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AMATEUR MOVIE SECTION

Contents . . .

WHAT'S New in 16mm Negative
by William Stull, A.S.C.....172

CONTINUITY for Fishing Families
by Arthur J. Campbell, A.S.C.....173

CINETRICKS . . .
Lens Manipulation and Filter Tricks
by W. J. Grace.....174

USING Process Backgrounds in
16mm Pictures
by Jerome H. Ash, A.S.C.....176

USING Camero Speeds Efficiently
by Dwight H. Warren, A.S.C.....178

BACKYARD Movie Winners.....179

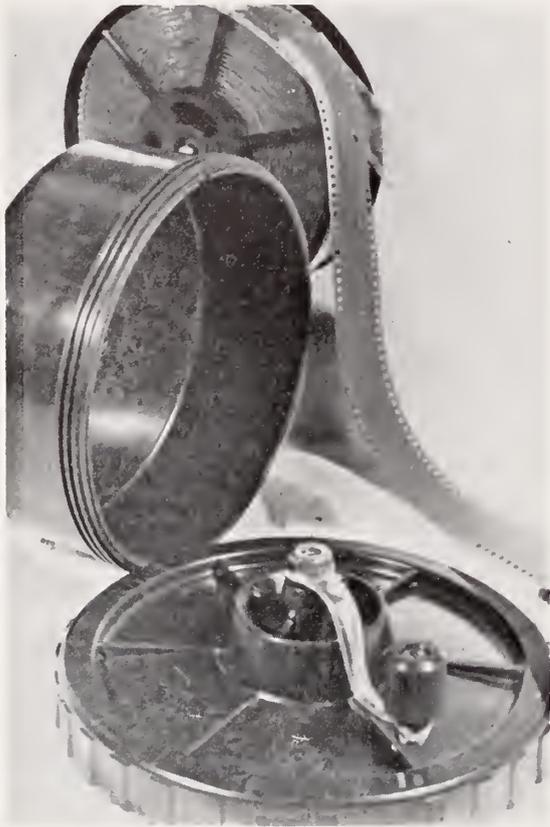
WHEELS of Industry.....180

HERE'S How
by A.S.C. Members.....182

Next Month . . .

PROFESSIONAL Criticism of the Amateur picture is a part of the service offered by the AMERICAN CINEMATOGRAPHER. Many are not aware of this. Hundreds of pictures have been reviewed this past year by members of the American Society of Cinematographers for the Amateur.

• More about 16mm negative-positive system. W. J. Grace will give us another of his interesting Cinetricks. Of course there will be the family continuity giving you an interesting story that anyone can make, scene for scene. Backyard movies will contribute more unusual plots.



The new Davidge Tank Developer for 16mm negative.

What's New In 16mm Negative-Positive

by
William Stull, A. S. C.

ALL indications point to 1934 as ushering in a "New Deal" for 16mm negative-positive. During the past year—especially the more recent months—more interest has been evident in the use of 16mm negative than ever before in the history of substandard filming. Several of the major film-manufacturers have announced their entry into the 16mm negative field; new and highly practical equipment for developing 16mm negative is available; and more and more laboratories are commercially offering paraphenylene-diamine "grainless" developing of substandard negative. In consequence, a renewed interest is being evidenced in the use of this film, both by individual ama-

teurs, and by the makers of educational and commercial films.

Undoubtedly, the keynote of the whole situation is the improvement in commercial laboratory work. For this, the American Cinematographer must take a goodly share of the credit. One year ago, following extensive practical researches, the American Cinematographer published an article emphasizing the fact that, with the proper treatment in the laboratory, 16mm negative film would give results in every way comparable to the best obtainable on reversal film, and advocating the use of paraphenylene-diamine as the ideal developing agent for really fine-grain results with this film. Shortly after the appearance of this article, and admittedly influenced by its findings, the Dunning Process Company of Hollywood introduced "Grainless" development of 16mm negative, using a modified paraphenylene-diamine developer. This literally revolutionized 16mm negative processing; and following upon Dunning's pioneering of fine-grain 16mm development, a number of other firms in this field followed suit, thereby removing from the path of 16mm negative film its greatest obstacle.

This has won the negative-positive system many new friends, among both individual amateurs and commercial and educational producers. Within the past few months, this has been substantially recognized by the film-manufacturers. The Agfa-Ansco Corporation has just introduced, in addition to its popular reversal films, a very fine Panchromatic Negative film, while another large manufacturer, heretofore associated exclusively with reversal emulsions, is understood to be preparing a 16mm negative film for use in semi-professional work. Many rumors of still further additions to the 16mm negative family are current, with several leading foreign film-makers and at least one camera-manufactory prominently mentioned.

The Agfa negative film, however, is definitely available, and has been tested by the writer. It is an excellent panchromatic film, with really admirable grain characteristics. In speed and color-sensitivity, it is closely comparable with the familiar Agfa Panchromatic reversal-film, while, due to the inherent advantages of the negative-positive system, it evidences somewhat greater latitude than is possible with reversal. Like all professional films of today, it has anti-halation protection. It is regularly distributed in 100-foot, daylight-loading rolls, but for users of the various semi-professional cameras now available, it is also available in 200- and 400-foot rolls, in laboratory packing only, however.

Within the past few weeks, a most important developing equipment has been announced by the Roy Davidge Laboratory of Hollywood. This is the "Roto-Tank," and is developed from the reel-and-apron developing equipment which has been in daily use for some years in Davidge's processing of standard film for Hollywood's leading studios. The Roto-Tank system consists of a bakelite tank, a reel, and an embossed celluloid apron. The film is wound with the apron onto the reel, the embossed indentations on the apron serving to hold the film in position, with both surfaces away from the surface of the apron, so that the solutions circulate freely about the film. This idea, in itself, is hardly new, for aside from certain important (though unnoticeable, to most individuals) differences in the arrangement of the indentations, the outfit seems rather similar to other types already familiar. In actual practice, however, several features make the Roto-Tank outstanding, and a very definite advance over anything hitherto available.

In the first place, it is the first equipment which, so to

Continued on Page 186

Continuity for Fishing Families

by
Arthur J. Campbell, A. S. C.



IN MOST families, Father has a monopoly on fish stories—but here is a fish story in which the whole family can participate. Moreover, a fishing film of this type should be a better "audience picture" than the general run of films brought back from vacation fishing excursions, for it combines an entertaining story with plenty of opportunity for making attractive scenic shots—and it doesn't attempt to show any actual fishing, which is as a rule very uninteresting on the screen.

The story is very easy to film, and requires few "props," and only a small cast, such as can easily be assembled by the average family. No special photographic equipment or technique is needed, as there are no interior scenes, and only one shot that requires anything but straightforward photography. Best of all, you can fit the film into your vacation plans very easily, for it can be made anywhere—at home, at a camp or lake resort, or in part at both locations. Try it!

MAIN TITLE:

"SOMETHING FISHY"

CREDIT TITLE:

THE PLAYERS

Father
 Mother
 Junior
 Bobby, Junior's Pal
 "Toughy," the Neighborhood Menace.....

Scene 1. Long-shot of the family's home, or vacation-cabin. Mother and Junior are sitting on the porch. If possible, fade or iris in.

Scene 2. Medium "two-shot" of Mother and Junior on the porch. Mother hears something, and looks up; Junior also looks up, then excitedly runs out of the picture, off the porch.

Scene 3. Long-shot, from porch (if possible). Father approaches. He carries a fishing-rod and creel. He waves a greeting toward the house.

Scene 4. Medium-shot of Father approaching. Junior runs into the picture (from beside the camera). When he has greeted the boy, Father opens his creel, and proudly brings forth several fine, big fish. Junior becomes very excited, and prances around, obviously wanting to know all about how the fish were caught. Father motions him to be quiet.

Scene 5. Medium-shot. Father reaches the porch,

and hands the fish to Mother, indicating that he's hungry. Mother takes them with a smile, and goes into the house. Father drops into a chair, while Junior hangs over the arm, and deluges him with questions.

Scene 6. Close-up of Junior, talking (preferably a big-head close-up).

Scene 7. Close shot of Father. He lights his pipe, and turns toward Junior, smilingly starting to explain.

Scene 8. Medium "two-shot" of Father and Junior, as Father tells his story. FADE OUT. (If you wish, you can add a fishing-sequence here, showing Father's story—how he caught the fish. This, incidentally, is a good way to work in fishing scenes you already have on hand. If you do, begin and end the sequence with fades.)

Scene 9. FADE IN. Close shot of a cat or dog on the back porch, eating the remains of the fish from a plate. Or, if no animal is available, a short shot of Mother throwing out the fish scraps.

Scene 10. Long-shot of the house: it is much later, as shown by the long shadows. Junior comes out, just as his pal, Bobby, passes by in front. Junior waves to him, and runs down to speak to him.

Scene 11. Medium "two-shot" of Junior and Bobby. Junior is telling Bobby all about the fish, and—like a good fisherman—exaggerating a bit, stretching his arms to the full to indicate the size, etc. Then he calms down a bit, and the two boys put their heads close together, obviously making some secret plans. Bobby nods his head, and they part.

Scene 12. INSERT—close-up of an alarm-clock, indicating 4 a.m.

Scene 13. Medium-shot of the front-door. Junior comes out, tiptoeing, and picks up Father's rod and creel. He glances furtively about, and then walks out of the picture.

Scene 14. Long-shot of a quiet country road; there is no traffic, and there should be long shadows, falling in the opposite direction in the frame from those in Scene 10,



With a stop of $f:12.5$ the top picture gives a great depth of focus . . . while the lower picture with a stop of $f:2.0$ gives a very shallow focus as explained in this article. Photos by Clarence Slifer, A.S.C.

SO FAR in our CINETRICKS series we have discussed those devices which most of us will concede are properly termed tricks. However, a complete discussion of trick cine work would have to include two phases which are not ordinarily considered unusual, yet lend themselves to trick work easily.

Lens Manipulation

Because we so often use the lens diaphragm and focusing adjustment in the normal manner, most of us are prone to overlook the possibilities for effect work in the manipulation of these two adjustments to secure certain effects.

The simplest manipulation we can employ is the closing of the lens diaphragm when we come to the end of a scene for a fade-out, or opening it from the smallest stop to the correct exposure stop for a fade-in. Quite properly, this is termed a camera trick and the use of the lens diaphragm in this manner is certainly useful if one is caught afield without proper fading equipment.

But suppose we reverse this procedure—what will we get? Since it very often happens that the scene is so well lighted that correct exposure calls for $f:8$, which isn't very far down the scale from the smallest stop. In other words, we have little chance to fade-out the scene. What to do? Try a "white fade," one which makes the screen go white instead of dark. Simply fade-out by **opening** the diaphragm to the largest stop for a "white fade-out." This isn't an effect which you may safely use often, because of the disagreeable optical effect of a white screen, but it should appear at least once or twice in your trick repertoire.

Aside from the obvious trick of changing the lens diaphragm while exposing, just how can we use the lens diaphragm to secure trick results?

Suppose you want to film a shipwreck using miniatures, or a train in miniature—how would you set your diaphragm to make the miniature appear to be the real thing? Would you shoot it wide open or stopped down? Before we make our decision, it will be well to review a peculiar character-

Cinetricks---

istic of lenses, one which has a very definite bearing on the matter.

You've heard of the term "depth of focus." Probably read it many, many times, haven't you? And, being a still as well as movie enthusiast, you no doubt have discovered a gap in your movie work which is quite easily spanned in still work, and that is in the matter of shutter opening as related to "time" or "speed" of an exposure. You have found that the variability of your still camera's shutter enables you to quite nicely run the gamut of depth of focus, but that your movie camera is a fixed shutter mechanism.

But now that we've brought up the matter, shown how lacking amateur movie cameras are in this matter of shutter adjustment, what's the sense of talking about depth of focus at all? We have a scene requiring a definite exposure, and since the only thing we can adjust on our camera to obtain correct exposures is to set the diaphragm, why talk about depth of focus? In other words, a given scene requires a definite diaphragm opening for correct exposure, and because the shutter can't be changed, we must let depth of focus go by the boards!

Not at all. Because the main road is blocked we simply have to take a detour. It may be rougher going and take more time, but we get there just the same. Some day the airline highway with adjustable shutters on amateur movie cameras will be opened, but until then we can take the more troublesome detour.

Scenic work offers little chance for shooting at other than the normal exposure indicated for normal 16-frame speed. We can't control the sun. But in scenic work the consideration of depth of focus is not nearly so important as indoor work, anyway, because nearly every object in the scene is so far away. The shots which benefit most by shooting wide open, or nearly so, are those made from two to twenty feet from the camera, and in many cases it is possible to control the illumination in such a way as to make it possible to shoot wide open.

What is shooting "wide open," and why must we say it so often? It simply means shooting with the lens at a large diaphragm opening to deliberately throw everything out of focus to a certain extent except the principal object. Professional cameramen found long ago the pleasing "three-dimensional" effect obtained with a wide open fast lens, explaining that the pictures so made are less "wiry." That is the artist's nomenclature for an effect which the scientist explains at greater length, to-wit: "When we look with our own eyes at a scene, we do not see all objects focussed sharply at one time. Our eyes concentrate on one object at a time, aware of the presence of other objects behind, before, and to one side of that main object, but nevertheless subdued with respect to importance. The importance is subdued, not by intensity of illumination, but by being out of focus." Therefore, unless our movie is to be strictly a photographic record, let us, whenever possible, shoot to obtain realness, lifelikeness, truth.

In outdoor work, to be sure, the means which amateurs may resort to to shoot wide open are limited. If we can select a shady spot the subject can be illuminated by light controlled thru the use of hard (shiny) and soft (diffused)

Lens Manipulation and Filter Tricks

by
W. J. Grace

metal or treated paper reflectors. And the light is usually of low enough intensity that the lens may be used at a large diaphragm opening for making the depth of focus rather shallow.

Another way to cut down the light entering the lens so that it may be opened wide is thru the use of filters. I hesitate to go into this phase very deeply, because of the confusion which attends any discussion of filter work in general. There is no such thing as a "general" filter, or even a set of "general" filters, in view of the great differences each filter will have when used with pan, ortho, superpon, panchrome (or verichrome), or positive stock.

If you have a good sunshade of the type which takes square filters (such as the Harrison or Brooks), a set of neutral density filters will come in handy for cutting down light without disturbing the color relations, and can be made easily somewhat in the manner of the dissolve or fade plate suggested by Mr. Campbell in the oddenda to the July CINETRICKS. Make up a set of plates which have been reduced various amounts (each plate being uniformly reduced, however, unlike the fade plate which is graduated).

Controlling indoor light is the ideal solution for the amateur to try his hand at "wide open" shooting. Set up your scene just as you want it, then pull your lamps back from the subject until the exposure meter indicates something like $f:2.5$ or even $f:1.9$ for correct exposure. Incidentally, most of us do not properly light backgrounds, and pulling the lamps back from the subject will help counteract our errors by spilling more light on the background.

One more trick with lens manipulation and we'll pass on to filters for trick work. So far the lens manipulation has been concerned with the diaphragm, and we've neglected the focusing. "Now, there's an adjustment which just can't be fooled with! An out-of-focus picture is just no good!" Is that the thing you are planning to say? If so, just try this little stunt (professional cameramen have begun to use it in lieu of dissolves or wipes): Instead of making a dissolve or wipe-over, end one scene by deliberately defocusing the lens and follow with the next scene out of focus to begin with and then brought into focus. It's quite good, especially if adjoining scenes are shots of the same thing from different distances (say, for instance, a long shot followed by a medium, and this followed by a closeup, all coupled together by the in-and-out focus trick).

Filter Tricks

Frankly, I haven't the slightest idea of a good starting point for this phase of trick work. I realize that most of

Twin Lakes

Dear Bill:-

Wish that you were up here. Lots of fish and I'm sure getting my share! Swell country. Great nights to sleep up here. Can't you come up over the week-end?

Dan.

Twin Lakes

Dear Bill:-

I bet you're sure touched! The poor fish that I'm getting up here - are the 'suckers' at the poker game every night - till dawnin'! Can't you ditch the ball and chain and come up, this week-end?

Dan

The letter at the top shows the even-numbered lines of the letter; the letter at the bottom, the uneven lines. That is, "I bet," etc., is the first line of the letter, "Wish that you" is the second line, and so on. The even-numbered lines were written in red ink. A blue C49 filter was used to photograph the top half; this wiped out the uneven lines and left only the red lines visible. The uneven-numbered lines were written in blue ink. This was photographed with a 29F filter, washing out the red lines and making only the blue lines visible in the bottom photo. Photos by Clarence Slifer, A.S.C.

my readers are aware of the possibilities of the use of filters for trick work, but I hardly know at what point a general discussion of this kind may begin. It is something which can begin anywhere and end anywhere.

This much I would certainly advise—a good sunshade type of filter holder to carry square filters should be a part of your accessory equipment. Burleigh Brooks has marketed an excellent filter holder of this type for some time, and within the past few months Mr. Harrison, whose filter articles appeared a few months ago in this magazine, has placed another excellent filter-sunshade. Neither make is expensive and you'll have a lot of fun using the regular available filters or making up some of your own. Wratten filters in the form of very thin colored celluloid sandwiched

Using a Process Background in 16mm Pictures

by
Jerome H. Ash, A. S. C.

A FEW weeks ago I was discussing 16mm filming with one of my friends. Both of us are professional cinematographers: I'm a 16mm enthusiast; he isn't. The argument grew rather warm; finally I told him, rather boastfully perhaps, that notwithstanding the limitations 16mm had when it began life, it has now developed to the point where one can, with regularly available 16mm equipment, duplicate anything possible with regular professional 35mm equipment. To all of which he replied, "Oh yeah? How about projected-background process shots?"

"And why not?" I countered. "We made 'em twenty years ago, when studio cameras weren't nearly as capable as the most ordinary 16mm camera of today. I'll bet I could go out tomorrow and do it with my little Cine-Kodak!"

And I did. I made a little 100-foot 16mm picture that includes normal photography, miniatures, and projected-background process shots. Every bit of it was done with absolutely ordinary equipment, such as any amateur has, or can easily build. The camera was my Model B Cine-Kodak, and the projector was an ordinary Eastman Kodascope (I can't recall what model, other than the fact that it certainly isn't one of their deluxe types!). The only other equipment I used was a sheet of ground glass, about 11x14 inches in size, a rectangular fish aquarium, three photoflood lamps and their reflectors, and a mirror. I made a couple of miniature sets with pebbles, sand, sea-weed and a painted backing, while for actors I used some tropical fish, and two little dummies I made to represent a diver and an octopus. The whole outfit was set up on my kitchen table—and left plenty of room to spare.

Here was my story: a pearl-diver sails with the fishing-fleet. When the boat reaches the fishing-grounds, he descends, and walks along the sea-bottom, looking for pearls. After a while, he sits down to rest. As he is sitting there, an octopus approaches from a cavern behind him and attacks him. Just in time, the diver rises, and draws his knife. After a battle, he kills the octopus, and continues his quest for pearls. That, of course, is just the bare skeleton of the plot, which was after all, only a sort of framework upon which to hang my "process shots."

Here's how I did it!

I opened the picture with a shot I had made some time before, showing the fishing-fleet at its docks at "Fisherman's Wharf," San Francisco. Next, I made a normal, close shot of my son, loading some diving equipment (borrowed from a diver friend here) into a hand-cart. Then a closer shot of the fishermen loading their boat—not close enough, however, so that you could see whether or not it was the diving-equipment that they were loading! Next, a shot of one of the boats leaving the dock, followed by a couple of scenic seascapes one of my friends made in the South Seas. Then a shot, actually made on a dock, but

apparently on the deck of the boat, showing the diver's air-pump being started, and the diver getting ready to go down.

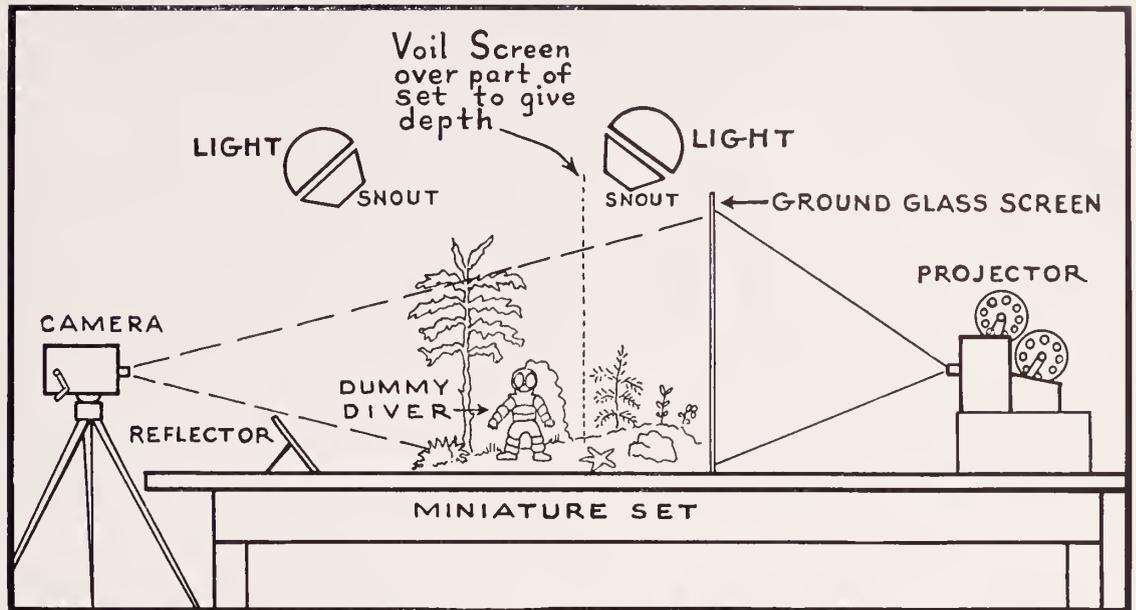
Here, the miniature work began. I built myself a little dummy diver—a little figure about five inches high, with flexible joints. I built a little set which suggested the side of a boat, and, working the diver like a puppet, got a shot of him going over the side.

Now for my underwater shots! I took an ordinary, rectangular aquarium, and some tropical fish—rather large ones, some of them two or three inches long. Behind the aquarium, I set up a painted backing, which suggested (I'm rather a poor painter!) the distance—seaweed, rocks, and so on. In the aquarium, I built up some submarine scenery, with white sand, pebbles (for rocks) and various types of sea plants. I wanted the fishes in fairly sharp focus, and as I was using my lens at $f:2.7$, I knew the depth of focus wouldn't be very great: so I placed a clear piece of glass about two or two and a half inches behind the front-glass, and parallel to it, so that the fish would be confined to a relatively narrow area.

Normally, most of the light under water seems to come from above; so I lit my little tank from above. I had three photoflood lamps, with the usual type of reflectors used for amateur lighting with photofloods. I built some concentrators (or "snouts") for them, similar to the ones described in this magazine a few months ago. (See the American Cinematographer for March, 1934, P. 458. Ed.) These lamps I directed into the water from above, at about a 45° angle. To get some front light on my little set, I made a reflector by sticking some tinfoil on a piece of cardboard, using the rubber cement you can get for a quarter at any auto-supply store. For a few shots, I used a gold reflector, made in the same way with cardboard and a bit of bronze wallpaper. One or two shots, too, I lit by reflecting daylight with an ordinary mirror, sometimes with parts of the mirror matted out with a piece of cardboard, in which I had cut holes of various odd shapes, so that I could get interesting light-effects. The only trick to the lighting of these shots was avoiding reflections from the glass surfaces.

I made several different submarine "sets," including the grotto from which the octopus was to come. The octopus itself was a "prop," which I built myself. I built its body out of cork and balsa wood, carved to shape. For the tentacles, or arms, I bored little holes in the balsa, and into them I fitted ordinary angle-worms: when these are dropped in water, you know, they writhe and twist just like the tentacles of a lively octopus. The next question was a real problem: when an octopus swims, he does so by taking in water through his mouth, and ejecting it through a vent behind. Finally I solved the problem by fixing a bit of "dry ice" about the size of a pea, on the rear under-side of my octopus. In the water, this "boiled" furiously, shooting out a perfect jet of bubbly water behind, giving a most realistic effect. To keep the octopus from bobbing to the surface like the cork it was, I had to ballast it with a tiny counterweight—and I'll admit that getting this weight placed properly was about the hardest job on the whole picture!

It was quite easy to move the thing around in my shots, using threads, and working the octopus like a puppet. I got some very satisfactory shots of it crawling out of the grotto, and approaching the camera. To make the picture more life-like, I visited one of the local aquariums, and got



a few close shots of a baby octopus they happened to have at the time, which I cut into the picture for close-ups.

These underwater shots were largely for use as back-grounds, to be projected on a screen behind other foreground action. They were shot on ordinary SuperSensitive reversal film, at normal speed, with the lens at $f:2.7$, and processed in the normal manner.

The process shots presented a peculiar problem: the projected background or "Transparency" process consists, essentially, of a camera photographing any desired foreground action, together with any desired background, which is projected from a strip of film, onto a translucent screen (usually ground glass) placed between camera and projector. Naturally, the shutters of the camera and the projector must be synchronized—that is, they must open and close together. Now, with most 16mm equipment, this seems impossible. It is, if you work at normal speed: but if you work in "stop motion"—one frame at a time—it becomes very easy. And though most amateurs don't realize it, any 16mm camera can shoot stop motion quite acceptably. I used my Model B Cine-Kodak for this, without any special attachments whatsoever: it required only a sure, quick touch on the shutter-release, to give me a single frame exposure. Occasionally, it is true, I would expose two or even three frames, rather than one: but I found that this didn't do any harm, but rather made my animation smoother. Of course, the ideal cameras for this purpose are those that definitely provide a single-frame movement—the Cine-Kodak "Special," the Filmo 121, and the Simplex. Using stop motion, it is simplicity itself to synchronize camera and projector: you simply pull your projector down one frame, make any changes needed in your foreground action, and trip the shutter of your camera. A device like the "Electrimote," recently described by Wm. J. Grace, would, of course, make this still easier.

Shooting my process scenes this way, I placed my projector at one end of the kitchen-table, with the ground-glass screen (which was about 11x14 inches in size) about at the middle of the table. In front of the screen, I built a little foreground set, to represent sea-bottom. I walked my little dummy diver (he was about five inches high) into the set—by animation, of course. Then I sat him down on some pebbles, and shot the approach of the octopus, which was photographed on the background-film. Of course,

I had to have the octopus in the foreground for the fight, so I had made some backgrounds of the same scene—without the octopus—for this. I used the same octopus for these shots, but I replaced the angleworms with pipe-cleaners, dyed to the right shade to match the angleworms. These, of course, made animation quite easy, as they could be bent to position, and would remain in place as long as necessary.

These scenes, too, were shot on SuperSensitive film, and processed in the usual manner. The only point to watch closely is to be sure that none of the light you use on your foreground set strikes the ground-glass screen. Virtually all of these underwater scenes—both the process shots and the miniatures—were shot with a No. 1 diffusing disc on the camera-lens, which softened the picture a bit, and added to the "underwater" effect. The idea, suggested by Jack Smith, A.S.C., in the June issue of this magazine, of using two frames covered with fine barbinette gauze, and moved in opposite directions past the lens, would give an even better submarine atmosphere. In several of the shots, I put up little screens of voile between parts of the set and the camera-lens to give an added sense of depth, or distance, to my background. In a few instances, I highlighted these voile strips with ordinary aluminum paint, to represent flickers of sunlight filtering through the water; and I also painted in a few shadows here and there with dark paint. The materials I used for my little sets were very simple: white Monterey sand, which can be had at any fish or pet store; pebbles; and such sea plants as Valcinaria, "eel-grass," and sea-bananas. The latter, placed upside down, so that the little bulbs came at the top, represented kelp excellently.

Just as I was finishing this picture, a friend showed me his Cine-Kodak "Special." There is the professional cinematographer's ideal personal-movie camera! It will do anything a professional camera will—and at much less cost. I'm going to get one for use with some of the professional experiments I've wanted for some time to make. One of the first will be regularly synchronized process shots, made at normal speed. With this camera, it will be easy. In a forthcoming issue of the American Cinematographer, I'll describe how to do it—and tell more about trickery with 16mm equipment.



Arrow points to speed control of Eastman Cine Special.

Using Camera Speeds Efficiently

by
Dwight W. Warren, A. S. C.

ONE OF the most useful accessories for personal filming is the speed control fitted to most of the better types of 16mm. cameras. Yet it is hardly ever used! To one who, like myself, has spent many years photographing professional comedies—which involve constant use of speeds above and below normal—this seems incredible, yet it is undeniably a fact. The average high-grade camera of today is fitted with speeds of 8, 12, 16, 24, 32, 48 and 64 frames per second; but, aside from a few experiments with "slow-motion" and half-speed, when the camera is new, most cinefilmmakers of my acquaintance seem to leave the speed-control knob strictly alone. Yet these speeds were built into the camera for a purpose—to make the camera more completely useful to its owner.

Let's stop and recall the way these speeds work; then we can perhaps figure out how to use them. Sixteen frames per second is the accepted normal speed for taking and projecting silent pictures. The projecting speed is relatively constant at sixteen pictures per second, so any modification must be in the taking speed. Let us suppose that a given action actually takes place in one second: filmed at normal speed, this would require sixteen pictures (or frames) on the film, whether photographed on 8mm., 9.5mm., 16mm., or 35mm. film. Projected at the normal rate of 16 pictures per second, the result on the screen would be to reproduce the action exactly as it happened in life. Now, suppose we photograph the same action with the camera running at half normal speed—8 frames per second. The action would be recorded on only half as much film, which would natur-

ally take only half as much time to run through the projector, with the result that the action on the screen would be twice as fast as normal. Suppose, on the other hand, that we photographed the same action with the camera running at double the normal speed, or 32 frames per second. This would spread the pictures of the action over double the usual number of frames, so that when projected at the normal projection-speed of 16 frames per second, the action would take two seconds to screen, or twice as long as it did in actuality.

So much for theory! Now, how can we apply the principle to practical use?

Let's take the higher speeds first. The most obvious use is "slow motion," for slowing down sports, etc., in which the action is actually too fast to follow clearly. By running the camera at a speed of, say 64 frames per second, we can slow the action down four times, or "spread it out" over a period four times as long as it actually took. This is pretty well known, and frequently used by amateurs filming diving, football, track events, etc. But this burns up film at an alarming rate—96 feet per minute, in 16mm.—so that it is, even at today's film-prices, rather expensive. Here is where the intermediate slow-motion speeds, 32 and 48, are useful. A great deal of action can really be shown better at such speeds than in extreme slow-motion. The action is slowed enough so it can be clearly seen, yet not so exaggeratedly slowed as with extreme slow-motion. Football, baseball, and many similar sports are really more effectively shown if photographed at such intermediate speeds. In the same way, airplanes stunting near the ground—as at an air meet—are very effective on the screen if photographed at 36 or 48, but exaggeratedly slowed if shot at a higher speed.

Here's another use of high-speed: every now and then some celebrity, of whom you'd like a picture, visits your town; but unless you are one of the lucky ones, who can wangle a chance to greet the visitor with the newspaper photographers, your shot is usually limited to a brief blur of the distinguished person as he whirls by in a car. Well, why not slow the car down by using slow-motion? It will work out very effectively—and if you bring the subject closer to you with a telephoto lens, you'll have a really worth-while picture.

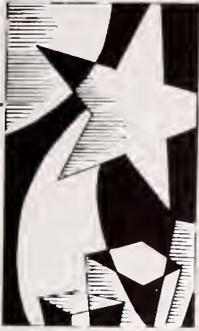
Extreme high camera-speeds are also excellent for filming miniatures: virtually every type of miniature except explosions can be filmed at 64. Miniature airplanes, trains, autos, and the like, filmed at this speed, gain an illusion of larger size, while their movement is greatly smoothed.

Similarly, any picture where you have to contend with vibration, or the like, can be improved by judiciously speeding the camera. For example, shots made from an airplane, an auto, or a train will be much smoother and better if shot at 24 or 32. If you are shooting from an auto, by the way, it is a good idea to drive the car a bit faster than normal, so that the road-shocks more or less overlap, and slow the movement down by speeding your camera. In this way, you can get exactly the same result as though you drove the car normally and shot at normal speed—but your picture will be much smoother.

But what, you ask, are the slower speeds for? Obviously, you can gain in exposure by slowing the camera to 12 or even 8, when the light conditions are unfavorable. Of course, you will have to offset this by having your people move slower than normal.

This idea can be put to good use, too, by using slower speeds—especially 12—for action which, for any reason, is actually too slow. In comedies, for instance, we almost

Continued on Page 188



BACKYARD MOVIES

● To most cinefilmmers, golf and movies are things that ought to go together—but usually don't. After the passing interest of those first few slow-motion shots of yourself and your friends driving, you begin to feel that golf is golf and movies are movies—and never the twain shall mix. But Laurence McGinty, this month's prize-winning Backyard-scenarist, doesn't agree. And to prove his contention, he has contributed an extremely clever and entertaining golf scenario, which can easily be made in the course of an afternoon's round of your favorite course, with any camera, and a single roll of film. Mr. McGinty, it is a pleasure to present you with the roll of Panchromatic film. We hope your golf is as good as your film technique!

MAIN TITLE:

"HOLE IN ONE"

Scene 1. Close-up. Score-card, with name of golf-club on cover. The card is being opened.

Scene 2. Close-up of inside of score-card, filled with "duffer" high scores. A finger is pointing to the short 150-yard hole, which is just about to be played.

Scene 3. Close-up of a golf-ball on a tee.

Scene 4. Medium close-up of the ball, about to be teed off; a club-head woves in and out of the picture.

Scene 5. Medium-shot of a player, about to tee off. He is wogging his club, duffer fashion, and has a set "do-or-die" expression on his face.

Scene 6. Medium-shot, from front of tee, showing the other three players in the foursome.

Scenes 7-9. Short close-ups (big heads) of the other three players. One is plainly disgusted, the other two jubilant, gleefully laughing at the fourth member of the party, who is not shown.

Scene 10. Long-shot. From behind the players, looking down the fairway. The player tees off, making a beautiful drive.

Scene 11. Close-up of the cup on the green. The ball rolls up, hesitates on the edge of the cup, then drops in.

Scene 12. Long-shot of the foursome walking toward the green (coming straight into the camera).

Movie Film Free

This month there are two winners of 100 foot rolls of Panchromatic Film. One of the suggestions has to do with the utilizing of your many miscellaneous shots of the family, while the other toys with the game of golf. However, you will find they are not complicated, they are not involved, try your hand, it's easy. If you don't win the month after your story is sent in, have patience. We received the "Family Album" idea three or four months ago. Remember. We give a 100 foot roll of Panchromatic 16mm. film to those whose ideas we print on this page.

Scene 13. Medium-shot of same action, but with players closer to the green.

Scene 14. Long-shot of all players looking for the ball.

Scene 15. Close-up of Partner as he sees the ball in the cup.

Scene 16. Close-up of the ball nestling in the cup.

Scenes 17-19. Close-ups (big heads) of surprised expressions on the players' faces.

Scene 20. Medium long-shot as the players surround the lucky man.

Scenes 21-23. Close-ups (big heads) of the faces of the other three players, as they congratulate him.

Scene 24. Close-up (big head) of the hole-in-one; incredulity slowly turns to belief, and a blissful smile spreads across his face.

Scene 25. Medium close-up as hands slop the lucky man on the back, and others grosp and pump his hand.

DISSOLVE TO:

Scene 26. Close-up of hands shaking the some player, seated in a chair on the club-house verondah—and asleep.

Scene 27. Medium-shot of the three men of the foursome, trying to awaken the fourth man—the one who dreamed of the hole-in-one.

Scene 28. Close-up of the face of the fourth man. He is smiling happily in his sleep. Slowly he awakens; then the smile slowly fades.

Scene 29. Close-up of feet. They slowly get up, and walk away from the camera. As they do, the camera tilts up, taking in the entire group as they go out

of the club-house door and walk toward the first tee. FADE OUT.

THE END

Laurence McGinty, B.Sc.,
Buffalo, New York.

"THE FAMILY ALBUM"

Everyone who owns a movie camera has photographed the members of his family. Most of these intimate glimpses are priceless, especially as time goes on; but as a rule they lack unity, and are nothing more than a hodge-podge of unrelated scenes.

Here is a way in which the movie-maker can utilize such scenes to form an interesting picture, which may be added to indefinitely. On this same plan, too, the beginner can build a good family picture.

The title is "The Family Album."

Secure a suitable album—the older the better—and use its pages with suitable titles to introduce the members of the family.

We start with a double-exposed title showing someone opening the album. The best angle for the background part of this title is a shot over the right shoulder of the person looking at the album, showing the side of the reader's face, his shoulder and arm. The album is held in the lap, closed. The main title wording should be white, double-exposed over this background. If you can, it will be very effective to have the words fade out as the book is opened.

This can be made in two ways. We can do it by double-exposure, which, though slightly harder, is probably the best; or we can do it with a "gloss shot" such as the professional cameraman uses for special effects. Using the first method, we first make our title as usual—white lettering on a flat block card. Then we wind the film back to the starting-point, and make the background-shot; it might be a good idea to shoot this through a gouze, for diffusion, if you can do so. Using the "gloss shot" method, we make the whole title at a single exposure. Print the desired lettering on a piece of glass about 10x12 inches in size, using white show-card color, or letters cut out from white paper. Suspend the glass about two feet from the camera (this usually gives an area of about 7x9 inches with most cameras), and photograph through the glass, with the background of the album, etc., beyond, just as in a normal shot.

Continued on Page 189



WHEELS OF INDUSTRY

16mm Sound On Film Camera

● The recent specially built 16mm sound on film camera for R. Grozier, publisher of the Boston, Mass., Post, from the factory of Eric Berndt demonstrates the advance that sound is making in the amateur field.

According to Berndt's announcement on this particular camera it is of the single system, studio type, variable area employing prism type finder, lap dissolves, 1000-foot external magazines interchangeable with 200-foot or 400-foot magazines. Equipped with four Zeiss lenses, 15mm, 1", 35mm and 3".

The amplifier uses a new type Brush crystal microphone; mixer has 2 microphone channels. It is equipped with visible monitor for the sound track so that the operator can see the sound waves, during the recording operation, on a ground glass.

New 16mm Projector

● According to an announcement from Fotoshop, Inc., of New York City, that concern is marketing a new 16mm projector employing a 300-watt lamp. This company places a special stress upon the cooling system which permits still pictures for a great length of time without burning the film. This projector is being marketed for \$38.50.

Filmo 8mm Projector

● An 8mm motion picture projector, the Filmo 8, has just been announced by the Bell & Howell Company.

The new projector employs a 300-watt lamp in a direct lighting system, and operates on 110 volts, A.C. or D.C. Except that it is smaller, it looks like the Model J Filmo 16mm projector.

It is gear-driven—there are no chains or belts inside or outside. Among other features, it has an automatic power rewind, pilot light, convenient tilt, monocular former, provision for still picture projection, Cooke 1-inch F 1.6 projection lens, and adequate cooling for use of the high-powered lamp. Its capacity is 200 feet of 8mm film.

M-R Silent Wind-Machine

● Mole-Richardson, Inc., report that they are completing a new, silent wind-

machine, especially for use in close shots. The device is driven by a quiet, low-speed electric motor, and equipped with a silent fan, with blades of a new design. Running at 600 r.p.m. the new fan is reported to be sufficiently noiseless to be used within ten feet of the microphone.

Triple Focal Length Lens

● An advance circular from Bousch and Lomb announces a lens combination on the same lens giving three different focal lengths. Seemingly it is possible to secure this lens in different basic focal lengths giving a varied combination of focal lengths.

One would determine from the folder that this lens has been made for still camera work. Such focal lengths as $9\frac{1}{8}$ ", $13\frac{3}{4}$ " and $18\frac{7}{8}$ " are mentioned as possible with one lens.

New Exposure Meter

● According to an announcement from Photo Utilities Inc. of New York City that company is marketing a new photoelectric exposure meter that is seemingly very elastic in its uses and in the information that can be gleaned from it in use. We quote herewith the claims made by this company for this meter:

"The instrument works with uniform accuracy in any latitude, any time of the day or year, and can be used equally well indoors or in brilliant sunlight. The PHOTOSCOP can be pointed directly at the object to be photographed without shading the instrument with a hood or other means.

"Pre-setting to any film or plate speed from 8 to 30 degrees Scheiner.

"You may choose the English diaphragm stop series: f:1.4-2-2.8-4-5.6-8-11.3-16-22-32-45-64, or, by switching the stop scale over a half circle, you may select the Continental diaphragm stop series: f:9-1.2-1.5-1.8-2.5-3.5-4.5-6.3-9-12.5-18-25-36-48.

"Exposure time readings: On the main scale, from 1/1000 to 100 seconds; on the auxiliary interpolation section of the scale, down to 2500 seconds at stop f:64 for 26 degree Scheiner film.

"The same scale gives you cine camera taking speeds of: 8-12-16-24-32-48-64-96-128 frames a second and the same scale contains specific Leico camera shutter speeds.

"The dust-proof, circular, metal housing is $2\frac{1}{2}$ inches in diameter, 1 inch

high, has no protruding or loose attachments—just the lens in front and on unbreakable window slit on the side. Robust, expert construction and extreme sensitiveness.

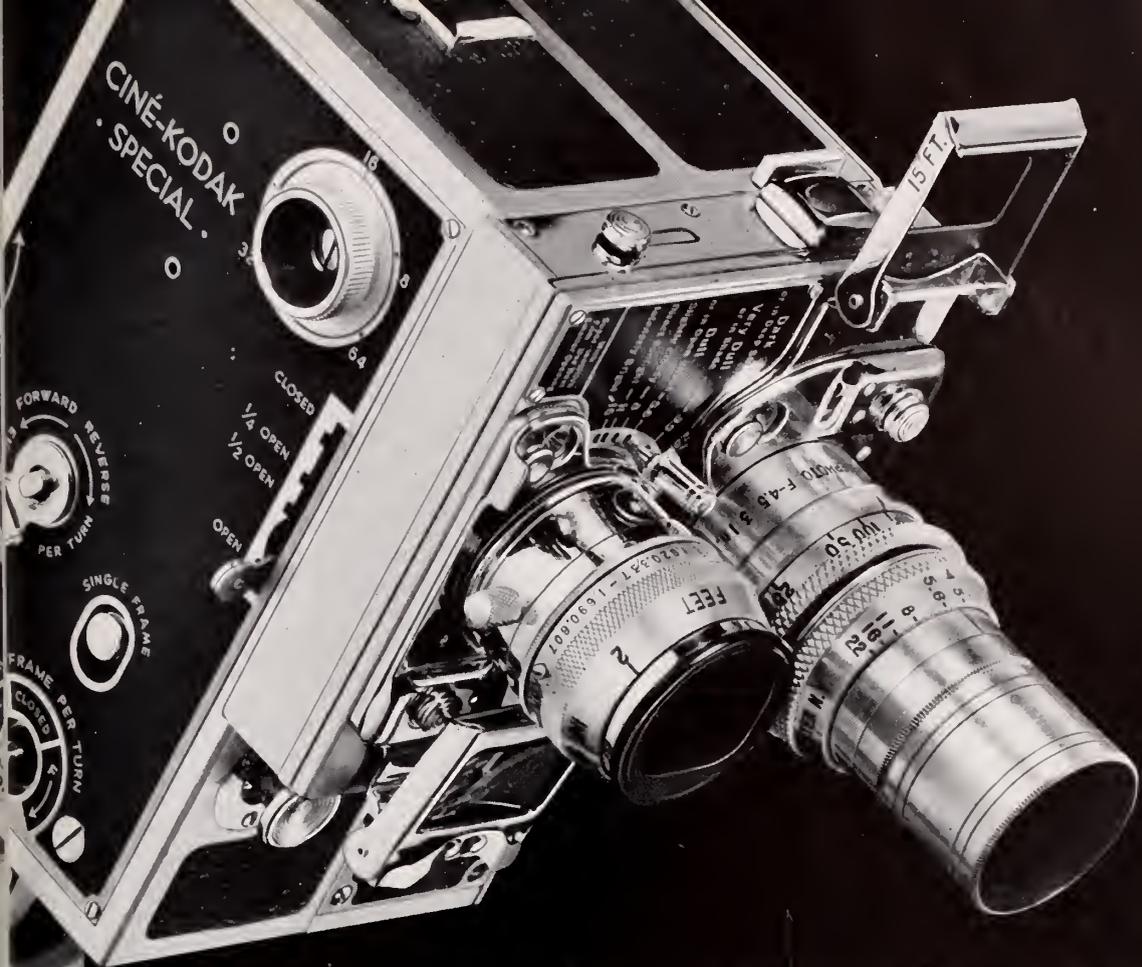
"The PHOTOSCOP is pointed or aimed like a camera. The scale is read in proper reading position, just as when you look into the "brilliant" reflecting viewfinder of a camera.

"The instrument solves swiftly and automatically any photographic exposure problem without changing the aim or lifting the meter. For instance—Super-speed panchromatic film: Set to 23 degrees on the Scheiner scale. You choose stop f:5.6. Turn this figure into the window, and the electrically guided pointer (needle) answers, "1/25 second." But you find the object moves too fast—1/200 second would be required to stop motion. Turn "1/200" under the red pointer, and the stop f:2 appears in the "f" window. However, your lens may have a speed of only f:2.8. Turn the 2.8 figure into the window, and the pointer indicates 1/100.

"Or, again, if you want to avail yourself of the greatest depth of focus. Bring f:32 into the window, and the pointer will instantly call for 1 (one second). Likewise, the film speed rating can be changed at any time. The automatic answer is given by the red pointer. During all this time, the position of the observer is not changed, nor is the meter removed from its original aim.

"The light is collected from the subject by the lens which is placed symmetrically about the cell axis, and the angle is further effectively limited by means of baffles or grids, situated between the lens and the cell surface. Over 45 percent of all the light comes from an angle of 10 degrees either side of the axis, and altogether 85 percent from an angle of 20 degrees on either side. Any other light beyond the total of 40 degrees at the light cone apex is of no practical influence upon the photographic exposure results.

"Temperature is of no practical influence upon meter accuracy. The PHOTOSCOP has been checked for use in tropical and polar regions as against temperature zone readings. Certain effect does take place, of course, from 32 degrees F. to 120 degrees F., but the percentages are of no photographic importance."



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HERE'S HOW

by A. S. C. Members

● At a recent meeting of the Los Angeles Cinema Club, sponsored by the Eastman Store, the following questions were a part of the evening's program. Those who answered them correctly in five minutes were given prizes.

In view of the fact that these questions proved of such great interest to those amateur movie makers present, we are publishing them in this month's Here's How together with their correct answers.

Which is faster, an f:3.5 lens or an f:1.8 lens?

The f:1.8 lens is the faster. The designation "f:1.8"—or any other speed rating of a lens using the generally-accepted "f system" is simply a convenient way of expressing the ratio between the focal length and aperture of the lens. The "f" stands for the focal length, which is always regarded as unity. Writing it this way: "1:1.8" and "1:3.5", or expressing the ratios fractionally (as some lens-makers do), as "1/1.8" and "1/3.5", it becomes quite clear which aperture would be the larger, and accordingly, since it would admit more light, the faster.

How many frames a second is considered normal speed?

For silent pictures, sixteen frames per second is the normal taking and projecting speed; for talking pictures, the standard speed is twenty-four frames per second. The sixteen-speed for silent pictures has been the standard ever since the earliest films of Edison and Lumiere, and was probably adopted as the best compromise between smoothness in the pictured action and economy in film-consumption. The talking-picture standard of 24 was adopted because a higher film-speed was needed to assure good tone quality in sound-on-film, and because of the mechanical needs of synchronizing the Vitaphone discs and the picture-film.

When a picture is taken at 8 frames per second, will the action be fast or slow when projected?

Granting that the picture is projected at the normal speed of 16 frames per second, the action in a picture made at 8 frames per second will be fast. Let us suppose that a given action really takes place in one second: if we photograph it

at normal speed, its phases will be recorded on 16 frames of film, which, when normally projected, reproduce the action on the screen in exactly one second. If we photograph this same action at a speed of 8 frames per second, however, we will only have half as many "frames" or pictures: accordingly, if we still project the film at the normal speed of 16 frames per second, the action will only take one-half a second on the screen. In other words, the movement will be twice as fast on the screen as it was in actuality.

Is it advisable to use a filter when taking close-ups?

It is not usually advisable to filter close-ups as heavily as one does long-shots or landscapes, as the heavier filters tend to lighten flesh tones objectionably. However, an Aero 1, Aero 2, or, in some cases with SuperSensitive film, a G filter will often make close-ups more pleasing.

Is it advisable to hold the camera in your hand when using a lens longer than one inch in focus?

No. Very few people have really steady nerves, or perfect muscular control; so that in spite of themselves, they cannot hold the camera absolutely firm and steady. A long-focus lens magnifies the image considerably, and, in turn, magnifies any unsteadiness in the camera or its support, which the magnification of projection again magnifies. Thus, unsteadiness which would, in a scene made with a normal one-inch lens, be so small as to be unnoticeable, would, with a two-inch or longer lens, be very unpleasant.

In photographing fast-moving objects, at what angle should the camera be pointed?

In photographing fast-moving objects, the camera should always be pointed so that the object approaches the camera at a three-quarter angle, and comes **into** the picture, rather than away from it. This is to minimize blurring. If an object moves directly across the frame at a high speed, the image cast by the lens travels across the film at a high speed—often so fast that it moves perceptibly during the time the shutter is open, resulting in a blur, rather than a well-defined image on the film. If the object approaches the camera at a three-quarter angle, this relative movement on the film is greatly reduced, and also this movement is such that any blurring is much less evident in the picture. The same is true, in so far as movement is concerned, of an object retreating from the camera at the same

angle: but a picture—still or moving—is more positive and interesting if it shows an object approaching than one showing the object receding. It is, therefore, a good plan always to have such objects coming into the picture, and to make it a rule that, the faster the object moves, the more nearly head-on it should be photographed.

What color-filter will turn blue sky blackest—red, yellow, blue, or green?

A red filter will turn a blue sky blackest. The action of any color-filter is to hold up all or part of the rays of any color other than that of the filter, in order to let other rays have a greater effect on the film. The red filter holds up virtually all of the blue rays: and as nothing is added to take their place, the blue portions of a picture (including, of course, the sky area) are naturally darkened.

If you use a red filter on a red object, will the object photograph light or dark?

Using a red filter on a red object, the object will photograph light. Just as this filter holds up the blue light, making blue objects photograph dark, it freely passes red light, making red things photograph lighter. This would not be so completely the case were the exposure not increased to compensate for the action of the filter: but, as it is, more red light than normal reaches the film, and, accordingly, the image of the red object gets more exposure than normal, and appears lighter.

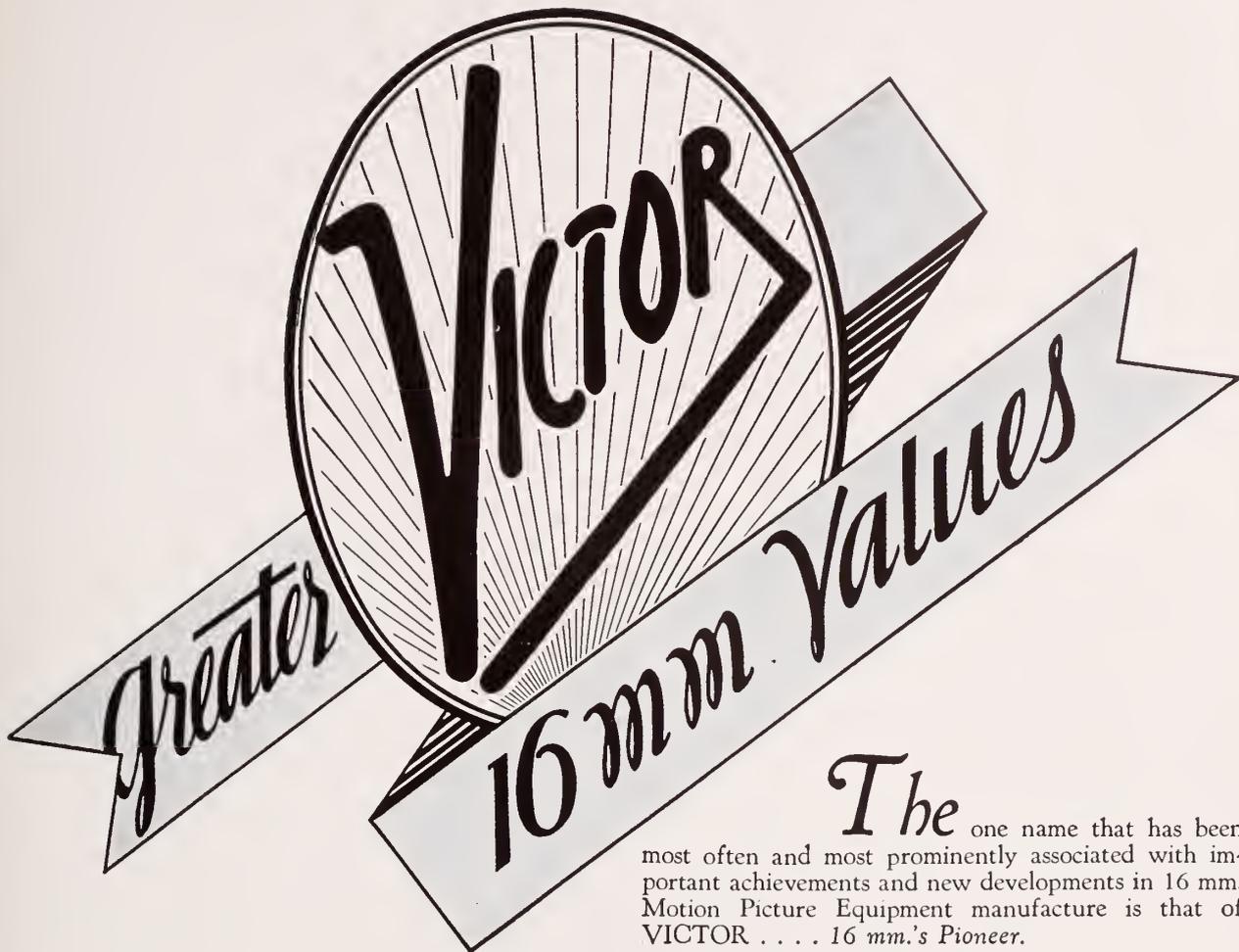
If the correct stop is f:8, and you put on a four times (4x) filter, what is the correct stop to use?

The correct stop in this case would be f:4. The filter-factor given for the filter (that is, the number of times the exposure must be increased in order to secure a normally well-exposed negative with the filter) is 4. Accordingly, the exposure must be four times greater than that given at f:8. Increasing the lens-opening one full stop doubles the exposure; accordingly, to get four times as much exposure, we must open the lens two full stops. If the original exposure is f:8, opening it up two full stops will bring us to f:4.

If at normal speed, the correct stop is f:8, what stop is correct when shooting at a speed of 32 frames per second? At 16 frames per second?

The correct stop at this speed would

Continued on Page 189



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16 mm Values

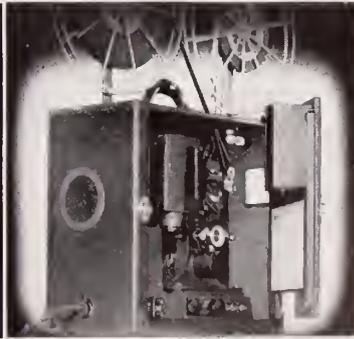
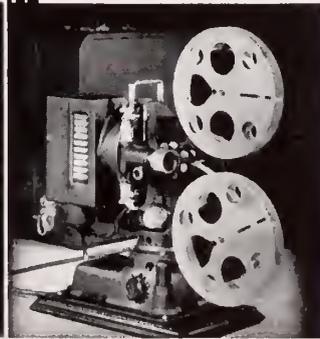
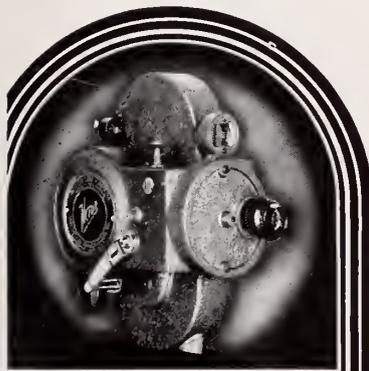
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CONTINUITY FOR FISHING FAMILIES

Continued from Page 173

to indicate early morning. Junior comes into the picture from one side, and Bobby enters from the other; both are equipped with rods and creels, and Bobby may also carry a tin bait-can. They join, and walk together toward the camera.

Scene 15. Long-shot, reverse angle from the preceding scene; the two boys are trudging down the road, away from the camera.

Scene 16. Medium long-shot. "Toughy" is shown in his yard. He is a bit larger than Junior or Bobby, and a rather rough-looking youngster. He sees something out of the picture, and walks toward it. The camera pans to follow him, and shows the road, with Junior and Bobby approaching.

Scene 17. Medium "three-shot." "Toughy" has stopped Junior and Bobby, and is insisting that they take him fishing with them. They refuse.

Scene 18. Medium long-shot. The two boys hurry off, a trifle scared. "Toughy" starts to follow them, then stops, grinning, and slips behind a tree, where he is hidden from the boys (but not from the camera) and watches them go.

Scene 19. Long-shot, at another point along the road, shot across the road. The two boys walk through the picture. A moment later, "Toughy" enters, following them, and slips behind a tree, only to dart out again, still following, but keeping concealed from Junior and Bobby.

Scene 20. Long-shot, by a lake-side. (This can be a very pictorial scenic shot.) Junior and Bobby enter (from camera right). They select a spot from which to fish, and start getting their things ready.

Scene 21. Long-shot, looking toward the lake. In the background, the two boys are getting ready to fish; in the foreground, "Toughy" (back to camera) is watching them, from behind a tree. Soon he turns away, and hurries out, toward the right of the picture.

Scene 22. Long-shot of a rubbish-heap. "Toughy" enters, and begins to rummage around for something.

Scene 23. Medium-shot of Junior and Bobby, baiting their lines.

Scene 24. Medium-shot of "Toughy," on the rubbish-heap. He picks up an old tin can, then an old boot. He looks up, grins, and hurries out, camera left.

Scene 25. Medium-shot of Junior and Bobby; they are fishing, but nothing is biting.

Scene 26. Short long-shot of "Toughy," carrying boot and can, running along the road.

Scene 27. Medium-shot (close) of

Junior and Bobby. They lay down their poles, leaving the lines in the water, and stretch out on the grass, looking up into the sky.

Scene 28. Long-shot of sky and clouds, made looking nearly straight up, as the two boys would see them.

Scene 29. Medium-shot of the two boys. One after the other, they grow drowsy, and fall asleep.

Scene 30. Close-up of "Toughy," peering from behind a tree.

Scene 31. Close-up of Junior—fast asleep.

Scene 32. Close-up of Bobby, also sleeping.

Scene 33. Medium-shot of "Toughy," as he emerges from behind the tree. He walks straight into the camera.

Scene 34. Long-shot. The two boys are stretched out on the grass, their poles still extended over the bank. "Toughy" enters, very quietly. For a moment, he looks down at the sleepers, then turns to the fish-poles. He pulls up Bobby's line, and attaches the can.

Scene 35. Close-up of "Toughy" putting the can on the hook.

Scene 36. Long-shot, same as Scene 34. "Toughy" quietly drops the line back into the water; then he picks up a good-sized rock, and ducks behind some bushes near the water's edge.

Scene 37. Medium-shot of the water, as the rock plunks down into it with a big splash.

Scene 38. Medium-shot, with camera near the boys' feet, pointed toward their heads. First one boy, then the other, jumps to a sitting position.

Scene 39. Medium long-shot. Bobby grabs his pole, sure he has a bite, and pulls in the can.

Scene 40. Close-up of "Toughy," behind the bushes, trying to subdue his laughter.

Scene 41. Long-shot, toward the lake. Bobby throws his line in again, and the two boys settle down once more.

Scene 42. Close medium-shot. The two boys again fall asleep.

Scene 43. Close-up of "Toughy," behind the bushes. He looks out, and sees that the boys are again asleep, and starts toward the camera.

Scene 44. Medium-shot. "Toughy" pulls out Junior's line, and attaches the boot. After carefully lowering it into the water, he picks up another rock—rather larger than the first—and once more hides himself.

Scene 45. Medium long-shot. The two sleeping boys are in the foreground, close to the edge of the water, with their poles hanging over the edge. The big rock comes into the picture (from the

side near "Toughy's" hiding place), and splashes into the water. If possible, have this land so that it splashes the two sleepers. Both boys jump up quickly, and Junior hurriedly reels in his line.

Scene 46. Close-shot as the boot emerges, dripping, from the water.

Scene 47. Medium-shot of Junior, as he disgustedly jerks the boot from his line, and throws it on the ground.

Scene 48. Close-up of "Toughy," laughing. Finally the joke is too much for him, and he laughs loudly.

Scene 49. Close shot of the two boys: they hear the laughter, and turn toward "Toughy's" hiding-place.

Scene 50. Medium-shot of the bushes, as "Toughy" emerges, still laughing. The two boys come up, talking angrily. Suddenly Bobby looks down and points, greatly surprised.

Scene 51. Close shot of the boot; it is flopping around as though alive.

Scene 52. Medium "three-shot" of the boys: Junior rubs his eyes, as though to make sure he isn't dreaming; Bobby pinches himself; and "Toughy" acts rather frightened.

Scene 53. Medium long-shot: Junior screws up his courage, and picks up the boot, turning it upside down.

Scene 54. Close-up of the boot: as Junior turns it upside-down, a lot of water pours out—and with it, a fine big fish!

Scene 55. Big-head close-up, panning slowly from one boy to the other. All three are amazed: "Toughy" is rather crestfallen, while Junior and Bobby are elated.

Scene 56. Long-shot. Junior and Bobby slap "Toughy" on the back, and shake his hand, thanking him for the good luck he has brought them.

Scene 57. Long-shot, looking back along the road. The three boys are walking away from the camera, arm-in-arm. FADE OUT. THE END

The only difficult shot in the picture is the one showing the boot flopping about. This can be made in stop-motion (one frame at a time) if your camera permits this sort of work. If not, it can easily be made at normal speed, moving the boot about with a black thread, which will not show. Allowing for the retakes you will probably have to make in order to get the splashing (Scenes 37 and 45) right, this continuity should require about 150 feet of 16mm film. Of course, you can add as much as you wish—Father's fishing sequence, suggested after Scene 8, a variety of scenic shots, and so on. You can also add parts for friends, or other members of your family, if you wish, while if you want to try some interiors, you can improve the picture by inserting a sequence in place of Scene 9 showing the family eating, and another shot at the end, showing the three boys gleefully consuming the fish that they have caught.

Wheels of Industry

Continued from Page 180

Note-Book for Amateurs

● The Wilshire Personal Movie Co., of Los Angeles, California, have just published a handy, pocket-size data and note-book for amateur cinematographers. Much useful information is to be found in this booklet, including such important facts as filter exposure-tables for Eastman and Agfa SuperSensitive films, Weston-meter and Scheiner speed-ratings of all popular films, general filter-factor tables, shutter-speed charts for moving objects and aerial photography, indoor exposure-guide, and the like, with thirty pages arranged for use as a note-book for recording full technical data regarding still, miniature-camera or cine pictures.

B. & H. 16mm Sound Library

● Bell & Howell Company announces the establishment of a 16mm sound-on-film rental library with branches already opened in various key cities of the country.

Fully a hundred 400-foot reels from Educational Film Corporation and other producers are now available in the library. In addition to such popular informative pictures as "Krakatoa," spectacular submarine volcano three-reeler, is the Erpi educational series with subjects on acoustics, energy, etc.; also beautiful presentations of outstanding operas, including "Carmen," "Faust," and "Martha;" a fine array of travel subjects; rollicking comedies; and a large variety of well-selected miscellanies.

Prominent in the library listings will be what is called a series of Feature Lecture Films, including five subjects in which the voice of the well-known explorer, Rev. Bernard Hubbard, will be heard describing his Popular Alaskan pictures. In this same series the voice of A. M. Bailey, director of The Chicago Academy of Sciences, will be heard in an interesting running commentary of his movies of "Wild Life Over the Gulf of Mexico;" also in a similar manner, Richard Finnie, the dashing young Arctic adventurer, will describe his popular picture "Among the Igloo Dwellers." Major Sawders will likewise be heard accompanying his "Republics in the Clouds"—a really remarkable motion picture of the little known countries of Bolivia, Peru, and Ecuador.

The name of the library is the Bell & Howell Filmosound Rental Library. H. A. Spanuth, who helped build up the company's silent film library, is in active charge. Already branch libraries have been established in Altoona, Pa.; Denver; Washington, D.C.; Wilmington, Delaware; Baltimore; New York; Philadelphia; Providence, Rhode Island; Chicago; San Francisco; and Hollywood.

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What's New in 16mm Negative-Positive

Continued from Page 172

speaking, takes 16mm negative development out of the dark-room: aside from the initial operation of loading the reel and placing it in the tank, which must of course, take place in the dark (only dark closet will suffice for this, however), every other operation can be conducted in full light, just as with the familiar developing tanks used for miniature-camera developing. This at once opens the field of 16mm negative developing to the average amateur. But there are still further advantages in this system: it requires smaller quantities of solutions than any other outfit with a similar capacity, and also provides for thorough agitation, which materially reduces the developing-time, and improves the quality and evenness of the result. As will be seen from the illustration, the cover of the tank is provided with a crank, while the tank itself has two small legs on one side. When the film and apron are threaded on the reel, and placed in the tank, the solutions are poured into the tank through the light-tight opening in the center of the cover. The full capacity of the tank is approximately 28 ounces; but normally only 16 to 18 ounces of any solution are necessary. This is possible because the tank is placed upright, standing on edge, supported by the rim of the cover and the two small legs referred to. In this position, only the lower third of the tank is filled with the solution, which is distributed uniformly over the film by rotating the film and reel, by slowly turning the crank.

A rate of approximately two turns per second is sufficient: more, in fact, would probably be undesirable. This provides the agitation so important in really good developing, resulting in a decided improvement in quality and grain, and reducing the developing time considerably: between 40% and 50%; according to the manufacturer. If, for example, you are using a solution which normally requires a 12-minute development, this agitation would permit you to secure identical density with better quality, in only six or seven minutes. It is by no means difficult to crank the film in this manner, as this writer can testify from personal experience in the course of tests made with the Roto-Tank.

For commercial installation, a small electric motor-agitator is being designed. It is, of course, also possible to fill the tank full, and agitate merely by giving

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the crank an occasional turn; but this is not recommended, as it does not, naturally, give such thorough agitation, and hence, neither improves the quality nor alters the normal developing time. The Roto-Tank is at present made in but one size, adaptable for either 25 feet of standard film, or 50 feet of 16mm by an adjustable reel, and the use of aprons of the proper width. It is quite possible, however, once one is accustomed to threading the apron, to develop two 50-foot lengths of film simultaneously, back to back, as many miniature-camera enthusiasts do. In this manner, two tumblers of developer will develop a full hundred feet of film—in contrast to the full gallon required to develop the same footage with conventional apparatus.

A further advantage offered by this system is the fact that with it, the individual amateur need not compound his own solutions, as the inexpensive, prepared diamine-type fine-grain developers sold for miniature-camera developing will serve his purpose excellently. The "Universal" developer of this type, prepared in 16-ounce bottles, is excellent, as is also the "Baratal," (a barax-type, I believe) which is dry, and sold in small tubes, ready to be added to the desired amount of water. If one wishes to prepare his own solutions, however, the following are recommended:

Paraphenylene-Diamine-Glycin Developer

(For normal exposure)

Paraphenylene-Diamine10 grams
Sodium Sulphite90 grams
Glycin1 gram
Water to make1 liter
Normal development time: 22 minutes at 68° F.

For the very finest grain, with good contrast, but demanding **double** normal exposure (i.e., one full stop larger than normal aperture):

Paraphenylene-Diamine Developer

Paraphenylene-Diamine67½ grains
Sodium Sulphite (E.K.Ca.)...93¾ grains
Water to16 ounces
Normal development time: 30 minutes at 68° F.

Using the Roto-Tank with these solutions, the respective developing times would be reduced to approximately 11 minutes for the Paraphenylene-Diamine-Glycin formula; and approximately 15 minutes for the straight Paraphenylene-Diamine solution.

Projection Control

Authored by William Martensen, the Camera Craft Publishing Company have issued a compilation of articles written by the author on the subject of "Projection Control."

Mr. Martensen's work is too well known to go into minute detail as to its value to the reader. He is among the foremost photographers in America and anything emanating from his pen is worth consideration.

This book is profusely illustrated with halftones demonstrating the subject covered by the author. It is a 32-page book, paper-covered and printed on good coated stock.

Period Costumes

• A book that might prove valuable to those in the studios having to research for authentic costuming, etc., might be found in the publication recently issued by the Studio Publications Inc. and which sells for \$4.50 in cloth and \$3.50 in paper, under the title of "Elizabethan Pageantry" with a subtitle "A pictorial survey of costume 1560-1620."

In addition to halftone illustrations of the various costumes, it also has much historical information that will undoubtedly prove of value to those active in research work. Its glossary alone is a fine compendium of information.

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Using Camera Speeds Efficiently

Continued from Page 178

always shoot "foot chases"—that is, people running on foot, at 12, or even 10. The same is true of many types of action with automobiles — chases, skids, and the like. What we call "Wire Gags"—that is, action which we could not well stage normally, and which we "direct" by means of invisible wires which pull the subject through its required action—are almost always filmed at speeds ranging from 12 or 14 down to as low as 6 frames per second.

And here comes a point the non-professional filmer rarely thinks of: speed-changes during a scene. This is quite possible with most 16mm. cameras, since the speed-control acts on the governor, rather than by shifting gears. On the Filma and Cine-Kodak "Special," it is quite easy, once you've had a bit of practice, to change speeds during a scene, though of course you should (as always!) use the camera on a tripod. With the Victor camera, you can get a surprising range of speeds by altering the pressure on the release-button: a light touch giving a slow speed, and harder pressure bringing the speed up to the full indicated speed. For minor speed-changes, the latitude of reversal film and its processing (especially when photo-cell-controlled flasher lights are used in the laboratory) will take care of the changed exposure; but for more extensive changes, you will have to compensate with diaphragm (or stop), or (in the C-K "Special") by altering the shutter-opening. This is quite a trick—but practice makes perfect! It will be much easier if you fix a removable pin-arm onto the speed-change knob, and the diaphragm control, as well.

But—how to use this idea! In timing comedies, we almost invariably use such speed-changes, especially to speed action that doesn't mean much, but yet can't be eliminated. Suppose, for instance, a man is to tie or loosen his necktie between more important action: we would, in the silent days, shoot the scene itself at 16; then, when we came to this particular bit of action, we would quickly drop the speed to about 12, speeding up to 16 again as soon as more important action began. And, for the same reason, a scene that was physically unimportant, yet dramatically necessary—such as a character walking across a set, we would shoot entirely at 14 or even 12. Often we drop the speed to add "punch" to thrill action, such as skids, fights, and the like. With a little practice, you can, in filming, say, a fight, shoot most of it at normal speed, and then, when the knockout blow is struck, drop your speed to 12 or 14, just during that one blow, and make the blow seem much faster and harder than could be done otherwise. Similarly, suppose we are starting a chase, with Andy Clyde com-

ing out of a house, getting into a car, and dashing away: we shoot the scene at normal speed up to the time he gets into the car, and then drop the speed, so the car starts off much faster than normal. The reverse is also true, of course: we can bring a car into the picture fast, by "undercranking," and then speed the camera to 16 as Andy gets out, so that the rest of the action is normal.

Another thing to remember is that since the speed control works on the governor of most 16mm. cameras, you can, if necessary, use settings between the marked speeds, and get speeds about half-way between those indicated: half-way between the "16" and "12" calibrations, for example, should give you approximately 14, and so on.

Frankly, I don't know of anything that would be so helpful to amateur pictures as more extensive use of speed changes, for it would pep up many an otherwise draggy scene. And it is surprisingly easy to do. However, take time to practice a bit beforehand, so that, when you do the trick with film in the camera, you can be sure you've got the hang of it!

Cinetricks

Continued from Page 175

in between two pieces of optical glass are available in a wide range of colors and densities, so go to it.

With plenachrome and verichrome now available in 16mm as well as packs and rolls, the amateur can make up his own "album" of colors as they are rendered thru various filters by making test shots with his still camera using the desired film, and refer to this in his movie making.

Consider this scheme: a color album of say, about fifty colors and hues, using panchromatic stock. Another album of the same colors thru various filters. Still another using plenachrome. Using the desired stock in your still camera, lay a number of small pieces of colored paper (either printed or hand colored) on the floor and take a snapshot of them with first one filter, then the next. Preserve a scrap of each colored paper and paste it in the album so you'll know how it photographed under the given filter condition. Then, use another film stock in your still camera and make same more test shots.

If you will spend the time in making up these color albums, some of these days you will suddenly feel the urge to film something like the "Invisible Man," and you will discover the fine aid the color album will lend in picking out colors and filters which will make visible objects invisible to the film. And then is where the fun will start! Once the trick color absorption bug bites, there is no stopping until the poorhouse comes into view!!

Since I myself have a rather limited working knowledge of what various filters will do, I must refer you to the works of others, or, better still, to your own experiments. No matter how much you may learn of filters through reading, your own work will be even more interesting, and as far as you are concerned, more practical. So make up your color albums, and go to it!!

HERE'S HOW

Continued from Page 182

be f:5.6. The normal speed is 16 frames per second; at this speed, the average 16mm. cine-camera gives each frame an exposure of approximately 1/25 second. At 32 frames per second (exactly double the normal 16-frame speed) each frame would be getting only half the exposure it got at normal speed—approximately 1/50 second. To compensate for this, we must open the lens enough to let in twice as much light as was needed for a normal exposure at 1/25 second. Since each full stop lets in twice as much light as the next lower stop, we would, if our normal scene was correctly exposed at f:8, open the lens to the next larger stop, at f:5.6, for our scene made at 32-frame speed.

Should you panoram normally from left to right or from right to left?

One should normally panoram from left to right, as it is much easier to follow. In viewing any picture, our eyes invariably begin at the lower left-hand corner, and travel diagonally upward toward the upper right-hand corner. Hence, if we panoram from left to right, we are working with, rather than against, this natural reaction—and the scene is much more pleasant to view.

What is the focal length of the average or normal lens on a 16mm. camera?

The normal lens on a 16mm. camera is of 1 inch (25mm.) focus. This was chosen because, under average projection conditions, a picture made with a one-inch lens gives the closest approximation of the perspective seen in actually viewing the object. It corresponds quite closely to the normal perspective of the average eye. For the same reason, a 2-inch (50mm.) lens is regarded as normal for standard 35mm. films, and a one-half inch (12.5mm.) lens for 8mm. pictures.

If you use a 1-inch lens and then a 3-inch lens, which will show the objects the largest?

The three-inch lens. As the focal length increases, the angle shown in the picture decreases, and accordingly, the picture-size of any given object increases. Considering the image-size of a 1-

Next month, suppose we gather up all of the CINETRICKS and put them all into one concluding article. And, if other tricks not mentioned so far can be worked in, they will be mentioned along with what we've already reviewed. So, until next month and the last chapter, let's dig out the other three articles and see what can be done to consolidate the tricks.

inch lens as normal, a three-inch lens will give an image of any given object three times as large as the image of the same object given by a one-inch lens (provided, of course, that the relative positions of camera and subject remain constant); in other words, a three-times magnification.

Which lens will give the widest field: a 1-inch lens, or a 4-inch lens?

As will be noted from the answer to the last question, as the focal length of lenses increases, the angle included in the picture decreases; accordingly, the longer the focal length, the narrower the field of the lens. Hence, the 1-inch lens will give the widest field—nearly four times as wide as the field of the four-inch lens.

Backyard Movies

Continued from Page 179

Be sure that you have enough front-light on the glass to make the white letters stand out—but take care that there are no reflections from the glass itself. Focus the lens on the title, so that the wording is sharp; it does not matter if the background-action is a bit out of focus—in fact, it may even be better.

For the sub-titles, use the pages of the album, having the page turn (or drop down) at the start of each title, to give the effect of someone looking through the book. Each title should fade out.

Sometimes it will be possible to insert a snapshot of the person being introduced, on the title-page introducing him.

Almost any type of subject can be presented this way; however, in planning such an album-film, it is well to select action which is most characteristic of your character. And since it is a "Family Album," at least one close-up of each character should be shown.

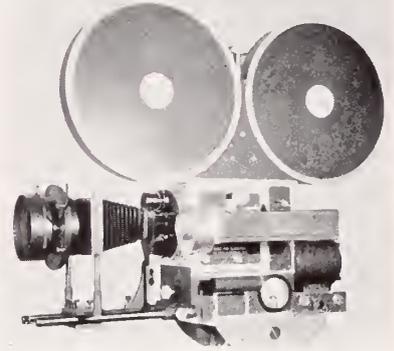
If you care to, you can easily plan such a film, making your family shots in such a way that they will automatically fit into your album-film. And if you want to deliberately set out to make an album-film which will really carry out the idea, why not raid the trunks up in the attic, dig out some of the old clothes

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that are packed away in the mothballs, and make several album sequences in the Mae Westian, "Gay Nineties" style? It will be fun to film these sequences—and more fun to watch them unfold from your film album on the screen!

W. R. ANDERSON,
Salt Lake City, Utah.

Photography For Fun

● What seems to be a very interesting little book on photography is just off the press of the Leisure League of America located in Rockefeller Plaza, New York City. It has been given the title, *Photography For Fun*.

It is a paper-covered book of 100 pages and sells for 25c. A good quality of coated paper has been used giving fine values to the photographic reproductions.

This booklet covers such subjects as: "Why Take Pictures?", "How to Learn Photography," "What Kind of Equipment Do I Need?", "What to Take Pictures Of," "Out of the Drugstore Class," "Let's Make Some Prints," and "Mistakes and How to Make Them."

Take a Tip from a Professional

● To the observant cinemateur, the neighborhood movie theatre can be a wonderful classroom for the study of cinematography. Keep your eyes open and see how many hints you can get from the way professional cinematographers do things!

For instance — makers of travel-films will find a useful idea in "Grand Canary," which was photographed by Bert Glennon, A.S.C. The early part of the story takes place on a liner steaming from England to the Canary Islands. It is necessary, from time to time, to put over the idea of the ship's progress from one port-of-call to another. This is cleverly done in a very effective double-exposed shot. The background is a shot from the deck of the ship, showing a section of the bulwarks, and the heaving sea passing in the distance. The second exposure is an insert of a map, with a line indicating the course of the ship. This type of shot can be made during the voyage, and will furnish diversion for the shipboard hours. All you need is a camera, a changing-bag (which should be a part of every traveler's equipment!) and a filter. You make the background shot normally, slightly underexposing. Then slip the camera into the changing-bag, and rewind the film. Next, slip a map of your course into the titler, and make your second exposure. You can get quite a variety of effects by balancing the two exposures — making either the map of

the background show up more clearly, or keeping them uniform.

Several of the shots in "Viva Villa," photographed by James Wong Howe, A.S.C., and Charles G. Clarke, A.S.C., will also prove instructive. Many of the exteriors were made early in the morning or late in the afternoon, to take advantage of the long, picturesque shadows. For instance, study the scenes where "Villa's" rag-tag army is mobilizing in the desert — and note how much these long shadows contribute to the pictorial effect. Another interesting shot in the same picture shows "Villa's" charros crossing a bridge, and then passing down into the gully beneath. The shot shows them crossing the bridge: then, they pass out of the picture, and their progress down to the gully is shown only by their moving shadows which fall on the stone abutment of the bridge. Once down in the gully, they again enter the picture. Throughout the shot, the camera remains stationary: but the scene is told as graphically as though the camera had been "panned" around to follow every bit of action. KARL HALE.

Agfa Panchromatic Negative

● Last month, in the *Wheels of Industry* page we announced a new 16mm negative by Agfa. We should have reported this as Panchromatic instead of Plenachrome as stated.

This negative is fully Panchromatic. Agfa is also offering a developing and printing service with this negative. This developing and printing service is a separate transaction and is not included in the purchase price of the film as is the custom with the reversal film.

No Russian Amateurs

● According to "Cine Amateur," a French publication, there are no amateur cine users in Russia. This publication goes further and claims there are no amateur still photographers in that country. The reason for this is that equipment is practically unobtainable and there are no facilities for processing.

Flexible Mirror

● Rumors reach us of a flexible mirror being experimented with by a Hollywood chemist. It is claimed this mirror presents a surface just as smooth as any glass mirror and is practically unbreakable. It is waterproof but not fireproof. It is a cellulose product and in appearance resembles a sheet of celluloid with a silver backing.

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Volume XV September, 1934 Number 5

What to Read

HOW We Made the Invisible Man by John P. Fulton.....	200
CHINA Photographically Ideal by Charles G. Clarke, A.S.C.....	202
RIDDLE Me This by A.S.C. Members.....	203
JUST What is "Mantoge"? by Karl Freund, A.S.C.....	204
SPECIAL Laboratory for Transparencies by A. Forciat Edauort, A.S.C.....	205
PHOTOGRAPHY of the Month.....	206

Next Month

- J. A. Dubray, A.S.C., will explain the intricacies of Chemical Focus. After reading this you may understand how a filter can throw a picture out of focus if the lens is not color-corrected.
- Aerial Problems and Practice will be discussed and explained by Chos. Morsholl, A.S.C.
- Karl Struss, A.S.C., will discuss the relation of modernism in photography and cinematography.



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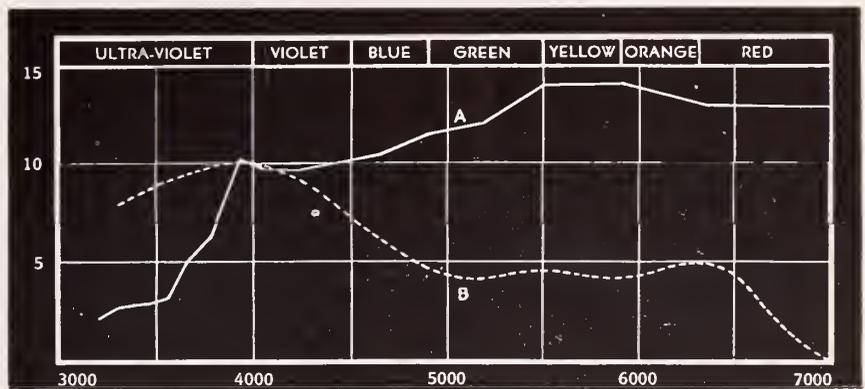
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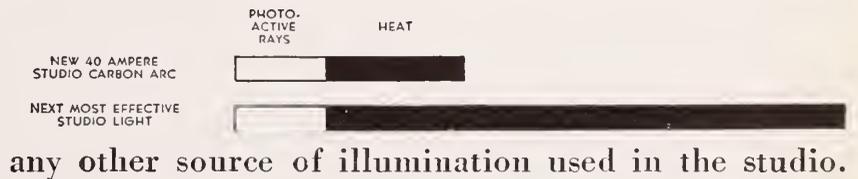
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Upper shot was superimposed over lower scene in printer. Method of doing this is explained in this article.

ABOUT a year ago, I was given the script of a picture adapted from H. G. Wells' novel, "The Invisible Man." It bristled with difficult special-process scenes, and I wondered if, even with our modern special-process technique, we could possibly make all of the amazing scenes called for. But after more than four months of intensive work, the picture was completed—so successfully that even experienced trick-camera technicians have asked me how in the world we obtained our effects—and, in retrospect, it seems surprisingly simple.

The story is quite well known: it tells of a young scientist who accidentally discovers a chemical which makes him completely invisible. Frightened by his invisibility, he swathes himself in concealing bandages, and flees to a small-town inn, where he sets up a laboratory and searches feverishly for an antidote until his secret is discovered by the villagers. Then he is hunted down, and finally is captured and dies; in the moment before dissolution, the effect of the drug wears off, and he slowly returns to his normal condition.

To say the least, this is a challenge to a special-effects technician! For not only are there sequences in the film in which the man, nude, is entirely invisible, but there are many in which he is seen partly clothed—a suit, a shirt, or a pair of pyjamas moving, apparently unsupported, about a room; and in yet other scenes, he is shown unwrapping the bandages from his head, and slowly revealing his invisibility.

The scenes in which he is totally invisible are, of course, very simple, for anything he may move about, such as furniture, books, a bicycle, and so on, could be moved by

How We

fine wires, invisible to the camera, and thereby give us exactly the right effect.

But the scenes in which our man was partly clothed, with all his unclothed parts invisible, presented more of a problem. The wire technique could not be used, for the clothes would look empty, and would hardly move naturally. So we had recourse to multiple-printing—with variations. Most of these scenes involved other, normal characters, so we photographed these scenes in the normal manner, but without any trace of the invisible man. All of the action, of course, had to be carefully timed, as in any sort of double-exposure work. This negative was then developed in the normal manner.

Then the special-process work began. We used a completely black set—walled and floored with black velvet, to be as nearly non-reflective as possible. Our actor was garbed from head to foot in black velvet tights, with black gloves, and a black headpiece rather like a diver's helmet. Over this, he wore whatever clothes might be required. This gave us a picture of the unsupported clothes moving around on a dead black field. From this negative, we made a print, and a duplicate negative, which we intensified to serve as mattes for printing. Then, with an ordinary printer, we proceeded to make our composite: first we printed from the positive of the background and normal action, using the intensified, negative matte to mask off the area where our invisible man's clothing was to move. Then we printed again, using the positive matte to shield the already printed area, and printing in the moving clothes from our "trick" negative. This printing operation made our duplicate, composite negative to be used in printing the final master-prints of the picture.

The chief difficulty we encountered in these scenes was not primarily photographic, but had to do with acting and direction—getting the player to move naturally, yet in a manner which did not present, for example, an open sleeve-end to the camera. This required endless rehearsal, endless patience—and many "takes." In many scenes, too, we had to figure out ways of getting natural-looking movement without having our "invisible" actor pass his hands in front of himself.

In several sequences, the player had to be shown unwrapping the concealing bandages from about his head; and in another, pulling off a false nose, revealing the absolute emptiness of the head-swathings, the back of which showed through when the nose was removed. This latter scene was made by using a dummy, an exact replica of the player's make-up, and with a chest ingeniously contrived to move as though breathing. The unwrapping action was handled in the same fashion as the other half-clad scenes—that is, by multiple printing with travelling mattes. Here, again, we had considerable trouble in getting the actor to move naturally, yet without ever passing his hands in front of himself. In some of these scenes, it was possible to leave small eye-holes in the helmet, through which the player could see; but in others—especially the close shots of the unwrapping action—this was impossible, and the player had to work "blind." Air had to be supplied through tubes, as in a diving-suit—but the tubes were concealed, usually

Made the Invisible Man

by
John P. Fulton

running up a trouser-leg. On at least one occasion, either the air-supply failed, or the midsummer heat (aided, of course, by the heat of the lamps) overcame the player and he fainted in the middle of a scene. Had he not been in splendid physical condition, I doubt if he could have survived the strenuous ordeal of working in such a costume, under such conditions.

In nearly all of these scenes, though they were made silent, it was difficult—sometimes impossible—to direct the actor, for the helmet muffled the sound from outside, and the air-tubes made a roaring rumble in his ears, which drowned out any sounds which might filter through the padding. When I used a large megaphone, and shouted at the top of my voice, he could just barely hear a faint murmur! Accordingly, we had to rehearse and rehearse—and then make many "takes"; as a rule, by "Take 20" of any such scene, we felt ourselves merely well started toward getting our shot!

The two principal difficulties, photographically speaking, were matching up the lighting on the visible parts of my shot with the general lighting used by Arthur Edson, A.S.C., for the normal parts of the picture; and eliminating the various little imperfections—such as the eye-holes, etc.—which were naturally picked up by the camera. This latter was done by retouching the film—frame by frame—with a brush and opaque dye. We photographed thousands of feet of film in the many "takes" of the different scenes, and approximately 4,000 feet of film received individual hand-work treatment in some degree, making approximately 64,000 frames which were individually retouched in this manner!

One of the later sequences of the picture showed the flight of the invisible man across the snow, his movements being traced by the appearance of footprints in the snow. As other actors appeared in these shots, we could not make the footprints appear by using "stop-motion," so instead we dug a trench along the line where we wanted the footprints, and covered the trench with a board, in which the footprints had been cut. The footprint-openings were filled with the wooden outlines which had been cut to make the footprints: these were supported by pegs extending to the

bottom of the trench, and a rope was looped around the pegs, so that pulling upon it would pull out the pegs, and cause the outlines to drop away from the board. The board was then covered with the snow-material; and as we shot the scene, we pulled on the rope, pulling out the pegs, and causing the snow to drop down through the holes, giving us perfect footprints.

Another scene that was difficult was one in which the invisible man unwrapped the bandages from his head before a mirror: the shot had to show the man himself (from the rear) and his reflection in the mirror. Ordinarily, this would be simple enough—but when you add to it the difficulties incident to showing the unwrapping of an invisible head, you have some rather complicated problems to solve! This required the making of four separate "takes," which were combined, by the travelling-matte printing system already outlined, into a single picture. First, there was the shot of the wall and the mirror, with the mirror itself masked out by black velvet; next, a separate shot of the opposite wall of the room, as reflected in the mirror; thirdly, the shot of the invisible man, from the rear, unwrapping his bandages; and lastly, the reflection of him, from the front, doing the same act. All of these had to be perfectly coordinated—matched in viewpoint, perspective and action to a fraction of an inch. Several of the negatives required hand-retouching; and last—but by no means least—the action had to be figured out so that the hands of the actor did not pass between himself and the camera, or between the "reflection" and the camera. It was as difficult a shot as I have ever made.

The final shots of the picture were also interesting—and difficult. The invisible man is shown in a hospital bed, dying; and as he dies, the effect of the drug slowly vanishes,

Continued on Page 214



Another scene from "The Invisible Man." This is a dummy. Lower photo shows man removing his nose.

China Photographically Ideal

by

Charles G. Clarke, A. S. C.



Charles G. Clarke, A.S.C.

FROM A purely photographic viewpoint, China is an ideal location for the cinematographer. For in addition to the always picturesque countryside and people, the climate and atmosphere are uncommonly favorable. Surprisingly enough, I found the light-conditions very like those I encountered in Mexico, where I made "Vivo Villa." The air was very clear, but with, as a rule, good clouds for pictorial uses (it rained a little almost every day!), and there was a peculiar quality to the atmosphere which, without the use of filters, gave us color-corrected effects which would normally demand the use of filters. For example, many of the scenes I made (both in China and Mexico) appear on the screen as though I had used, say, an Aero 2 Filter—yet they were made absolutely unfiltered. Similarly, many scenes which, on the screen, appear as though I had used a red filter—such as the 23-A—were made with only an Aero filter. In both instances, I decided to utilize this natural atmospheric correction, rather than to make any attempt to counteract it and get what we would term more normal results.

Aside from this characteristic, the light evidenced the same peculiarity often noticed at high altitudes, and which Clyde De Vinna, A.S.C., commented upon encountering in Africa: extreme contrast, with very little power to penetrate into shadows. This is strange, for we did not work at any high altitudes, as China is a relatively flat land; none the less, we found that without the aid of reflectors or "booster" lights, there was always the danger of getting an unpleasant "soot-and-whitewash" effect—especially during the middle of the day. I found the guidance of my Weston exposure-meter invaluable in coping with these unusual light-conditions; I can heartily recommend that all cinematographers working on unfamiliar locations make such a device a part of their equipment—and use it religiously. I also found that personal 16mm movies, which I shot before our permits for standard-film shooting were issued, gave me another valuable guidance in both instances.

Our group, aside from myself and my camera-crew, consisted of Director George Hill (himself a former A.S.C. member), Art-Director Alexander Taluboff, representatives of the studio Property and "Grip" departments, and an expert from the studio Laboratory. In China, we made the studio of Wm. H. Jansen, A.S.C., our base of operations, installing our laboratory-expert to supervise the processing

of our film in the plant. In addition, we were fortunate in being able to add to our staff H. S. "Newsreel" Wong, whose cooperation proved invaluable to us. Wong is a native Chinese, and staff representative in Shanghai for the Fox Movietone News. He is an excellent cinematographer, and, best of all, an Oriental who understands the viewpoint and methods of American cinematographers. Whatever sound-effects were needed, we recorded with Wang's Movietone equipment; but as most of our work was photographing backgrounds, atmospheric and mob shots, to be used in connection with studio-mode action, we were able to make the greater part of our film silent. Our equipment consisted of Standard Bell & Howell cameras, with an Eyemo for special "candid camera" shots, and, in addition, my 16mm Filmo, my 4x5 Groflex, and my Stereo camera. Thus organized—and abundantly equipped—we roved over a great part of China in search of the material we needed, penetrating to many regions utterly unknown to the average tourist.

The first necessity was, of course, to secure the requisite Government cooperation and permits. This proved a slow and involved process; the Chinese have so repeatedly been misrepresented in both American and European films that they have, quite justifiably, come to have a profound mistrust of motion picture people. This has not in the least been lessened by the behavior of certain unscrupulous individuals who, though unknown in the actual film-production centers, represent themselves as affiliated with the industry, and have succeeded in too many instances in giving legitimate cinematographers and film folk an evil reputation in the far-oway parts of the world.

For three months, we did not so much as unpack our cameras, while we waited for the decision of the officials. In the end, it was, strongly enough, a movie which gave us our permits! One night, Marshal Chong Kai-Shek, the Dictator of the Central Government, amused himself by going to the cinema, where he saw a film of the "Dr. Fu-Monchu" school, in which the Chinese were represented as the sinister villains so dear to the writers of lurid fiction. That decided His Excellency! If our group, who wished to

Continued on Page 211



RIDDLE

ME THIS

The Riddle: Would you consider it an advantage to have a smaller, more compact and portable dimmer for dimming individual lamps when making effect-lightings and moving-shots? Also, what improvements could be made in the means of controlling light-intensity in such cases?

JEROME H. ASH, A.S.C.: If such a device could be made available without being prohibitively expensive, it would be a wonderful advantage in many instances. For example, in making visionary shots by reflection, such control would be a very great aid to the cinematographer. It would seem possible that individual dimmers could be developed along the lines of the small ones used in household lighting, enlarged only enough to stand the higher load imposed by studio lights.

KARL STRUSS, A.S.C.: Individual dimming is often vitally necessary; for example, suppose we have a travelling-shot in which we move from a close-up to a long-shot (or vice-versa), especially in a big set. Most of the front light upon the people must come from units placed on the perambulator with the camera, and unless we are able to dim these lights individually as we approach the player, we cannot preserve the balance and quality modern cinematography demands. Naturally, a more compact dimmer would be invaluable in such circumstances.

WILLIAM A. REES, A.S.C.: I use dimmers constantly—especially to control individual lamps in shots where the camera must move away from a player, as in a scene that begins with the player seated, and ends with him standing. I would greatly appreciate a smaller, handier and more portable dimmer: the present unit is about two feet square, and weighs approximately seventy-five pounds; it would certainly seem both possible and advisable to evolve a smaller and more efficient unit.

M. A. ANDERSEN, A.S.C.: I'd certainly appreciate a smaller, more portable dimmer for such work. Where you have to work quickly, and still get good photography and lighting effects, such a dimmer would be invaluable.

RAY JUNE, A.S.C.: I very frequently use a dimmer to control one or two lamps—for example, when a player must enter from a closed door: if the amount of front light necessary to properly illumine the player were concentrated on the closed door, the door would be badly overlit; the dimmer solves the problem excellently. Of course, if a smaller and handier dimmer could be had, it would be a great advantage in such shots.

WALTER STROHM (Head of Electrical Dept., United Artists Studio): A more compact dimmer for use with only

one or two lights would certainly be useful. However, the idea of dimming lights by a voltage-reducing resistance suffers from the disadvantage that as the voltage drops the color-temperature of the lights is altered, growing progressively redder, until it is soan of little photographic value. I have for some time felt that the problem could be better solved by use of lamp-globes fitted with multi-plane filaments, and wired in connection with a rheostat so that, for a low intensity, but a single filament would be used—but at its full strength, giving normal color-emission—while the higher intensities would be obtained by gradually bringing into use the supplementary filaments.

PETER MOLE (Mole-Richardson, Inc.): Smaller dimmers could be built, and be quite satisfactory from an engineering standpoint; but it is questionable whether they would be adequately sturdy to stand up under the hard knocks of studio use. There are a number of methods by which such a device could be made—as a laboratory experiment; but designing one sturdy enough for regular use is a difficult problem. We are working on the problem, however. The situation would be greatly helped, from the design standpoint, if studio lighting were handled more like stage lighting, that is, as at least a semi-permanent installation, controlled from a central switchboard on the stage.

VERNON L. WALKER, A.S.C.: Such a dimmer would be very useful in special-process work.

CHARLES G. CLARKE, A.S.C.: For my own use, I don't see much use for such a device, as we already have a wide

Continued on Page 213



Lamp referred to by Charles Rosher, A.S.C. The operator's left hand controls the intensity of the beam, and the paddle used in his right hand shades the subject for modeling purposes. The lamp may be used on the floor, or attached to camera or perambulator.

Just What Is "Montage"?

by
Karl Freund, A. S. C.



Karl
Freund
A.S.C.

THE WORD "Montage" is probably the most moligned—and certainly the least understood—of any used by English-speaking film-people. Here in America we speak (approvingly and otherwise) of the "Montage" technique of the Russian films, or comment upon the "Montage sequences" and "Montage shots" in this film or that. But very few of us have a really clear mental picture of what the word means—and fewer yet could define it, if asked.

Actually, "Montage" is nothing new; neither is it a Russian invention. The word itself is simply the French word for "editing" or "assembling," and the Russian technique to which it is modernly applied is simply a utilization of the basic principles of silent-film technique adapted to suit the peculiar needs of the Russian Directors, Cinematographers and Producers.

In the early days of the cinema, it will be remembered, France led the world in both the Art and the Technique of making moving pictures. Up to the year 1914, French Directors and Cinematographers reigned supreme in almost every country, and (especially in continental Europe) they took their terminology with them. One of these words was "Montage," which literally means "assembling," and which they used as we use the words "cutting" or "editing." The word is used in that sense throughout most of Europe, even today.

After the war, though France never regained her lost cinematic prestige, the term "Montage" took on a new significance. The Russian film industry revived under the Soviets, and startled the world with a new and virile technique. Especially in the hands of Eisenstein, this technique was expressed by a bewildering use of cutting. Dazzling effects were gained by artful inter-cutting of extremely short scenes—"flashes," as we say in Hollywood; but Eisenstein reduced these flashes to scenes far shorter than anything previously attempted. Instead of measuring his scenes in meters or feet, he often measured them by frames. In his scripts one can frequently see scenes bearing such notations as "27 frames long"; "9 frames"; "6 frames in length"—and some scenes have contained but three frames! Eisenstein, himself, regarded the technique as principally, if not exclusively, a matter of cutting; hence, when asked about it, he described it as "Montage"—which was simply the word used in the Russian studios to indicate cutting or editing. And so the word "Montage" took on a new meaning.

It is in this newer sense that the American studios have adopted the expression. In our adaptation of the Eisenstein technique, we have added to it the use of mul-

tiply printing, optical printing, and the like, so, accordingly, we have "Montage sequences" and "Montage shots." As the execution of such effects is almost invariably entrusted to Special Effects specialists, "Montage" has come to be regarded definitely as a special photographic effect, and, as such, rather a mystery to the majority of film people, technicians and artists alike.

The Russian Montage technique was not evolved as one attempt to create a new art-form, but grew out of the necessity of overcoming the two greatest obstacles that lay in the path of the early Soviet film-workers. The technique is based on principles established largely by such American film-pioneers as D. W. Griffith, and known and practiced universally in making silent pictures.

It was this writer's good fortune, when working in Germany, to come in rather intimate contact with most of the Russian Directors and Cinematographers during the formative years of the Soviet film-industry, for they regarded the German studios as both their base of supplies and their teacher.

In Russia the motion picture has had to appeal to an audience numbered in the hundreds of millions, 90% of which was at the start completely illiterate—and who spoke several hundred different languages and dialects. Accordingly, the Russian cinema had from the beginning to be completely visual in its appeal. The story had to be told visually—with the camera—or not at all. In silent films, titles had to be held to the minimum, if not utterly eliminated; and even in sound-films, the dialog had to remain purely on auxiliary to the visual.

The second obstacle, which, in my mind, was even more truly the cause of the Montage technique, was the early poverty of the Government—and accordingly, of its film branch. Eisenstein and Pudavkin have both told me that when the Soviet Film Trust was first formed, there was not only little or no equipment with which to work, but there was actually no money with which to buy film! When at last some money was available, there was very little of it; so the Soviet Cameramen and Directors would send down to Berlin to buy "short ends" from the German studios—little bits of five, ten and fifteen feet of film left in the camera-magazines after we had made our scenes. Rarely did they have the good luck to obtain more than twenty feet of film in a single piece; naturally, they had to adopt

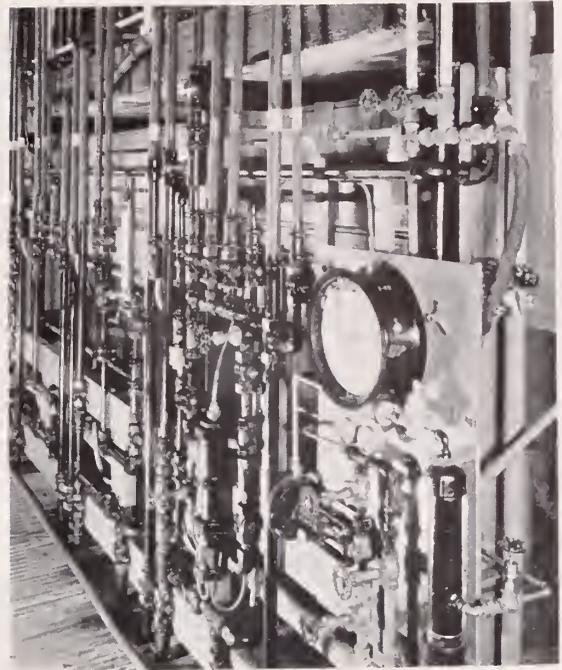
Continued on Page 210

Special Laboratory for Transparencies

by

A. Farciot Edouart, A. S. C.

Head of Transparency Dept., Paramount Productions



Part of the circulating system, Paramount Transparency Dept. Laboratory, showing special rubber tubing, and (in foreground) one of the four automatic-recording regulator-thermometers.

AT THE Paramount Studio, we are fortunate in having a separate, small laboratory devoted exclusively to supplying the Transparency Department. At present, this laboratory is used solely for making the positive "Background Plates" used in this process, although the ultimate ideal would naturally be to extend its operations to handle the Department's negative developing, as well, in order to obtain ultra-fine-grain results impossible in the volume production of a larger plant.

At present, however, the Transparency Department's negative developing is handled adequately by the studio laboratory: the developed negative and one normal print being delivered to the Transparency staff. This print is not for background use, but is made solely for reference purposes, and is filed in the Department's film-library.

When the scenes desired for background use have been segregated, the negative is sent to the Department's laboratory for printing. This operation is usually done on our Optical Printer, in order to assure absolute precision. For our purposes, the printing must be extremely accurate: and tests have proven that no contact printer is sufficiently accurate. The limiting factor in this operation is the accuracy of the film-perforations themselves, and it is a tribute to the design and operation of Bell & Howell Standard Perforators that no practical contact printer has been made sufficiently accurate to approach the accuracy of the perforation. Accordingly, we use an Optical Printer designed and operated to tolerances impossible in contact printing. The timing of the prints is, of course, determined by the most scientific densitometric tests.

The prints are developed on a specially designed developing-machine, which enables us to exercise an unusual degree of control over the result. For the projection-Transparency process, only the normal operations of preliminary soaking, developing, rinsing, fixing, washing and drying are necessary; but when the color-separation Transparency process is used, such additional processes as bleaching, mordanting, drying, etc., are involved, making a total of 22 separate operations, all of which can be handled by the one machine, in a single, continuous operation. The machine is so designed that any one of these operations may be accelerated or retarded at any time without interfering with any other phase.

As a rule, prints intended for projected-background use are made to a rather higher Gamma, or contrast, than prints

for normal uses: our equipment and methods permit a range in Gamma from 0.65 to a maximum of 2.70, whereas normal laboratories seldom, if ever, have a range greater than from about 1.90 to 2.00. The actual Gamma to which we make our prints must naturally depend upon the requirements of the composite shot—the type of foreground action, the key and style of foreground-lighting, the size of the screen, etc.

It is obvious that equipment and methods permitting such exact control would be valueless if operations were not conducted on an equally scientific basis. To this end, even routine operations are recorded as painstakingly as though in a research laboratory. Every detail of every operation is recorded, and filed away for future reference, so that we can, at any time, duplicate any shot made within the past five years, with the assurance that, since every possible factor in the making of the print has been reproduced with scientific accuracy, the result, too, must be identical.

The design and construction of this laboratory extended over a period of more than three years, over half of which was devoted to exhaustive tests of every type. The materials used for the construction of the developing-machine, for example, have an important bearing, not alone upon the useful life of the machine and economy of operation, but upon the quality and uniformity of the results. It is vitally important that none of the materials used shall have any chemical effect upon the solutions, and, through them, upon the film. Many materials which seem to have no such effect may actually do so over a period of years: therefore, exhaustive tests were made of every material. The metal-work, for example, was tested until but two possible choices remained: then samples of these two metals, in several sizes, were immersed in samples of our standard solutions for periods up to two and one-half years. The results of each test were tabulated, and, wherever more than one such test was made of any metal, the tests were averaged. Ultimately, Rezistal No. 4 was chosen, as the tests proved it to have no effect upon any of the solutions.

Continued on Page 212



PHOTOGRAPHY

of the MONTH

"FIFTEEN WIVES"

Invincible
Directing Cinematographer: **M. A. Andersen, A.S.C.**
The Film Daily (July 17, 1934): Photography "Good."

"I GIVE MY LOVE"

Universal
Directing Cinematographer: **George Robinson, A.S.C.**
The Film Daily (July 17, 1934): Photography "A-1."

"HIS GREATEST GAMBLE"

RKO Radio
Directing Cinematographer: **Teddy Tetzloff, A.S.C.**
The Film Daily (July 18, 1934): Photography "A-1."

"SHE LOVES ME NOT"

Paramount
Directing Cinematographer: **Charles Lang, A.S.C.**
The Film Daily (July 19, 1934): Photography "Fine."

"BACHELOR BAIT"

RKO Radio
Directing Cinematographer: **Dovid Abel, A.S.C.**
The Film Daily (July 20, 1934): Photography "Fine."

"GRAND CANARY"

Fox
Directing Cinematographer: **Bert Glennon, A.S.C.**
The Film Daily (July 20, 1934): Photography "A-1."

"SMOKING GUNS"

Universal
Directing Cinematographer: **Ted McCord, A.S.C.**
The Film Daily (July 20, 1934): Photography "Good."

"CLEOPATRA"

Paramount
Directing Cinematographer: **Victor Milner, A.S.C.**
The Hollywood Reporter (July 23, 1934): "And of course, the exquisite photography of Victor Milner makes the visual entertainment a thing of joy and beauty."
Daily Variety (July 23, 1934): "Battle scenes on land and sea, sybaritic orgies on the queen's galley, splendors of court and more intimate episodes are superbly photographed by Victor Milner."
The Film Daily (July 25, 1934): "—while Victor Milner's photography is also deserving of a bow." Photography "Superb."

"BLIND DATE"

Columbia
Directing Cinematographer: **Al Siegler, A.S.C.**
The Hollywood Reporter (July 23, 1934): "—and Al Siegler photographed it well."
Daily Variety (July 24, 1934): "Photography is impressive—"

"SHE WAS A LADY"

Fox
Directing Cinematographer: **Bert Glennon, A.S.C.**
Daily Variety (July 25, 1934): "Photography Good."

"MILLION DOLLAR RANSOM"

Universal
Directing Cinematographer: **George Robinson, A.S.C.**
The Daily Variety (July 27, 1934): "Camera work is by George Robinson, who has secured effective night shots and clearcut interiors."

"THE CAT'S PAW"

Fox
Directing Cinematographer: **Walter Lundin, A.S.C.**
Hollywood Reporter (July 27, 1934): "Walter Lundin's photography does wonders for the players—"
Daily Variety (July 27, 1934): "Walter Lundin has photographed well."
The Film Daily (July 30, 1934): Photography "A-1."

"WILD GOLD"

Fox
Directing Cinematographer: **Joseph Volentine, A.S.C.**
The Film Daily (July 30, 1934): Photography "A-1."

"BEYOND THE LAW"

Columbia
Directing Cinematographer: **Al Siegler, A.S.C.**
The Film Daily (July 24, 1934): Photography "Good."
Hollywood Reporter (July 30, 1934): "Photography standard, except for some overlighted close-ups."

"SHE HAD TO CHOOSE"

Majestic
Directing Cinematographer: **James S. Brown, Jr., A.S.C.**
Daily Variety (July 30, 1934): "—and is handsomely photographed."

"HIDE-OUT"

M-G-M
Directing Cinematographer: **Roy June, A.S.C.**
Daily Variety (July 30, 1934): "Photography is swell."
Hollywood Reporter (July 30, 1934): "Ray June's photography is, of course, the best."

"SHE LEARNED ABOUT SAILORS"

Fox
Directing Cinematographer: **Horry Jackson, A.S.C.**
The Film Daily (July 28, 1934): Photography "Good."

"ROMANCE IN THE RAIN"

Universal
Directing Cinematographer: **Charles Stumor, A.S.C.**
Hollywood Reporter (July 31, 1934): "Charlie Stumor's photography is spotty."

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ANY manufacturer who has won his way into the confidence of a great industry is under obligation to maintain the standards that have given his product preference. Eastman Super-Sensitive "Pan" is continually discharging such an obligation. On the lot . . . in the laboratory . . . on the screen . . . it is unfailingly delivering the same qualities that first made it a sensation in the motion-picture world. Eastman Kodak Co. (J. E. Brulatour, Inc., Distributors, New York, Chicago, Hollywood.)

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PHOTOGRAPHY OF THE MONTH

Continued from Page 206

"BRITISH AGENT"

Warner Bros.

Directing Cinematographer: **Ernest Haller, A.S.C.**

Daily Variety (August 1, 1934): "—and photography also rate high praise."

Hollywood Reporter (August 1, 1934): "—and the photography by Ernest Haller is very beautiful."

Film Daily (August 2, 1934): Photography "A-1."

Motion Picture Daily (August 3, 1934): "Ernest Haller's photography is an asset."

"THE PERSONALITY KID"

Warner Bros.

Directing Cinematographer: **William Rees, A.S.C.**

The Film Daily (August 1, 1934): Photography "A-1."

"JUDGE PRIEST"

Fox

Directing Cinematographer: **George Schneiderman, A.S.C.**

The Hollywood Reporter (August 4, 1934): "And right along with these people goes the camerawork of George Schneiderman, whose picturization of a sleepy southern town, stretched out in the sunlight, makes you yawn lazily and pleasantly just to look at it."

Variety (August 4, 1934): "Photography is excellent."

"THE GIRL FROM MISSOURI"

M-G-M

Directing Cinematographer: **Ray June, A.S.C.**

The Film Daily (August 4, 1934): Photography "Fine."

"KANSAS CITY PRINCESS"

Warner Bros.

Directing Cinematographer: **George Barnes, A.S.C.**

Daily Variety (August 6, 1934): "George Barnes' photography is top notch."

"THE MOONSTONE"

Monogram

Directing Cinematographer: **Robert Planck, A.S.C.**

The Film Daily (August 7, 1934): Photography "A-1."

"STOLEN SWEETS"

Chesterfield

Directing Cinematographer: **M. A. Andersen, A.S.C.**

The Film Daily (August 7, 1934): Photography "Good."

"MADAME DUBARRY"

Warner Bros.

Directing Cinematographer: **Sal Palito, A.S.C.**

Daily Variety (August 7, 1934): "—photography by Sol Polito and art direction by Jack Okey, all contribute materially to the gorgeous quality of the film."

"THE HUMAN SIDE"

Universal

Directing Cinematographer: **Norbert Brodine, A.S.C.**

The Hollywood Reporter: "Brodine's photography is okay for the most part, but a little harsh in spots."

"YOU BELONG TO ME"

Paramount

Directing Cinematographer: **Leo Tover, A.S.C.**

Hollywood Reporter (August 9, 1934): "Leo Tover's photography cannot be criticized."

Daily Variety (August 19, 1934): "Photography by Leo Tover has no flaws."

"THE FOUNTAIN"

Radio

Directing Cinematographer: **Henry W. Gerrard, A.S.C.**

Hollywood Reporter (August 9, 1934): "Henry Gerrard's photography is very beautiful."

Daily Variety (August 9, 1934): "Photography is average, with Miss Harding none too well lensed in spots."

"DESIRABLE"

Warner Bros.

Directing Cinematographer: **Ernest Haller, A.S.C.**

Daily Variety (August 10, 1934): "Ernest Haller's photography adds the finishing touch of class."

Hollywood Reporter (August 10, 1934): "Ernest Haller's photography is very good throughout."

"SCHOOL FOR GIRLS"

Liberty

Directing Cinematographer: **Harry Newmann, A.S.C.**

Daily Variety (August 10, 1934): "Photography by Harry Newmann is average."

"WE'RE RICH AGAIN"

RKO Radio

Directing Cinematographer: **Nick Musuraca, A.S.C.**

The Film Daily (August 11, 1934): Photography "Fine."

"THE LADY IS WILLING"

Columbia

Directing Cinematographer: **Joseph Walker, A.S.C.**

The Film Daily (August 11, 1934): Photography "Good."

"HAVE A HEART"

M-G-M

Directing Cinematographer: **James Wong Howe, A.S.C.**

Hollywood Reporter (August 11, 1934): "Jimmy Howe's photography is okay."

"CHAINED"

M-G-M

Directing Cinematographer: **George Folsay, A.S.C.**

Daily Variety (August 13, 1934): "George Folsay's photography is outstanding, particularly sea shots."

Hollywood Reporter (August 13, 1934):

"And, speaking of being seen, George Folsay has done one of the best photography jobs you're likely to see. The process shots are well-nigh perfect. The ranch scenes are exquisite, and Joan Crawford hasn't looked as beautiful and young and vibrant in months and months. Gable is beautifully photographed, too—"

Motion Picture Daily (August 14, 1934): "The production's photography, settings and costumes are all that could be desired."

"IRIS MARCH"

M-G-M

Directing Cinematographer: **Charles Rosher, A.S.C.**

Hollywood Reporter (August 17, 1934): "The direction of Robert Z. Leonard is restrained and touched by moments of great beauty. The same may be said of Zoe Akins' screen play, and certainly of Charles Rosher's photography."

"MRS. WIGGS OF THE CABBAGE PATCH"

Paramount

Directing Cinematographer: **Charles Lang, A.S.C.**

Hollywood Reporter (August 17, 1934): "—and Charles Lang's photography is a big asset."

Daily Variety (August 17, 1934): "Photography is oke."

"BELLE OF THE NINETIES"

Paramount

Directing Cinematographer: **Karl Struss, A.S.C.**

Daily Variety (August 18, 1934): "Karl Struss' photography is excellent, with especial fine effects in the camp meeting interlude."

Hollywood Reporter (August 18, 1934): "The photography by Karl Struss is too lovely and makes Miss West look like a gorgeous woman."

His Weston Meter Read

F 6.3 at 2 P. M.

F 2.3 at 3³⁰ P. M.

FOX AUSTRALIAN
MOVIE TONE NEWS

Victorian Division, 365 Lonsdale St.,
Melbourne, Cl.

24th May, 1934

Messrs. Weston Elec. Inst. Corp.,
NEWARK, N.J., U.S.A.

Dear Sirs:

For some time, I have been using a Weston Model 617 Universal Exposure Meter and have been very pleased indeed with its performance.

A few days ago, however, its value was brought home to me very forcibly. I was covering a very important rowing race here in Melbourne, and was photographing in the worst light I have ever experienced. At 2 P.M. using Super-sensitive Pan film the exposure according to the Weston Meter was F 6.3. By the time I had finished shooting the story at 3:30 P.M. the exposure indicated was F 2.3.

This will give you an idea of light conditions that day. The next day I photographed the final of the race in brilliant light and was shooting at F 12.5 on the same roll of film. When the roll was developed, not only was the negative perfectly exposed, but was so even that every shot was printed at the same light number.

I would not be without the meter for the world, as after some nine year's experience I certainly could not judge exposures as accurately as that.

Yours very truly,

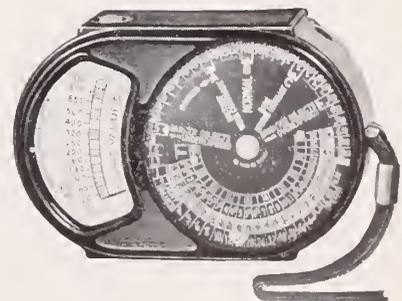
(signed) E. W. Bierre,
Chief Cameraman,
Vic. Division,
Fox Aust. Movietone News

P. S. You may use this letter if you wish.

In far off Australia, on the Continent, in every corner of the globe where photography is being done, there you will find Weston Exposure Meters in the hands of satisfied owners. Visit your dealer's today and see both models of this *proved* meter . . . the Weston Meter . . . Weston Electrical Instrument Corporation, 598 Frelinghuysen Avenue, Newark, New Jersey.



Weston Cine Model Exposure Meter



Weston Universal Model Exposure Meter

WESTON Exposure Meters

JUST WHAT IS "MONTAGE"

Continued from Page 204

their technique to utilize these extremely short bits of film—and to utilize them efficiently.

The "Montage Technique," therefore, was due simply to the necessity for making pictures for a predominantly illiterate audience, using only the short scraps of film which would be regarded as worthless, waste material in any more prosperous studio. They did not create anything essentially new, but rather adapted established, silent-film technique to suit these requirements. But if they did not create, they were forced to refine the existing technique to a point where it became a close approximate of the ultimate of pure cinematographic expression. They were dealing with a predominantly illiterate audience, and one which spoke many different tongues: accordingly, they could not fall back on the two mainstays of directors in other lands who do not fully appreciate their medium—printed titles and, more recently, spoken words; they had to make every inch of film count, so they learned to make every frame, every move or action, vitally expressive.

The natural means to attain these

ends was by searching analysis of the basic principles of film technique. In the final analysis, the film-craftsman has five principal avenues of expression: pantomime, facial expression, viewpoint (or angle), chiaroscuro, and tempo, both physical and cinematic. These, rightly employed, can convey emotional messages even to the most primitive mind; and the Russians made full use of all.

Much of their pantomime, for example, became definitely stylized, for they reasoned that certain actions must inevitably indicate certain associated thoughts in any mind: for instance, hands outstretched, palms upward, suggest "give me"; palms downward, benediction; a figure advancing toward the camera (even in a "flash"), connotes aggression; while a retreating, or even backward-leaning figure suggests fear. In the same way, facial expression was analyzed and became stylized.

Russian friends have told me that one reason for their wide use of camera angles—aside from purely aesthetic considerations—was the early film-shortage. Obviously, if you have only short lengths

of film with which to work, you must choose your angles with care, so that both composition and action will be most graphic. Working in this manner, often with only a few meters of film available at any one time (and no immediate prospect of getting another supply with which to continue filming), it is natural to see that both Director and Cinematographer would prefer to make a number of short, related shots, from a wide variety of angles.

In the assembly—or, if you will, "Montage"—of these scenes, the Russians followed essentially the same principles which have governed film-makers since Griffith and Bitzer discovered the close-up. Assembling the scenes selectively, so as to present smoothly upon the screen changes of time, place or thought; parallel action; to stress or exclude detail; and, above all, to build filmic tempo or rhythm: none of this is new in itself, though the restrictions under which the Russians worked forced them to apply them in a new way. Symbolism, and cutting to heighten contrast hark back to D. W. Griffith's early films. Cutting for suspense and for tempo have their origins in Griffith, as well as in scores of unnoticed comedies, "Westerns," and even newsreels. The bewildering effects of abruptly intercut "flashes" is, I am sure, in no small part an attempt to reproduce the effect of the optical effects in such German films as "Variety," "The Last Laugh" and "Metropolis," surmounting the barrier of the complete lack of optical accessories such as we enjoy here and in Germany.

In brief, every phase of "Montage" has its foundation in some basic part of silent-film technique, as developed in America or Germany. The mystery of "Montage" lies in the fact that the Russians had to refine these familiar principles to the utmost—and in the fact, too, that the Russians, unlike those of us making pictures elsewhere, had not only the inclination, but also the time to subject every film to detailed study: to searchingly analyze every scene, every movement, that they might produce their next film better and more efficiently. Before they had money for making actual films, they wrote scripts, and subjected them to this same detailed analysis: purely for practice in technique—if only theoretical practice. Every artist and technician participated in this study, and strove to find a rational, psychological explanation for everything. Imbued with the characteristic, Russian introspectiveness, they expressed their findings in psychological-technical terms, all too often misunderstood by the everyday film craftsman elsewhere. And so "Montage," which all of us had known and, to some extent, practiced for years, became shrouded in mystery!



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China Photographically Ideal

Continued from Page 202

film "The Good Earth," and to show the Chinese as the human beings they really are, were denied permission to photograph their scenes, surely, he reasoned, we would go home and continue to produce the objectionable "yellow peril" films. Hence, it was far better to help us, rather than hinder. From then on, every day the Chinese officials could give us ours: permits to photograph wherever we wished—official guides and interpreters—the cooperation of the Chinese Army for our scenes of the Revolution of 1912—and even relaxation of the stringent censorship rulings, so that, instead of having to have all of our film developed and inspected in China, we were able to send the greater part of the film to the studio's own laboratory, where the exciting background scenes could be given the very best of treatment.

By this time our unit had been reduced in strength, as Director Hill and Art-Director Toluboff had been recalled to the studio for other productions, leaving me in charge of the unit. In the following five months, we photographed over 150,000 feet of film, made more than 3,000 still pictures for research purposes, and nearly 1,000 stereo-photo-

graphs to supplement the stills, showing every conceivable detail of native life, from native types and costumes to household implements, buildings, temples and even groves. In addition, we purchased over twenty tons of properties,

ranging from a complete farm, with house and all equipment (even three water-buffalo!) to costumes, children's toys, and the minutest details of everyday life.

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world. Small and compact enough to be carried anywhere, Eyemo may be operated by spring motor, hand crank, or electric motor. Takes 100-foot daylight loading spools, or may be used with 200- or 400-foot external magazines. Seven film speeds, from 4 to 32 or 8 to 48, including sound speed.

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ried us all over China, from the Great Wall and Shantung on the North, to Hong-Kong in the South, and at times, several hundred miles inland. Moreover, we photographed not only in the relatively familiar cities of Shanghai, Nan-king, Peking, Shanhaikwan and Hong-Kong, but also in the country, and in the homes of Chinese of all classes, from the lowliest peasants to Harvard and Oxford educated aristocrats. We even visited a group of the Eunuchs of the old Imperial Court, who let us study and photograph a collection of priceless art-treasures salvaged from the splendors of Manchu Dynasty magnificence.

SPECIAL LABORATORY FOR TRANSPARENCIES

Continued from Page 205

In such a machine, a great deal of tubing must naturally be employed to circulate the solutions; for this purpose, most of the chemically satisfactory alloys would have been prohibitively expensive. Therefore we employed a special hard-rubber tubing, of a special composition which left no sulphur or other impurities to contaminate the solutions.

The tanks, themselves, were made of wood, impregnated under high pressure with a special bitumastic compound which rendered them non-absorptive and impervious to photo-chemical solutions.

The machine is driven by air-turbines, which provide the smoothest drive known. Each stage is driven by its individual turbine, so that it is possible to accelerate or retard any stage, independently of the rest of the machine. Provision is, of course, made for automatically taking care of any slack created by such a change; the tension upon the film is likewise variable.

All chemical supplies are naturally tested for purity and consistency, and the obvious precautions of separating all mixing operations from the machine and its tanks are, of course, taken.

It is equally vital that the water-supply be pure: accordingly, in addition to the generous use of distilled water, all water taken from the city mains is filtered no less than five times. First come two large sand-and-charcoal filters; then a further chemical purifier; next, a high-pressure stone filter; and lastly a special filter in which the water is passed through purified, long-staple cotton. In addition to this, all solutions are auto-

matically filtered each time they pass through the circulating system, and accurately "pepped up" so that they are maintained at constant strength and purity. All solutions are maintained at their optimum temperatures by automatic controls which work to a tolerance of less than plus-or-minus one degree, and the temperatures are automatically recorded. We have found that each solution has its most favorable operating temperature; and we maintain these, rather than following the conventional practice of keeping all solutions at the same temperature. The air-supply for both the laboratory itself and the drying-box is from a special air-conditioning plant, which gives us absolute control of temperature, cleanliness and humidity. The humidity of the drying-box can be greatly varied for special purposes.

The advantages of this precise control are shown, not alone in routine operations, though the efficiency of the laboratory has played an important part in the Department's record of efficiency and economy, but in emergencies where special treatment may be necessary for any individual scene. For example, in a recent production we found it necessary to use, for background and other special purposes, some scenes from negative made over eleven years ago. While this film had not been used for making prints, and had been carefully stored in the studio's film-vault, it was, none the less, in extremely poor condition for such use. Not only was it physically dirty, but it had shrunken so badly that it literally would not go on the printer! Yet it had to be used, for it was important to the picture, and would be prohibitively expensive to remake. Therefore, we began by cleaning the film carefully—by hand—with carbon tetrachloride, and, later, with glycerin, to restore both cleanliness and pliability. Then we ran it through our developing-machine several times, passing it through all of the normal solutions—not for any photographic effect, but to restore some, at least, of the moisture which had evaporated during the period of years. In this process, we increased the tension upon the film very considerably above that normally used in routine developing, and raised the humidity of the drying-box to the highest point compatible with getting a dry film. This treatment served gradually to stretch the shrunken film, as it absorbed moisture, until it regained printable proportions. The ultimate result was that we were not only able to produce a print satisfactory for our purposes, but, due to the improved materials, methods and technique employed in our printing, to actually secure a print better than an original print made from that negative eleven years ago.

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Riddle Me This

Continued from Page 203

variety of means for controlling our lights, including diffusing screens, the "flooding" adjustment on many types, and dimmers. Personally, I prefer to compensate my light by "flooding" or "pulling down" the beam, and avoid dimming wherever possible, due to the color-change brought about by lowering the voltage. I believe, though, that a very beneficial development would be the evolution of some means of getting the effect of dimming without the change of color-temperature.

JOSEPH VALENTINE, A.S.C.: I'd like one! In fact, I'd have given a lot for one yesterday, when I needed it very, very badly for some scenes I was making. I don't see any reason why a small dimming rheostat couldn't be made; something with sufficient electrical strength to carry a load of about three thousand watts, yet small enough to be hung right on the camera, and operated by the cameraman. If our equipment manufacturers would abandon their passion for excessive durability and bulk, such a device could, I am sure, be turned out easily; perhaps it wouldn't be as sturdy or long-lived as the present bulky equipment, but it would fill a crying need in present-day cinematography. The multi-plane lamp-filament idea for dimming without changing the color of the light would also be a big advantage if it could be worked out practically.

CHARLES ROSHER, A.S.C.: For such uses, good cinematography makes it imperative that the cinematographer be able to control the light-intensity personally, for it is usually too delicate a matter to entrust to anyone else. For several years I have had a special 500-watt reflector spotlight, which I keep attached to my camera, and manipulate personally. The lamp itself is of the general type of the "Lupe," and made by the Dietz firm; it is a small barrel-type reflector spotlight, and by "flooding" or "pulling down" the light—that is, throwing the light-source in or out of focus—I can get the same effect as dimming but without any change in the color-temperature of the light. In addition, I have a little paddle, something like the ones you use in playing ping-pong, but larger, which I use for modelling the light on faces in close-shots. In close-ups of Constance Bennett, for example, I always used this light on the camera, and, with the paddle, I would shade one side of the face, thereby getting very nice modelling. In a recent scene in another picture, I was making a close shot of Helen Hayes: I used this lamp to light her with, and when several

actors were required to pass in front of her, I easily "dimmed" the front-light down to nothing as they passed, by sim-

ply "flooding it out" as they went by, and "pulling it down" when they were out of the picture.

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Eastern Rental Service

According to an announcement from Motion Picture Camera Supply Company of New York City, that organization is establishing a special department for Coast studios sending units to New York to service these units with every type of accessory needed, such as Mitchell and Bell & Howell cameras for silent, sound and high-speed work; Fearless blimps,

Fox velocitators, Mole-Richardson perambulators, camera motors, moviolas and even zoom lenses.

It is believed with this type of service the studios in Hollywood will find it more economical to rent these accessories than to ship them from the coast.

Gerrard Uses New Combination Filter

● On his most recent production for RKO, Henry Gerrard, A.S.C., utilized a new combination filter-diffuser developed for him by George Scheibe, the well-known filter specialist. The combination consists of an Aero 1 color-filter, a .25 Neutral-Density filter, and the Scheibe 1/32 diffusion filter, combined into a single unit. Gerrard states that he used this combination on all of the exterior scenes of "The Fountain," starring Ann Harding, with excellent results. A number of the RKO cinematographers are understood to be adopting this combination.

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How We Made the Invisible Man

Continued from Page 201

and we see him at last, as he really is. Upon the screen, we first see only the bed—we are looking straight down upon it from above, and we see the depression made in the pillow by the invisible head, and the folds of the sheets and blankets over the unseen form. Slowly a suggestion of bone-structure appears — then a full skeleton — then slowly traces of flesh—then skin—and finally we see the man himself. This was done directly in the camera. First, we showed the bed, occupied by its invisible patient: the pillow, indentation and all, was made of plaster, and the blankets and sheets of papier-mache. A long, slow lap-dissolve revealed the skeleton (a real one, by the way); another lap-dissolve replaced the skeleton with a roughly-sculptured dummy, which suggested the contours of the actor; and a further series of such dissolves, each time using a slightly more finished dummy, brought us to the real actor, himself. After he had spoken his last few lines, and "died," the camera was moved away — straight up — on a special track which we assembled for the purpose, and a final fade-out ended the picture.

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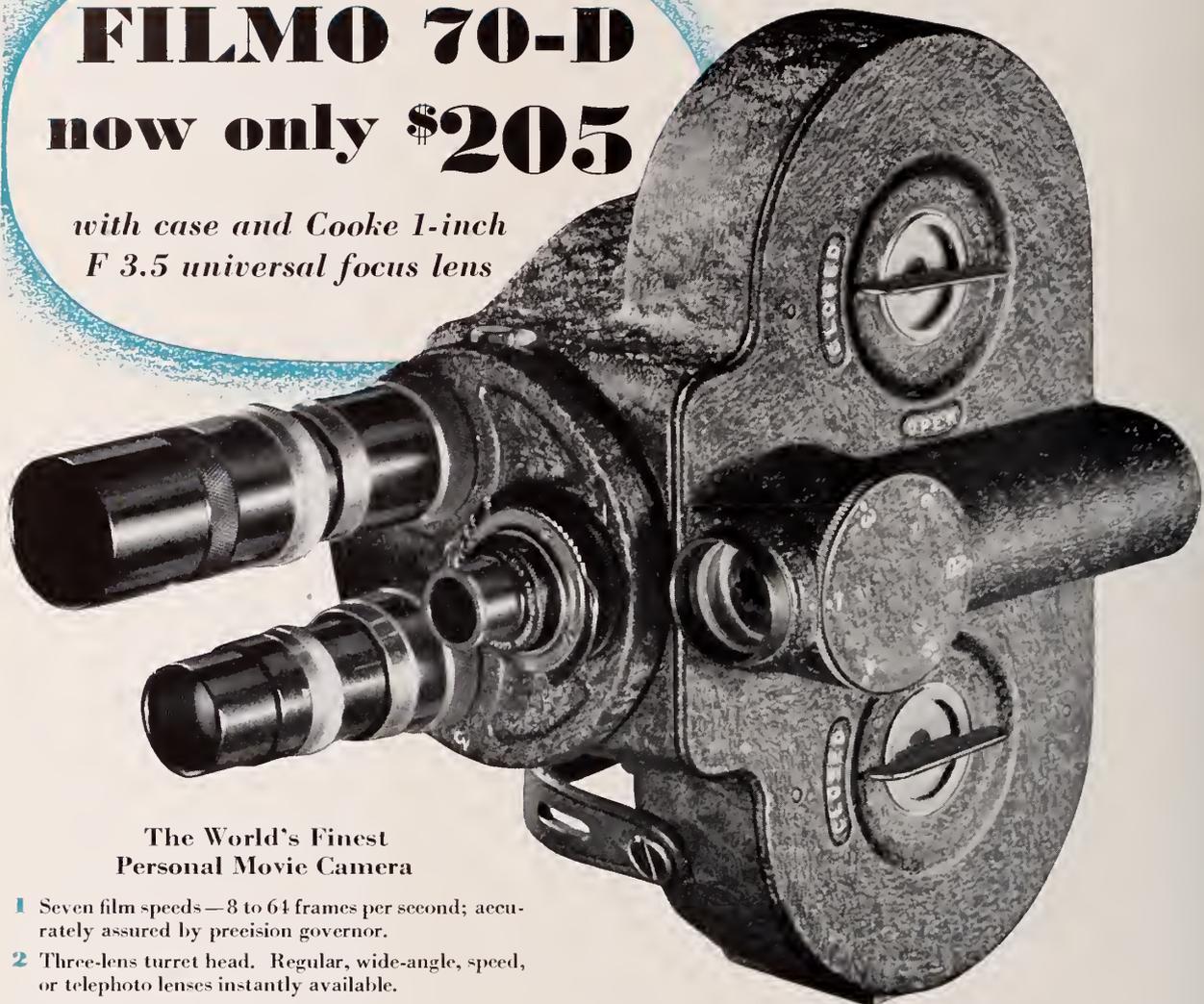
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AMATEUR MOVIES

this issue

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AMATEUR MOVIE SECTION

Contents . . .

CINETRICKS . . . Principles Underlying Film Tricks by Wm. J. Grace.....	220
DIGGING for Buried Treasure by Luis A. Inserra.....	222
LET'S TRY Animation by Walter Lantz.....	223
MINIATURE Camera Goes to Schaal by Nina Brawnrigg.....	225
SURVEY of Foreign Cinephotography by Arthur Campbell, A.S.C.....	226
CAMERAING Through Yellowstone by George J. Lancaster, A.S.C.....	227
WHEELS of Industry.....	228
BACKYARD Movies	230

Next Month . . .

☛ Turn to the inside back cover and read of a new interesting monthly contest. Those of you who are technically or mechanically inclined will find something there to warm the cockles of your heart.

● Grace will give you something about lenses in his next month's installment.

● We have worked up a corking continuity; you'll like it. Backyard movies will have another contribution. There'll be a lot of interesting things.



Photo by H. W. Voss

PROFESSIONAL Criticism of the Amateur picture is a part of the service offered by the AMERICAN CINEMATOGRAPHER. Many are not aware of this. Hundreds of pictures have been reviewed this past year by members of the American Society of Cinematographers for the Amateur.

IN CONCLUDING the present series of CINETRICKS it is not my thought to leave with my readers the notion that every trick possible with amateur cine cameras has been discussed. The scope of trick work in motion pictures depends on the ingenuity of every individual worker and the equipment he has at hand, and to list in 1-2-3 fashion even the many tricks known to have been used until this very moment would be to hand to the printer of AMERICAN CINEMATOGRAPHER a list obsolete before he could set up the type.

Besides, as you may have discovered already in reading this CINETRICKS series, the articles have been kept general in nature for an obvious reason—it hasn't been my idea so much to pick out and discuss a number of actual tricks as to discuss the underlying principles of certain types of tricks in the hope that your ingenuity would be challenged sufficiently to work out your own individual applications.

In order to furnish still more incentive to work out your own applications to the tricks we've been talking about and those we haven't mentioned yet, this magazine will shortly announce a contest with prizes for original and striking applications of tricks. But perhaps I've let the cat out of the bag, so we'll wait for further announcements.

Now to a summary of the tricks discussed so far. In the first of the CINETRICKS series, appearing in the May issue of this magazine, we talked about the reasons for taking motion pictures at other than the normal speed.

Amateur motion pictures are normally taken and projected at a film speed of 16 frames per second. Whether we take pictures at a slower or faster film speed makes no difference to the projector, for it grinds them out at 16 frames per second thruout the reel. If we wish to show action, then, at a different pace than normal, we must adjust the speed of our camera.

Subnormal camera speeds are used when the projected picture is to show the action faster than normal; supernormal speeds show the action slowed up when projected. Because our projector is always (or should be) run at the normal speed constantly, a camera speed the inverse of the desired screened action must be selected. If we want to screen a running horse apparently running one-fourth his actual or normal speed, it must be filmed with the camera running four times normal speed. If, for comedy or other effects, we want the screened action to be twice as fast as normal, the camera must be run at half speed. In short, we must film at a speed inversely proportional to the speed desired for projection.

A supernormal speed is generally used for slowing down the motion of the subject so that its action may be observed at a pace which our eyes can easily follow. Slow motion is quite extensively used to study the movements of athletes and animals because it is the only way our eyes can catch or detect flows in a swiftly-moving subject. The same is true of detecting the flows in some high-speed mechanical motions which would not develop at a slow enough speed for the human eye to follow.

In nearly all miniature motion picture work the camera is run at supernormal speed because the illusion is thereby considerably heightened. The larger an object is, the more slowly it moves, so a miniature must be so photographed that the miniature moves (on the screen) at the speed the large original would move. For instance, a real yacht might rise and fall in a storm at sea in four seconds, whereas a two-foot miniature reproduction would rise and fall in a "storm" in a tank in one or one and a half seconds. If we slowed down the miniature shot so that the screen time was exactly four seconds, the miniature would act exactly like the original yacht. The same applies to miniature railroad trains. If a ten-car crack flyer takes 14 seconds to pass the camera, the ten-car miniature re-

Cinetricks---

production of that train should also take 14 seconds of screen time to pass the camera. If we find that the miniature actually takes only $3\frac{1}{2}$ seconds to pass, we must run our camera at 14 divided by $3\frac{1}{2}$, or 4 times normal speed.

A slight supernormal speed, say 24 or 32 frames, is sometimes also found useful by the amateur in eliminating blurring of moving objects because of the faster shutter speed. This is, of course, only necessary where the shutter opening cannot be varied. Another use of 24- and 32-frame speed is to smooth out panorama shots, especially if the camera is hand-held.

Subnormal speeds of 12 and 8 frames per second are used usually for one of two reasons—to speed up action for comedy, or to get sufficient exposure under poor light conditions. If subnormal speeds are used because of poor light, caution your actors to go thru their pantomime at a proportionately slower speed than normal, else the screen effect will be ludicrous. It is possible, with supersensitive film and an f1.9 lens, to cinephotograph, in an otherwise completely dark room, a person lighting a cigaret, and if the subject moves half as fast as he normally would, the scene, shot at 8 frames, will be sufficiently exposed.

Altho usually regarded as a separate phase of motion picture work, single frame or animation cinephotography is really only a special case of subnormal speed. It's easy, yet often the easiest of tricks can "make" your picture.

One more thing—don't forget to compensate for the increase or decrease of exposure when making pictures at subnormal or supernormal speeds. Just remember that each stop on your lens means an increase of 50% from one opening to the next larger (the smaller the f number the larger the opening, you know). For instance, the normal speed requires an opening of f6.3. You want to take it at half speed. Close the lens down to f11 and the film will be correctly exposed. If you want to shoot at 64 frames, open the lens to f3.5. If you are using a camera with variable speeds, however, you'll find all this calculation worked out for you on a dial. Also, your exposure meter will instantly indicate the correct opening no matter what your film speed.

Because no one has so far come forward with a laboratory printer on which the amateur can do trick work in 16 and 8, the amateur finds it necessary to resort to a simple trick if he wishes to make movies showing a subject acting in reverse. This simple trick consists merely of holding the camera upside down while filming, and then cutting out that shot and splicing it back in end for end after development. We won't go into the explanation of this feat—refer to the CINETRICKS article in the June issue.

If you will recall, we showed one trick which was made with a knife-throwing sequence by this reverse film travel trick. This, of course, is but one of many such tricks you can use. Another might be something like this: You are on a fishing trip and have caught a "big one" but didn't get a movie of the actual strike and haul-in. That's easily enough remedied. Put the big boy back on the hook and throw him back in, filming upside down. Reversed end

Principles Underlying Film Tricks

by
Wm. J. Grace

far end, the scene will be just as convincing as the real one would have been.

Reversed film travel shots are often used in making trick titles. Suppose you are making a main title for your reel of that seashore vacation and decide to let the ocean waves spell the title. Obviously, ocean waves are difficult to train to spell, but by a little reverse action we can make it look as if the sea had really gone to school. Pick out a smooth spot on the sandy shore where little waves will wash in. Build a low dam to keep out the water and write on the sand with a stick the title you want to use. After getting it to look just right, set up the camera upside down and wait for an incoming wave. Just as you see a good wave coming in, have an assistant quickly tear down the dam and start your camera. The wave will come in and cover up the title drawn in the sand.

Projected after being turned end for end, the title will start with clean sand, and a wave will wash up on the sand and then recede, leaving the title exposed.

Whether you own a camera equipped for rewinding film in the camera, whether you have your regular camera equipped for such work, or whether you work out simple schemes that require no rewinding, by all means use double exposures plentifully.

Double exposures are widely used and appear in many forms from the lap dissolve and wipe-over to the multiple exposures which show the same person four times in the same picture doing four different things. One of the most cleverly worked out examples I've seen recently of multiple-exposure work is the Paramount short which shows a musician playing four different stringed instruments at one time, the screen picture showing the same man with a different instrument in each quarter of the screen.

There have been numerous professional examples of an actor talking to himself. Of those which I can recall at the moment are the picture in which Frederick March was his own twin brother and the picture in which Ruth Chatterton was her own daughter. In each of these pictures the timing was probably considerably aided by the sound play-back, but the amateur can equip his camera with an accurate frame or footage counter and means for accurately rewinding film in the camera to get the same excellence in results.



At top, first scene photographed. Then camera is turned back and center scene photographed creating the lap at the bottom with the picture of course lapping again into the center scene of the boat.

There are certain things which are ordinarily made by double exposure which can be made quite well, however, by other means. A moving background for titles can be made by lettering the title on glass and shooting thru the glass to include the desired background. The focus, of course, is on the lettering.

Unless you have means, however, for rewinding film in the camera and accurate footage indication of some sort, it would not be wise to attempt double exposure work which is too involved. This advice is offered in the spirit of friendly advice, not as a sales talk for my own equipment designed for the purpose. Nor is it necessarily intended



Digging for Buried Treasure

by

Louis A. Inserra

MANY suggestions in our Backyard Movie Contest came to us on the idea of "Buried Treasure." However, the completeness of Inserra's story prompts us to give it the place of our usual monthly continuity.

Cast of Characters

Father
 Jimmy, his son
 Four or five of Jimmy's playmates
 Spotty, the family dog

Scene 1. Long-shot of a backyard. On the left side of the scene is Father sitting on the porch steps reading and smcking. On the right Jimmy and his playmates lie on the grass. Jimmy is reading aloud from a book.

Scene 2. Medium close-up of the boys. Jimmy waves his arm frantically as if enacting a battle scene he is reading.

Scene 3. Close-up of Father as he shakes his head slowly and smiles at the boys. (Be sure Father looks in the right direction!)

Scene 4. Close-up of Jimmy reading a pirate book. Suddenly, he stops and a far-away look comes into his eyes. An idea dawns on him and he turns to the others excitedly, and speaks:

TITLE: "Let's play pirates!"

Scene 5. Continue Scene 4. Pan slowly over the group as the idea is accepted unanimously by each boy.

Scene 6. Medium long-shot of boys. They rise and disperse in all directions to their homes.

Scene 7. Close-up of Father as he watches the last boy disappear from view. He smiles and is about to resume his reading when, peering over the newspaper, he spies something on the ground to the right and well behind the camera. It holds his attention for a moment, and then his gaze slowly travels from right to left of the picture as if following some moving object. His gaze stops, and he shows signs of impatience. Some dust-laden air drifts into the scene as he closes his eyes and turns his head aside. (Clean your lens carefully after this shot!)

Scene 8. Medium-shot of Father as he rises to dust himself.

Scene 9. Close-up as he finishes dusting himself. Suddenly, he smiles as he gets an idea. He looks at the spot where the boys were last seen and then to his right whence the dust had come. FADE OUT.

Scene 10. FADE IN. Close-up of Father's hands tacking a piece of paper to a tree trunk. FADE OUT.

Scene 11. FADE IN. Long-shot of backyard. Father has resumed his reading. The boys enter the scene crudely dressed as pirates. Jimmy wears golf knickers, another boy a pair of shorts, still another his mother's half-century-old hat. As Jimmy enters, he slips, falls on wet ground, but rises again.

Scene 12. Brief close-up of Father snickering at the nonsensical costumes just displayed.

Scene 13. Pan close-up of each boy's costume.

Scene 14. Long-shot of backyard showing porch steps and tree trunk with note attached. The boys begin "playing pirates" with Father often glancing up from his reading.

Scene 15. Medium-shot of Jimmy struggling in a hand-to-hand encounter. He spies note tacked on tree and stops fighting.

Scene 16. Close-up of Jimmy's puzzled face as he looks up at the note. He waves and shouts to the others. (Take this shot from behind the tree looking down at him. Have a portion of the note paper appear in the picture.)

Scene 17. Close-up of Father as he grins and steals a glance at the boys.

Scene 18. Medium close-up of the boys crowding in as Jimmy points to the note. (Shoot over Jimmy's shoulders towards the note so as to prepare for an insert of note.)

Scene 19. (INSERT) Very close close-up of note reading in crude printing: "Ho, my lads! There is hidden treasure. Solve the secret of this letter for the hidden treasure map, but—beware, for he who misses shall die!" The note is signed, "Bluebeard, the pirate," with a picture of a skull and cross-bones drawn beneath the signature.

Scene 20. Close-up of Jimmy and the frightened boys as he tears the note down.

Scene 21. Close-up of one small boy as his eyes water slightly. (A few drops of water will do the trick.) He doesn't favor this pirate game anymore.

Continued on Page 234



Let's Try Animation

by

Walter Lantz

Head of Cartoon Dept.,
Universal Pictures Studio

ANIMATION is the art of photographing inanimate objects—drawings, dolls, models, and the like—an animation picture film, exposing only one or two frames at a time, moving the object between the exposures, so that, on the screen, you have the illusion of seeing the actually inanimate object in apparent motion.

Many amateur cinematographers have asked me if animation can be done with home-movie cameras. Of course it can! Some cameras—like the Simplex, the new "121" Filma, and the Cine-Kodak "Special"—are provided with automatic single-frame movements; others, like the Victor, have auxiliary hand-cranks, which can be geared to expose but one frame at a time. Even cameras which don't have these features can be used for animation, if you practice enough to get a light touch on the release-button, so that you will only expose one or two frames with each touch.

The most familiar form of animation is seen in animated cartoons: it is quite possible for any amateur to make his own cartoons, if he can draw—or collaborate with somebody who can. But cartooning isn't by any means the only type of animation: you can get very interesting animation effects with dolls, toy animals, and the like. This is easier for the amateur filmer, since no drawing is required: and, best of all, it is virgin territory, and offers a chance for making really "different" films.

All you will need for such pictures will be dolls whose arms and legs can be moved, but with joints stiff enough so that, once you have moved them, they will remain in place. If you want to, you can build little sets for your dolls to "act" in (a doll-house is often convenient for this), or you can have your dolls move around in a normal room, in your yard—or anywhere that may fit your sequence.

The principle of animation is the same, whether you are using drawings or dolls: if you want smooth action, use many intermediate positions (or "phases of motion") between the beginning and end of any action. Make these phases close together, so that there is relatively little difference between one frame and the next. This will make the movement flow smoothly; if you want it more jerky, use fewer intermediate stages. For fast action, use one frame per phase; for slower action, increase the number of frames per phase.

The illustrations may help to show how professional animators space their drawings. The drawings are taken from a recent Universal "Oswald" cartoon, and show the drawings used to make a single step. Beginning at the right end of the strip at the top of the page, we see the left foot just being lifted from the ground, and by following the action in both strips from right to left, we can trace

Continued on Page 238





The Miniature

ALIFE full of adventure has been the lot of the miniature camera. It has tracked wild animals in the jungle, has soared over land and sea and ice, has attended important athletic events and has recorded human drama in its many phases, even inside the court room. Now I am able to testify that it has had a college education. For over a year my Leica and I shared many adventures on the campus of a very small and yet very famous college for women at Claremont, California.

My four years at the above college had been unaccompanied by such a true friend as my camera. Therefore, at graduation time of the year following I, proud possessor of a Madel D Leica, decided that it was high time for it to acquire a college education. Since I knew little about the operation of the camera with the exception of these two very meager suggestions, (1) take pictures out-of-doors in the sun at $f6.3$ at a hundredth of a second, and (2) interiors should be given about a second at $f3.5$, I thought it high time that I acquired a little further education myself.

There were three opportunities to employ my camera during the last three days of the college year. Wednesday night there was a water pageant at the open-air swimming pool. For it I used formula (2), above. Thursday afternoon at the college's colorful garden party I employed formula (1). The grand stroke was yet to come. I trembled in my boots, for I had had a fearful time getting permission from the authorities to photograph each senior as she received her diploma at the graduation exercises. The small size of my camera and my promise to keep it hidden from view finally won out. Friday afternoon, then, after photographing all of the girls and all of the professors as they marched to the scene of the ceremony, I ran to my seat inside the auditorium. In the nick of time I changed to

some supersensitive film and set my Leica on its tripod, screwed on the cable release and prayed that formula (2) would work. It did, at least, part of the time. In three days I had taken around three hundred pictures. The summer was spent mailing out enlargements to proud parents and girl graduates.

In September, then, my camera and I attended school in earnest, for by this time I realized all the tremendous possibilities that lay in the camera. Even I, a girl, could learn to put them to work. College proved a miniature world whose limited yet greatly varied phases of activity I could learn to photograph. Most of the people and events there were literally on the jump. There were the college dances, teas, tennis, swimming and diving, riding, hockey, plays, pageants, dance festivals, club meetings, convocations, dinners, and not least, classes. I tried also architectural studies and somewhat later, portraits. The buildings were calm in all their beauty, but the portrait subjects, although beautiful were as jumpy as everything else. Most of the portraits were snatched on the run between classes and term papers and dates.

After I had been experimenting for about two months upon every occasion the college had to offer, trying to enlarge my pocketful of formulas for successful pictures, some of the senior girls came to me and said, "Nina, the senior class is considering having you take the portraits for the Annual. Have you any samples that we could show them?" I thought fast, because portrait photography and I were hardly on nodding terms. (In fact I did not know what a Photoflood was and had made but two attempts at portraiture with ordinary 60- and 100-watt lamps.) In spite of my limitations I told them that I would bring them some enlargements immediately. My first attempt was put on a charcoal paper which helped. The second "portrait" I had tried was with the 1.9 lens. It had a pleasing portrait quality and enlarged sharply to an 8 by 10. Evidently the girls liked these, for when they took the vote, I was in for it.

The portrait "studio" was a vacant room in one of the dormitories. In the beginning it seemed quite adequate, but towards the end of the school year it was continually cluttered with a maze of lamps, callers, electric cords, pictures, cameras, and everything else that finds its way into a camera amateur's work room. Furthermore, there was all the furniture of the room. I could not throw it out. Usually the bed, dresser, desk and chairs were covered with girls. Sometimes I did throw the girls out when there was serious portrait work to do.

At first I used two lights for "portraits" but gradually learned to manipulate four or five, often tripping over the cords, it is true. I started with the 50mm lens but later came to the conclusion that a telephoto would do the trick much better. I tried the 135mm and the 90mm, finding them both excellent. All my portraits were taken with the camera on a tripod with the exception of the very last ones which were taken with $f2$ lens. They certainly have something that the others lack, some indescribable quality that gives them more reality and at the same time more beauty.

Camera Goes To School

by
Nina Brownrigg

In general the exposure with the 90mm was $f6.3$ at a fifth of a second, although I often used $f4.5$ at a twentieth. The pictures with the caps and gowns were the most difficult. Mortar boards are so beautifully becoming, I decided. However, I had a chance to do a portrait of most of the girls in the school. What fun it was to try to bring out their beauty without sacrificing their characters, if that order is possible, especially when they gave me about five minutes each in which to do it. The portrait adventures were good for Leica and me, for besides adding slightly to our technical knowledge, we learned a little more about human nature.

Sometimes I was called upon to leave my "studio" in order to pursue the task of photographing the rooms of some of the girls. Since the rooms were so tiny, I always put the wide-angle lens to work. With its excellent depth of focus, $f3.5$ turned out to be a perfectly good stop. For these pictures one Photoflood lamp in a wide reflector which I waved around during the short time exposure was sufficient. The room pictures always turned out sharp and clear and were sent, no doubt, to parents in the East to show them what comforts their daughters were enjoying in a California college.

Besides all these portrait and room picture adventures, my Leica and I attended every possible college function. Sometimes we were popular at the formal dances, and sometimes we were not. That all depended. Anyhow we managed quite a few good "candid camera" pictures. On the athletic field there was always adventure in plenty of action. We had other adventures too, in snapping girls intimately at meals, on the campus, talking to professors or enjoying a cup of tea which is a daily informal institution. One day I gave the whole school a start with a borrowed 1.5 lens. The process was very simple but not to be recommended upon every occasion. I would open the door of a class-room, click the picture, close the door. Later with more nerve I would take a seat at the back of the room and shoot the professors in their most characteristic poses during their lectures.

During the year the girls gave several excellent plays and a very ambitious dance-drama. These were the most fun of all to photograph. Usually Leica and I sat in the front row with our tripod. I became rather expert at judging just when the characters might be still long enough to allow a short short-time exposure at $f3.5$. It was much more sport than using the 1.9 lens although the latter had its advantage in that it gave me close-ups. Later I used



the $f2$ lens and found that it is all that could be desired. This year's diploma pictures with the $f2$ are all good.

Photography became quite popular at the college last year. A flock of cameras from Univexes to 16mm motion picture cameras sprang into action around me. One evening we had a show for the Scholarship Fund. There were 8- and 16mm movies and many, many Leicas still projected. Due to the success of the show I decided to have positives made of all of my negatives from then on. The projected pictures helped enormously as far as portraits were concerned. Whenever I announced a show of some new pictures, the girls crowded into my "studio." Then I was tempted to go into the moving picture business but only managed to take 300 feet on 16mm film at graduation time along with Leica pictures. Needless to say the college Annual was plastered with "candid camera" pictures. The remaining ten percent were taken by one of the senior girls. And so Leica and I skipped blithely from one school adventure to another. Sometimes we profited from bitter experience and other times we did the same wrong things over again, but there was always something new to try.

Another adventure the camera and I had at school consisted of learning to use the copy attachment. Before long we were copying maps, diagrams, graphs, plans, sketches, and photographs for term papers and theses.

That brings up the subject of my protegee, or rather protegee. Her first experience with a miniature camera consisted of photographing insects for her Biology project. With the aid of the copy attachment and tubes and under my supervision she obtained a remarkably good collection. Now she has run away from school into the world of greater adventure with her new Model F Leica. I hope that she has as much fun in her camera adventures away from school as I had when I took my camera back to school.



A 16mm Seimens camera, made in Germany. Note the 3-lens sliding turret.

Survey of Foreign Cinephotography

by

Arthur Campbell, A. S. C.

TAKING into consideration the population of some of the foreign countries compared to the United States, great things are being accomplished by the foreign Amateur Cinephotographer. Perusing most of the foreign-language periodicals one cannot help but notice the attention being paid, even by official government bodies, to the substandard film for its educational and commercial importance.

Great Britain seems to lead all other countries, 16 and 8 mm being the most widely used medium. However, the French 9.5mm has quite a few adherents. Much is to be said for and against either mentioned size; however, 16 and 8 mm seem to be by far the most popular. In spite of the great number of domestic cameras and projection machines built there, American cameras still reign supreme.

Outstanding is the great number of clubs and associations for substandard film. The Institute of Amateur Cinematographers may be considered one of the largest and

most important amateur organizations in the world, patronized by the very elite of aristocracy and commoners alike bound by their common hobby. Their annual contest is the most important event in the year and their awards highly coveted. Every town seems to have a cine club and since competition is the spice of things, everybody is trying to outdo the other.

A survey of most of the entries for this contest proves that amateurs are very much alike all over the world. The subjects vary but the great majority consist of travel films, family and baby incidents and the more elaborate playfilm. The quality also varies greatly, proving clearly how much more there is still to be done in the educative field to teach amateurs how to shoot their little film clean and economically. The IAC Bulletin and several other well-informed cine papers are doing excellent work in that respect.

The camera being practically the base of photography, or the one piece of equipment in which the amateur takes the greatest interest and pride, it might be well to review briefly the cameras and types of cameras available to the British amateur.

A very popular and efficient camera is the Ensign Kinecam, in some respects resembling the Bell & Howell in construction, equipped with a 3-lens turret. Stock cameras come equipped with such fast lenses as f1.5 and f2.8.

An interesting camera is the Midas camera and projector combined. This camera is operated by dry cell batteries even for the taking of pictures. It has the single-lens mount system and is made only for 9.5mm film.

For the advanced amateur who is interested in sound on 16mm there is the Marshall camera. It is the single recording system type and is used largely by professional 16mm cameramen.

Film is available to the British amateur in many speeds. A marketing method strange to America is their offer to sell reversal film with or without developing privileges. The amateur may buy this film at a slight discount and try his own hand at developing and reversing. Naturally the negative and positive system is widely used in Britain, especially by those who desire to do their own developing and printing.

The exposure meter is widely used and more and more amateurs are starting to use filters intelligently.

Prices for raw stock, etc., and camera equipment do not vary much compared to the United States. For economic reasons the 8mm is becoming more popular.

FRANCE: France is the Birthplace of Photography has universally adopted Amateur Cinephotography. And with true Gallic temperament the average amateur uses his substandard camera as a means of expressing and fixing his more or less artistic talents. As the home of the 9.5mm it naturally has quite a large number of users. However, we shall not endeavor to discuss the relative merits of the different sizes used. The French next to the German takes his amateur cinephotography with extreme seriousness.

The acted amateur playfilm dominates all other subjects. The reason for this is that there are so many amateur dramatic societies which have converted themselves into cine clubs. What they lack in technical knowledge they make up by their enthusiasm. Great stress is laid upon emotional and sentimental subjects suited to their psychology but perhaps a bit too melodramatic for Anglo-Saxon taste. The very beauty of their countryside with their

Continued on Page 232



George Lancaster, A.S.C. with an improvised dolly converted from a tawing dolly to a camera dolly for the occasion.

Cameraing Through Yellowstone

by
George J. Lancaster, A. S. C.

LONG LOG houses; low log barns with straw spread on the roofs; streams with leaping fish; to the east are the jagged peaks of the Tetons, loveliest of mountains.

To me the most interesting thing about the Yellowstone is its variety. Here one may photograph the Yellowstone River battling its way through gorges, or the Madison dimpling in and out of the sun and shadows, or the Fire Hole placidly rippling over the warm lava beds, or see the Emerald Pool, the Grotto Geyser spurt forth, or Old Faithful send high into the air steam and water every hour just as regular as clockwork. Or to see the waters tumbling over the falls at the Canyon; the sides of the canyon running in riot of color of all shades and hues of the spectrum. Or to see the bears, deer, elk, and moose feeding in their meadows along the trip from lodge to lodge. Once in the Yellowstone, all you have to do is follow a nature guide around the park.

What a place to set up a camera, a photographer's

paradise, I call it, by gosh. Here one should use his color outfit, if he has one, or have a supply of filters on hand.

My hand tests showed that the light is very fast due to the high elevation and the rarity of the air. Normally if one was in the habit of stopping down to $f.16$, in this region it would be safe to stop to $f.32$. But if it is desired to use heavy filters like the "G" to emphasize white clouds and to darken the sky, allowances must be made for additional opening of the diaphragm, back to $f.16$. Here one will find the use of the 5N5 and 3N5 filters to neutralize the sunlight and shadows found in practically all scenic set-ups. A 23-A filter is very effective when one is set up photographing the geysers in action; this filter will neutralize the white spray and lime-like cone surrounding the vent of the geyser. On all geyser set-ups I highly recommend a three-quarter light, which will give beautiful composition in highlights and shadows, with the lodgepole pines in the background, while overhead one will see huge snow clouds gathered intermittently in a tapaz-green sky.

Following the Fire Hole River to Madison Junction, one will encounter rapids and waterfalls foaming over the jagged rocks. Here it is suggested to use the 3N5 with an O-A glass. In the Fire Hole canyon the sun never lights up the whole of the landscape, thus it will be seen that either side of the canyon will be in a shade, while portions of the white, tumbling, foaming waters will be brightly illuminated. The 3N5 will compensate the highlights and shadows, while the O-A glass will diffuse slightly the sharpness of the landscape, giving a sort of soft focus effect, and also produce an effect like diamonds jumping and glistening in the water.

At Madison Lodge one will see a formation of lime and chalk, a growth from the algae animal life. The Terraces are queerly shaped, giving effects of icicles, great buildings and ancient Roman structures. This is hard to photograph because of the flat light that strikes the front, sides and top. To accentuate the detail it is necessary to dampen down, so to speak, the crevices and indentations of the formations. By using the combination 56-72 filter and supersensitive film one will secure good results, the very bright spots will be subdued, while the parts that have a tendency of casting shadows will produce gray-tones of all shades.

At the bear feeding grounds and photographing other scenes it is suggested to use the Na. 25 neutral filter at all times. Surprising effects will reward the 16mm photographer in his endeavor.

Panning and tilting will be necessary in some of the set-ups. To obtain steadiness in movement a tripod is absolutely necessary. Nothing is so distracting to the eye while watching the subject on the screen as a wobbly camera giving the effect of being on the high seas in a row boat. No matter how good the subject may be, if any of the scenes are wobbly the whole effect is lost.

Lastly and most important of all is the care of the camera. Considering the compactness of the mechanism and other mechanical appliances incorporated, one must take care of the camera. During the night the atmosphere becomes dry and extremely chilly. The oil in the camera will stiffen, perhaps you will not be able to make the camera operate. Do not become alarmed. Open it and let the sun thaw it out. At night remove the lens, wrap it in a handkerchief and place it in the camera case, leaving it out in your car over night. Never take a camera lens into a warm room as it will immediately start sweating when taken out in the cooler air like that found in this region in the mornings.



WHEELS OF INDUSTRY

Recent Photographic Books

● In the Practical Photography Series published by American Photographic Publishing Company and authored by Frank R. Fraprie, F.R.P.S., three books come to our desk bearing the titles, "The Secret of Exposure," "Practical Retouching," and "How to Make Lantern Slides."

The last book is seemingly in its first edition. "Practical Retouching" was first copyrighted in 1907. The present edition indicates that more than forty thousand copies of this book have been sold. "The Secret of Exposure" was first written in 1906. Since then it has had seven reprints with a sale that ran as high as twenty-four thousand copies. These books have been revised many times to bring them up to date. The latest revision made was during the current year.

Special Leica Camera Model

● The new model FF Leica is being announced by E. Leitz, Inc. The model FF Leica is basically the same as the model F excepting that the film capacity is 33 feet (enough for 250 exposures) instead of a little more than 5 feet in the regular Leica (giving up to 36 exposures). Aerial photographers will welcome this new model, for it eliminates the need for reloading after every 36 exposures. Natural-color photographers will find it of value in their work, for it permits a greater range of pictures to be made without opening the camera. It is likewise useful to press and candid photographers, for often they are required to make a complete series of pictures in rapid succession without time to re-load shorter lengths. For copy work, the model FF is without a peer, for its film capacity permits the copying of many pages successively without interruptions.

The new Leica model possesses all the features of the model F Leica, slow shutter speeds, magnified range finder, etc. Two film magazines are used, thus making it unnecessary to rewind the film back after exposure. Any of the Leica lenses are interchangeable on this model. Accessories include an Eveready case, special film trimming guide, and spare magazines.

New Victor Projector

● Victor announces a new projector to be placed on the market very soon employing a 750-watt lamp. This will be a



counterpart of their Hi-Power projector which has been using the 500-watt light.

It is expected this new 16mm projector will be ready for the market within the month.

New Miniature Camera

● The newest foreign-type miniature Kodak, which takes sixteen pictures, $1\frac{5}{8}$ by $2\frac{1}{4}$ inches in size, on an eight-exposure roll of 620 film, has just been put on the market by the Eastman Kodak Company.

The sixteen prints from a roll of film exposed in the Kodak Duo Six-20, as the new camera is called, are large enough for an album, a letter, or a pocket. The availability of Panatomic Film, with its fine-grain characteristics, in the 620 size for use in the Duo Six-20 will accommodate also photographers who wish to make sizable enlargements from their negatives.

The Kodak Duo Six-20 is compact for a camera taking pictures of the size described, its longest dimension being less than that of a Vest Pocket Kodak. Like the Kodak Vollenda and the Kodaks Six-20 and Six-16, the front of the Duo Six-20 springs into rigid picture-taking position at the touch of a button.

The Duo Six-20 is equipped with a Kodak Anastigmat f3.5 lens and a Com-

pur shutter, which are set in a spiral focusing mount controlled by a lever. The lens is of 7cm focal length. The shutter has eight speeds, ranging from 1 second to $1/300$ of a second, with bulb and time.

The red windows have a slide cover for light protection when panchromatic film is used. There is a collapsible direct-view optical finder, besides a depth-of-focus scale.

New 16mm Color Process

● From England comes word of a new natural-color process for use in any 16mm camera or projector. Known as "Dufaycolor," it appears to be a subtractive process, and is backed by many figures well known in British photography. The use of the process does not appear to be restricted to cameras fitted with fast lenses, or to high-powered projectors; the manufacturers state that satisfactory pictures have been made with it under the most adverse weather conditions, and with ordinary equipment.

Quoting further, the manufacturers state: "A filter is used on the camera when taking 'Dufaycolor,' but it is a simple, inexpensive, one-color filter. The film is a reversal film, and when it has been processed, the colors are in the film itself, and can be examined when holding the film in the hand. Because the color is inherent in the film, no filter is necessary in projection."

The process is stated to be the result of twelve years' research, and to be backed by many of the leaders of the British photographic industry. The price quoted for the English market is only slightly higher than that of ordinary reversal films. It is not stated whether the process is to be introduced into America.

Goerz Lens Catalog

● The C. P. Goerz American Optical Co. has just issued their latest catalog of lenses and photographic accessories which that concern manufactures.

In addition to their wide line of lenses for still, 16mm and 35mm movie cameras they also list such interesting things for amateur movie-makers as direct focusers for film cameras. This device permits focusing directly through the lens in taking position. It is applied to lenses of 3" and greater focal length. Also the effect device and mask box will prove of interest to advanced amateurs.

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BACKYARD MOVIES

● You'll recognize in both contributions to Backyard Movies this month two very fine suggestions, constructive and mightily useful to practically every cinephotographer.

THE UNREAL NEWSREEL

Recently I decided to rid my dark room of some fifty bits that I had deleted from my films during recent years. In looking over these shots, the thought occurred to me that I could weave some of them into amusing plots by adding a scene or two here and there.

I decided to assemble from this hodgepodge of film, a burlesque newsreel. The "newsreel" items were presented with titles after the fashion of present-day newsreels.

For example, I found in my collection a shot of a group of people scurrying out of the dusty propeller-wake of an airplane taking off just out of scene range. Still another shot showed a male member of the family frantically taking clothes off the family wash line and stuffing the clothes pins in his mouth—a scene playfully taken a few years ago in order to use up a few remaining feet of film. There was another shot showing floodwaters of a rainstorm that occurred some years ago, flowing down a city street carrying debris before them.

These scenes were laid aside. After the main title of the "Unreal Newsreel" was spliced, the subtitle: "Punkin Center, Iowa. Cyclone Strikes Village, Wreaking Havoc."

Then the rescued scenes were assembled as follows:

Scene 1. Shot of people scurrying out of propeller wake. This gave the appearance of people running for shelter in storm.

Scene 2. Made special shot of fast-moving dark storm clouds in sky.

Scene 3. Shot of man taking clothes from line, apparently fearful of a approaching storm.

Scene 4. Shot of torrential rain falling, made specially to link up the sequence.

Scene 5. Shot of swirling storm waters, referred to above.

Thus I had a complete sequence made with the three discarded shots and two specially-made shots.

Movie Film Free

These two contributors received each a 100-ft. roll of 16mm panchromatic film. Send your suggestions in, you may also win a 100-ft. roll of film free. The main thing is the idea. Something that practically every amateur can make. Something not too difficult and something that does not call for special investment other than film. You do not have to send it to us scene for scene unless you want to. Just let us have the plot in your own words.

Another newsreel item was made from discarded and special scenes as follows: Subtitle, "San Pedro, Calif. Rare Animals Arrive from Borneo for Griffith Park Zoo."

Scene 1. Medium-shot of ocean freighter unloading at docks.

Scene 2. Medium-close shot of caged baboons taken at zoo.

Scene 3. Medium-close shot of my wife playfully imitating a caged monkey behind a garden grill-work.

Subtitle: "A rare specimen of Dam-sel captured after a strenuous 24-hour battle."

Scene 4. Continuation of Scene 3. Scenes 1, 3 and 4 were selected from the discarded group. Scene 2 and titles were added and an amusing sequence resulted.

Amateurs looking about for something new to film will find making an "Unreal Newsreel" amusing and a test for their ability to improvise and develop plots, and at the same time save costly footage that might otherwise be discarded.

ARTHUR E. GAVIN.

"WHILE THE EARTH REMAINETH"

● Did you ever come face to face with a stone wall, as it were, in selecting a title for your next picture? One that would provide a wealth of material and required no elaborate set-up? A movie that included, when completed, many scenes taken while touring or right in your own home or neighborhood? Well, such a problem confronted me when my last four-hundred-foot reel was finished.

Memory came to the rescue and "While the Earth Remaineth" will be placed in production. It came about in

this way: Years ago, there hung in the living room at the old farm an imitation oil painting with this same title and beneath it, in bold lettering, was the complete text: "While the earth remaineth, seedtime and harvest, cold and heat, summer and winter, day and night shall not cease," each sequence of which was crudely illustrated. Naturally, this made a lasting impression on my youthful mind and these words will now be made to leap into action by means of the motion picture camera.

One can readily see the possibilities our title will present; for example, "Seedtime." Ploughing by horse, mule or tractor will yield scenes filled with action and one may be fortunate enough to meet up with a yoke of oxen to yield additional atmosphere. There are numerous modern implements used to sow seed or even to set plants that could be included, to say nothing about the women and children who are a part of the group in many sections of the country.

"Harvest." The fields of grain, the new-mown hay, the mowers, the reapers, the threshing machines and the workers, if properly filmed, will surely glorify the harvest-time and give the cinematographer lasting pleasure.

One can make attractive stills and by means of the titler create beautiful subtitles.

"Cold." Who doesn't have a very special shot that makes you shiver to look at it? Mine shows our letter-carrier with his head wrapped in a heavy muffler, breath congealing and hands covered with mittens—his very posture symbolizing cold. Icicles glinting in the sunlight, a jar burst by the expanding ice will enable one to put the "cold" idea over without difficulty.

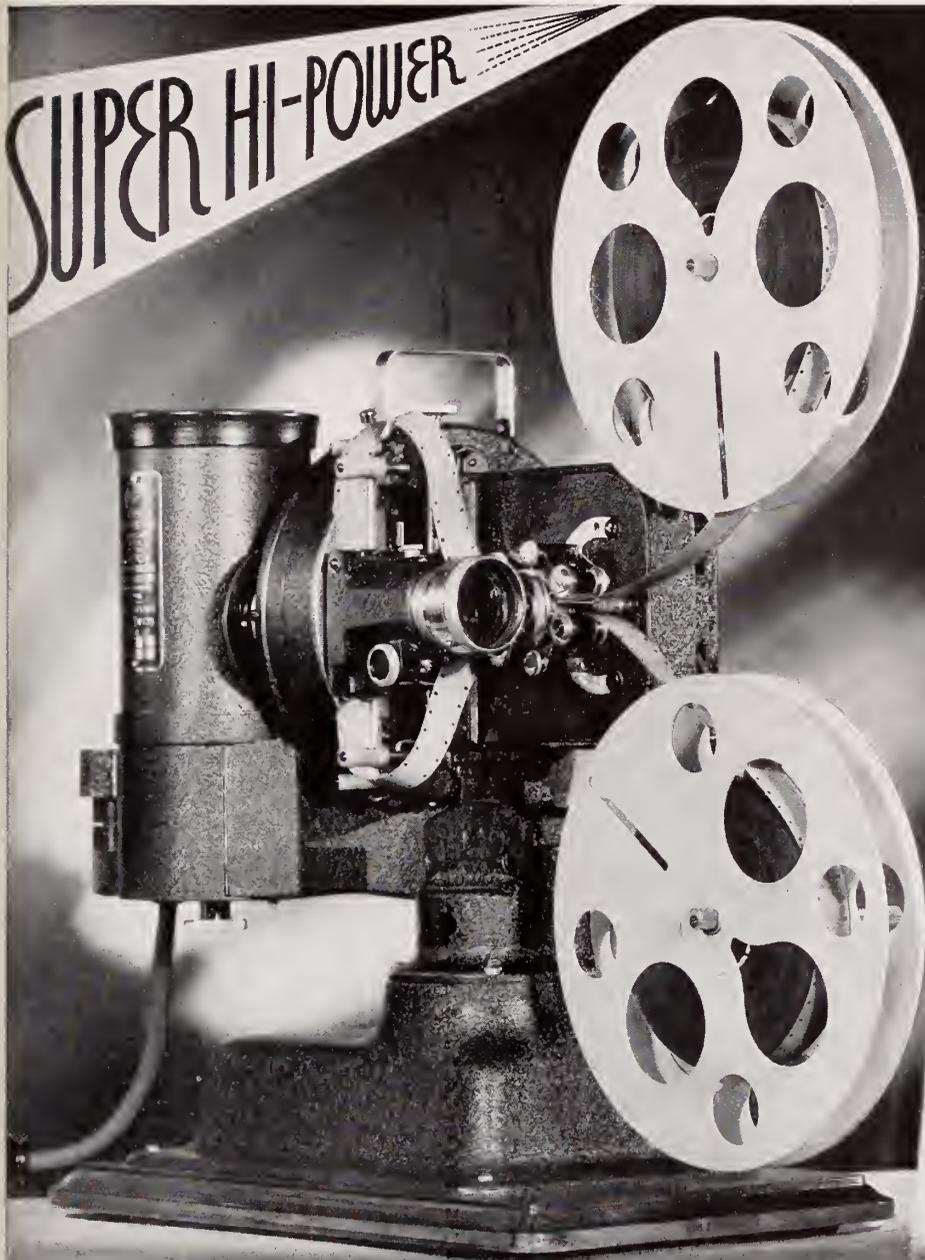
"Heat." The city kiddies reveling in the spray from a fire hydrant; the scorching narrow streets; the crowded parks; a close-up of some portly gentleman, collar open, coat over arm, fanning himself with his hat. No, no subjects will be lacking in a quest for "Heat" shots.

"Summer." The beaches, the bathers, the boys splashing in the "old swimmin' hole"; in fact, why not feature the recreational angle of summer? If an ocean voyage or a bus trip is included in your summer itinerary, a wealth of material is at once available.

"Winter." Again winter sports could be featured with some attractive and

Continued on Page 233

SUPER HI-POWER



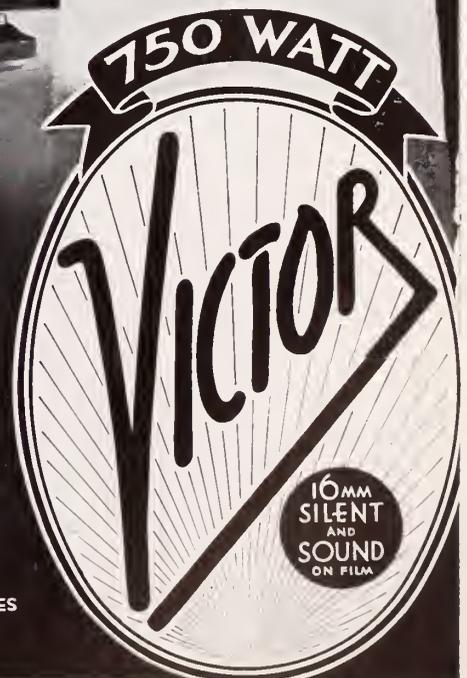
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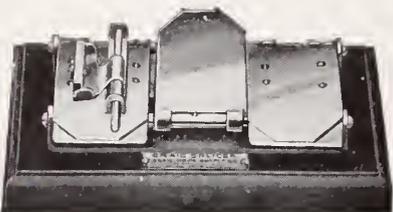
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Survey of Foreign
Cinephotography

Continued from Page 226

historical monuments offers a great variety of subjects. Probably more amateur costume play films are being made in France than anywhere else.

There is plenty of equipment from which to choose and it is quite moderately priced. Much experimenting is being done by the amateurs with negatives and positives. Quite a number of them try their own developing with various results. Cine clubs are to be found all over and they, too, have many contests. Several well-informed cine periodicals are published. Well-stocked substandard film libraries are to be found. All the larger cities have processing stations although more speed in delivery is desirable.

France, like many other European countries, has always sent entries to the greater international contests with various results. The 8mm is rapidly making headway.

In addition to the French cameras being marketed there is a wide demand for the American- and German-made cameras.

Owing to the widespread use of 9.5-mm there are a number of cameras like the Motocamera made by Pathe.

In addition to the well-known Kodak 8mm there are several other 8mm cameras of French construction.

Germany also takes its substandard cinephotography very seriously and with proper Teutonic methodical efficiency turns out some very admirable results, though usually technically a bit serious and lacking the warmth of the more spontaneous French efforts. They too, have a wonderful variety of equipment to choose from and perhaps cheaper than any other country.

The Germans, too, have a great many clubs, or "Vereine," and competition is keen. The travel exterior film dominates in entries. Also quite a few play films are being produced. Germany more than any other country has quite a few enthusiasts who make animated drawing films. The trick film is very popular. In general their technique is rather good but their subjects a bit monotonous. However, some very excellent entries have been noticed at the greater international contests. The number of amateurs using negative and positive is quite surprising and a very large part of them do their own processing.

Their publications lean more to the technical side, perhaps neglecting a bit to fan that spirit of fraternity and good-fellowship that is so noticeable in other foreign cine publications. However, they are exceedingly well-informed but as a rule contain information mostly for the advanced amateur. Outside the United States, Germany uses more 16mm for

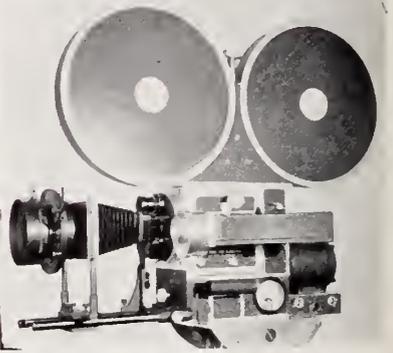
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educational purposes than any other country. It has been officially recognized by the German government and quite a few 16mm amateurs have turned 16mm professional.

Germany has a multitude of cameras for the amateur. A very practical camera is offered by the Siemes Co. They manu-

facture a single-lens mount with 4 speeds as well as a three-lens mount.

There are many smaller countries in Europe which are great enthusiasts in Cinephotography and they also have made their marks in the various contests. However, they are mostly dependent on foreign cameras and raw film. I dare say that cine clubs are found in all parts of the world, by no means forgetting Japan. The various prizes won by the Nippanese prove that they are very much awake and have long adopted Amateur Cinephotography as one of the most interesting and educative hobbies one could possibly indulge in.

Backyard Movies

Continued from Page 230

unusual shots of driving snow, big drifts, stalled motor cars and snow-plows. Doubtless most of us have plenty of these in "camphor" awaiting the opportune time to use them.

"Day." Why not show a day's activities? A hand placing the bottles of milk on the back steps; the morning paper dropping on the lawn; bacon and eggs sizzling in the pan; Junior toddling into the scene yawning and only partly dressed. Under this heading can be filmed an interesting record of events centered around our daily life in home and office — not forgetting the many humorous sides—and by so doing much added interest will be gained.

"Night." So much has been written about night photography with high-speed cine and miniature camera lenses since the introduction of super-sensitive films that the amateur cinematographer should be right in his element. As a prelude, however, some beautiful cloud effects over hills, mountains or ocean simulating the coming on of evening should be filmed. Here again home life—arriving from the office, the evening meal, gardening, putting Junior to bed. But why not continue our filming by showing some of the bright lights, too: flashing electric signs, lighted streets, the crowded board-walk or any other night scenes that make for originality?

How shall we end the reel? Fade-out on the lost "Night" scene and fade-in on the following—on your titler—giving each little more than a flash: "Seedtime and Harvest," "Cold and Heat," "Summer and Winter," "Day and Night"; then in larger letters giving slightly longer footage: "While the Earth Remaineth" followed by "Shall" (small) "Not" (larger) "Cease" (larger).

Look over your random shots, make your plans for the summer and you'll have an interesting reel.

FREEMAN P. TAYLOR.

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DIGGING FOR BURIED TREASURE

Continued from Page 222

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Scene 22. Close-up of another boy backing away hesitatingly as he speaks:

TITLE: "Let's quit . . . I don't wanna ploy anymore!"

Scene 23. Continue Scene 22.

Scene 24. Semi-close-up of Jimmy glancing at note then at boys. He speaks:

TITLE: "I'm not scared."

Scene 25. Continue Scene 24.

Scene 26. Close-up of Father as he foils to compose himself; he snickers . . . once . . . twice . . . etc.

Scene 27. Same shot as Scene 24. Jimmy points to his dad and questions the boys; they nod their approval.

Scene 28. Long-shot of boys as they walk up to Father.

Scene 29. Medium shot of Father as he pretends to read. The boys enter the scene, Jimmy speaks to his father, and hands him the note.

Scene 30. Close-up of Father trying to control his emotions as he reads the note. He assumes a serious expression and strokes his chin thoughtfully.

Scene 31. Close-up of boys' faces as they look at one another questioningly.

Scene 32. Continue Scene 30. Father raises his finger motioning them to remain there. He assumes a satisfied look as if to say, "I have found the secret, my boys!" He rises.

Scene 33. Medium long-shot of Father rising from the group and entering the kitchen door.

Scene 34. Medium close-up shot of the boys who are still surprised at the sudden turn of events. (Take this shot looking down at them from the top of porch steps. The boys looking up towards the camera as if waiting for Father's exit.)

Scene 35. Very close close-up of one boy's finger nervously twitching at his shirt.

Scene 36. Same setup as Scene 33. Father exits from the kitchen door with an electric iron in his hand. He touches it; it is hot.

Scene 37. Close-up of Father sitting as the boys gather around. He starts to lower the iron.

Scene 38. Very close close-up of Father's hands as they lay the iron on the steps, face up. He places the note on the hot face.

Scene 39. Same shot as Scene 37. Father begins same hoodoo conts over the note. He waves his hands over it in a mysterious manner.

Scene 40. Close-up of boys' faces as they gape at him and then the note.

Scene 41. Continue Scene 39. Father finally ceases and with a trium-

phant gesture he points at the note. They crowd in.

Scene 42. (INSERT) Close-up of the note as lines begin to appear on the white spaces. It is a mop. (This trick is simple. Write with lemon juice on the white spaces of the note and when heat is applied to the note, the writing or drawing will appear plainly. No double exposure necessary for this trick.)

Scene 43. Continue Scene 41. The boys look up and draw backward surprised. Jimmy shouts gleefully and picks up the note.

TITLE: "A treasure map! . . . And it's hidden in this yard, too!"

Scene 44. Long-shot of the group as the boys begin to follow the map's directions.

Scene 45. Close-up of Father's amused countenance. He glances over to the spot from where the dust had originated in Scene 7.

Scene 46. Close-up of Jimmy carefully measuring fatogge. He stops, points downward, and shouts triumphantly:

TITLE: "Here's the spot!"

Scene 47. Medium long-shot as the boys crowd around and begin digging.

Scene 48. Close-up of Spotty. He is lying down and suddenly pricks his ears up and watches the boys intently.

Scene 49. Close-up of Jimmy's face only as he digs furiously. His eyes fairly pop out as he strikes something hard. He looks down surprised at the discovery and then leans backward. The others peer into the hole. (Tilt camera downward toward the hole revealing contents.) They are dumbfounded to find a bone as the treasure!

Scene 50. Close-up of Father hilariously laughing at the joke.

Scene 51. Medium-shot of Jimmy rising with bone in hand.

Scene 52. Close-up of Spotty growling and barking. He makes a short dash for his property.

Scene 53. Medium-shot of boys as they start to run for safety. Jimmy slips and falls on a board.

Scene 54. Close-up of Jimmy's knickers as they tear on a nail protruding from the board. (Use old golf knickers.)

Scene 55. Close-up of Father as he suddenly realizes they are his new golf knickers. He exclaims:

TITLE: "My new knickers!"

Scene 56. Continue Scene 55 as Father raises his hands to the sides of his head in despair. (Pan down to Spotty, who is licking his retrieved bone in peace.) FADE OUT.

THE END

Cinematographic Annual,
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Principles Underlying Film Tricks

Continued from Page 221

to frighten my readers away from at least trying to get double exposure effects, if you will but think out ways and means before you waste too much film.

Have you made up your "color catalog" yet? If not, by all means do so as soon as you can. The knowledge of what filters can do under certain conditions is apt to be the only solution at times to the attainment of effects impossible in other ways. The illustration in the August issue which Mr. Slifer made shows in a striking manner how completely filters can absorb colors. With your color catalog you can proceed confidently in trick filter shots, so bear with me in the repetition of "make a color catalog now."

The manipulation of the lens focus and diaphragm opening makes possible better cinephotography, as we discovered from Mr. Slifer's other illustration in August. Study your focusing problems as they arise. Try to produce the best possible picture for the subject matter under consideration. Remember that in scenic work or portraiture, the face of the subject is the dominant thing in that picture. Choose the quantity and intensity of light which allows the diaphragm to open wide enough to make the depth of focus short, then focus sharply on the main object.

On the other hand, if you are making miniature shots, take care that you don't have so shallow a depth of focus that it looks like a miniature shot. Use enough light so that the diaphragm may be stopped down for greater depth of focus, and if the picture still looks too much like a miniature shot, use a slightly diffusing filter to soften the sharpness of detail.

A number of readers of CINETRICKS have written their appreciation of the matter written, but have expressed a desire to be shown more definite examples of the tricks used. This seems an excellent idea, but the examples must come from you readers. When the AMERICAN CINEMATOGRAPHER announces the contest, be ready with your own means for doing these tricks, and submit clear photographs, if necessary, of your gadgets along with a concise description and the manner in which you have actually used them in your own filming. I do not know the details of the contest, but I do know you'll be happy to own the equipment which is to be offered as prizes in the contest. Thank you for reading my humble efforts, and if they have been the means of inspiring you to work them out, I've received my reward.

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This Contest is open ONLY to AMATEURS. No professional cinematographer will be eligible to compete.

The Contest ends at midnight of October 31, 1934. All pictures must be entered by the closing date or they will not be considered. Entries, mailed or expressed, bearing a date not later than October 31, 1934, will be accepted.

Pictures submitted in this contest will be judged for photography, composition, direction, acting, cutting and entertainment value. The judges will include outstanding and widely known cameramen, directors, actors, writers and a group of nationally known motion picture critics.

The decision of the judges will be absolutely final and there can be no appeal from their decision. Announcements of the awards will be made as soon after the close of the contest as possible and checks and prizes will be sent the winners.

Pictures may be submitted either by individual amateur movie makers, or they may be submitted by amateur movie clubs. However they must be photographed on 16 millimeter, 9½ millimeter or 8 millimeter film. Each entrant must have his entries accompanied by the sworn statement which will be sent him to fill out. No pictures will be accepted which were photographed on 35 millimeter film and then reduced.

Contestants may enter as many subjects as they desire. One entry blank will cover all subjects put in the contest by that entrant.

The contest is open to amateurs and amateur clubs anywhere in the world.

The \$1000 in cash will be divided very simply. There will be a grand prize of \$250 for the best all-around picture. There will be from 10 to 15 prizes in the various classifications of \$50 each. There will be such classifications as Scenic, Travel, Educational, Scenarios, Home Movie, Kalendar, Technical and any other classifications which might be brought forth by the entries made.

The American Cinematographer reserves the right not to declare a prize for any classification, if in the opinion of the judges, there is not a picture submitted sufficiently good to be classed as a prize-winner.

The American Cinematographer also retains the right to make duplicates of such prize-winning pictures as it may indicate, for free distribution to clubs and amateur organizations throughout the world.

If you intend to enter the contest please send coupon on this page for official entry blank.

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Please send me one of your official entry blanks. I intend to enter a (16mm 8mm 9½mm) picture in your 1934 contest. I understand my entry must be in your office not later than October 31, 1934.

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Let's Try Animation

Continued from Page 223

the course of the foot until, in the eleventh drawing (lower left) it is once more on the ground, with the other foot ready to be raised for the next step. This produces a very smooth movement: if we photograph giving one frame to each drawing, we will have a smooth, yet quick step, which is shown on the screen (at the talking-picture speed of 24 frames per second) in just under 1/2-second. If we want to slow the step, we can shoot two frames of each drawing, and make the step last nearly a second—or even longer, by using three frames per drawing. Sometimes, in making our "Oswald" cartoons, we may use as many as 30 or more frames to show a single step. For amateur films, the silent-picture projecting-speed of 16 frames per second is standard.

The same principle naturally holds good for all movements, and is equally applicable to animated dolls and the like as to drawings. In making such animations, however, the amateur should guard against the peculiar mental effect of working a frame at a time: when you are working this way, you often lose sight of the fact that work which takes quite a while to do actually gives you only a fraction of a second's action on the screen. Naturally, the inexperienced worker will try to hurry—using too few intermediate phases, perhaps too few frames per phase, as well; and the natural result, of course, is over-fast, jerky animation. So the best rule to follow is: two frames per phase; plenty of phases, closely-spaced—and lots of patience. Remember, too, that if you want a thing to be motionless on the screen—either a "prop," such as furniture, or a moving object, temporarily motionless—it has to be motionless while you are shooting! Take care to have your camera firmly in place on a tripod, and avoid moving anything you don't want to see moving on the screen. Most important of all, don't make the mistake of not allowing enough frames for any object you want to show as standing still: remember that each frame is on the screen for only 1/16 of a second—and it takes sixteen frames to make a character stand still for only a second. If you use less, your object will only pause momentarily between its movements, and you won't get the effect of a stop, but rather of a sort of jiggle in the motion.

The best way to learn animation, though, is to study normal film of ordinary action—and study it frame by frame, so that you can see just how the camera spaces its phases of motion. Naturally, you won't by any means have to

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use as many phases as are actually caught by the movie-camera, but if you pattern your animation closely upon the movement shown in normal films, you'll come very close to getting smooth, normal animation. Try it!

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GADGETS

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Here's how it works. Send us in tricks you have done in filming with your 8mm, 9½mm or 16mm camera. Explain them to us so that we can explain them to others in the pages of *American Cinematographer*.

For every one we publish you will be entitled to your choice of one of the prizes listed below.

By Gadgets we mean little pieces of equipment you have built, designed or devised. Equipment that works. Little gadgets you have added to your camera, projector or otherwise. For instance, we heard of one fellow who built a splicer out of a mouse-trap . . . that's a gadget.

What kind of gadgets have you made . . . what sort of tricks do you do with your camera or equipment? If necessary send us a rough sketch or a snap shot of your equipment if it will help describe it better and quicker.

Here's Your Chance to Win Equipment or Film

Frequently we have published what might be termed tricks. Such as making distorted effects by pouring sweet-oil over a glass in front of the film. Others have been published from time to time.

In the way of gadgets we have reported many things from the building of a complete 16mm camera by amateurs down to making their own reels.

What Have You Done?

Here are the prizes . . . you may make your choice of any one of them.

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Volume XV OCTOBER, 1934 Number 6

What to Read

CHEMICAL Focus in Cinematography by J. A. Dubroy, A.S.C.....	248
MOUNTING Cameras for Aerial Cinematography by Charles A. Morsholl, A.S.C.....	250
RIDDLE Me This by A.S.C. Members.....	252
NEW DEAL for Newsreel Cinematographers by J. Hubbell.....	253
PHOTOGRAPHY of the Month.....	254

Next Month

● There will be a number of interesting articles telling you how the professional cameraman in the Hollywood studios does the things you see in the pictures. There will be stories on both the artistic side of pictures as well as the technical and practical viewpoints.



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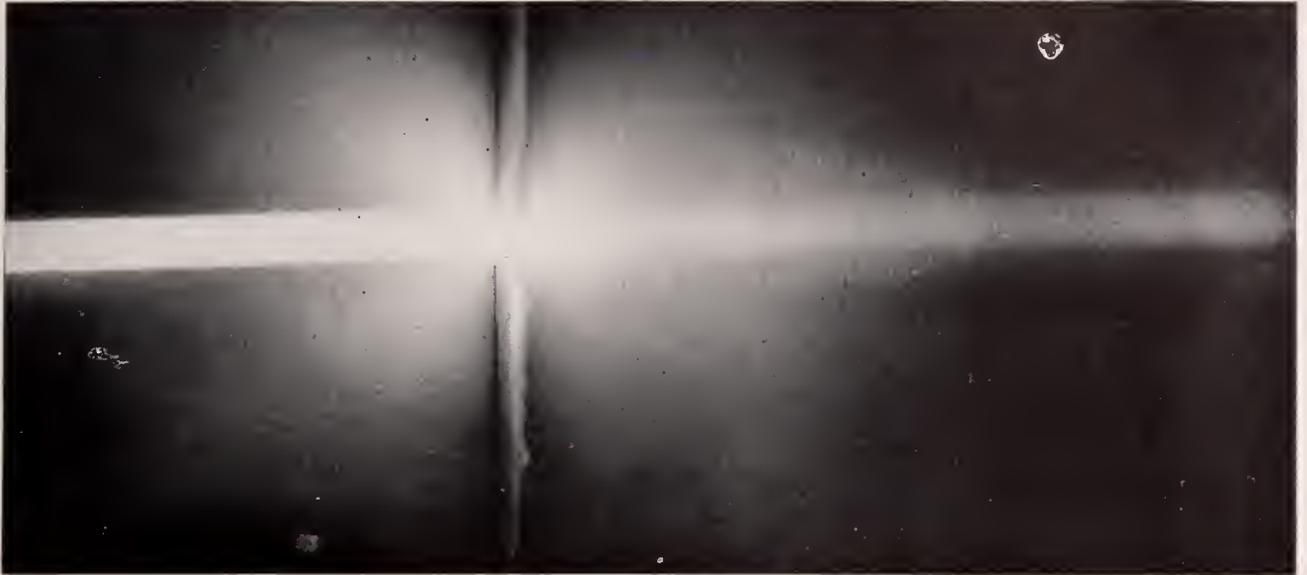
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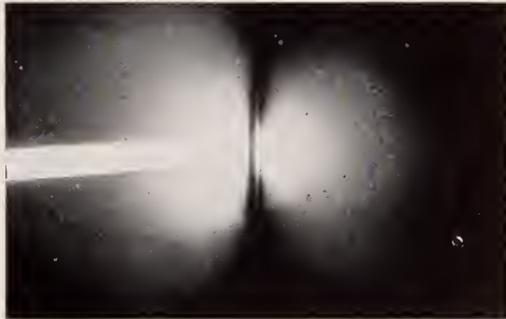
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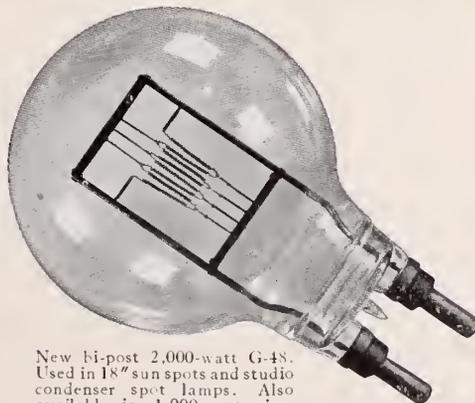
SILK, as cinematographers well know, is the most commonly used material for spreading the light to soften shadows, and for diffusing light to eliminate "hot spots". It helps you control light quality and intensity. It transmits from 65 to 75% of the light and effectively conceals the bright filament. The photo above shows how it distributes the light. Very similar characteristics are shown by ground glass and pebbled glass.



White opal glass diffuses more but transmits less light

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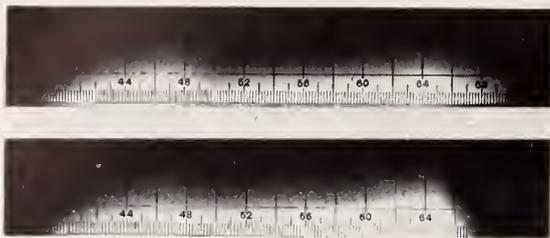


Fig. 1. Spectrographs of Eastman Panchromatic film Type 2 (above) and Superspeed Panchromatic (below).

Chemical

ONCE in a while, the question of focusing differences, commonly called "Chemical Focus" comes to the front in cinematographic practice and although much has been written in the near past on the subject, it appears that it may not be amiss to once more discuss its fundamental effects and the part that they play in everyday cinematographic procedure.

It is obvious that the photographer and the cinematographer strive to obtain a photographic reproduction of an object with all possible fidelity with regard, especially, to modeling and the distribution of lights and shades that best correspond to the visual impression produced by the subject, except for the rare cases in which a distortion of the visual impression serves to emphasize a dramatic mood or enhance some essential, and all-important, details to the detriment of others.

All branches of photographic research have bent their efforts to satisfy the requisites of fidelity in reproduction which involve, mainly, the characteristics of photographic emulsion sensitivity, those of the light used in illuminating the subject and those of the image-forming optical system, and their relation to the sensitivity of the eye for the light radiations emitted by the subject.

In a quite complete and very comprehensive paper (*1) Loyd A. Jones has shown that the visibility function of the eye is far from even approaching the spectral distribution of sensitivity of one, or any photographic emulsion, and the relation between photographic sensitivity and the distribution of light energy in daylight.

In another paper (*2) Mr. Jones demonstrates the relation between photographic sensitivity and the distribution of energy in incandescent filament (Mazda) lights and for both cases he includes the absorption characteristics of the glass of the photographic lens.

These demonstrations make quite obvious the fact that by controlling the condition of illumination with respect to the sensitivity characteristics of the film emulsion, one could secure a photographic record very closely approximating the visual impression made by the subject on the onlooker. In actual practice, however, it is quite impractical to secure perfect tone reproduction because the density of the filter that should be used would be entirely too great to be in keeping with the average exposure time used in studio photographic procedure.

The cinematographer is then confined to as close an approximation of color value renditions as is compatible with the means at his disposal.

Theory and general practice suggest for general work the use of panchromatic films and a yellow filter of the K series for daylight exterior work, and that of unfiltered incandescent filament (Mazda) lamps for interiors.

Following Mr. Jones' discussion, it is quite easy to determine, with a fair degree of accuracy, the range of the band of spectral colors that is called to form the photographic image with due consideration to the sensitivity of the emulsion, the light-transmitting characteristic of the filter and those of the illuminant.

Since Mr. Jones' work was published, a new type of film emulsion has been introduced to the cinematographer and is now widely used. This is the supersensitive emulsion commonly referred to as super-pan.

Since no quantitative data are available at the present time for this type of emulsion, the spectrographs illustrated in Fig. 1 will serve as a guide for an understanding of the relative response of the supersensitive emulsion to the various light wave lengths as compared with the response of panchromatic type 2 Eastman film, mainly dealt with by Mr. Jones.

It is clearly seen that the sensitivity of supersensitive emulsions does not extend as far into the red as does the panchromatic, but shows a pronounced peak at approximately wave length 650 mu, which nearly corresponds to the C. Fraunhofer line of the solar spectrum.

It is to be remembered that the apparent drop of sensitivity in the short wave length of the spectrum is not due to the emulsion sensitivity characteristic in this region of the spectrum, but to the fact that the spectrographs are made through a wedge which absorbs the unrecorded short waves in a manner similar to that in which these waves are absorbed by the flint glass components of a photographic lens.

These data prove (*4) that a wide range of wave lengths within the visible spectrum is recorded.

Further references are available (*3) on the spectral distribution of energy of either white flame or panchromatic carbons.

This proves that in general practice, a wide range of wave lengths, approximately from 400 to 670 mu within the visible spectrum, is recorded on the film irrespective of the sources of illumination used; that is to say, normally (Wratten K) filtered daylight, incandescent filament lamps or arcs.

These premises established, it remains to analyze the characteristics of performance of the photographic lens with special reference to its ability to produce an image of an acceptable degree of sharpness.

It is well known that a photographic lens represents at its best, a compromise between its ability to form a point-by-point ideal image of the subject and its nearest approach, as determined by the optician, to answer the requirements of the specific use for which the lens is designed.

This involves carrying the correction of the various unavoidable aberrations to the best acceptable compromise.

The aberrations related to the scope of this article are obviously those which arise from the inability of a lens to bring to a common focus all of the wave lengths comprised in the spectrum which are generalized under the term "chromatic aberrations."

It is well known that for lenses of large aperture and designed for cinematographic purposes, only two of the spectral colors can be brought into coincidence at the image plane, resulting in unavoidable residual chromatic errors which the optician has called the secondary or residual spectrum (*5).

Focus in Cinematography

by
J. A. Dubray, A. S. C.

These limitations have led the optician to design instruments most adapted to the particular use for which they are created and to seek the best possible compromise imposed upon him.

For example, in refracting telescopes to be used for visual observation the colors brought to coincide with the focal plane would be those corresponding to the C and F lines, for which region of the spectrum the eye has the greatest visual response.

The narrowness of this spectral band is imposed by the great focal length of this type of objectives since the errors due to the secondary spectrum increase with the focal length of the lens.

A refracting telescope to be used for photographic purposes and with emulsions most sensitive to the blue region of the spectrum would be "corrected" for the F and G' lines, and since it would be impossible to accurately focus visually, the best focal distance would be determined experimentally and the lens locked in position for operating.

It is evident that since photographic lenses, and especially cinematographic lenses, are of a short focal length the magnitudes of the chromatic errors are reduced as compared with those of telescopic objective and therefore the two points of focal coincidence can be extended to a greater range of the spectrum.

Before the advent of red sensitive films a color correction for the blues and the yellows, that is to say for the D and G' lines, was found adequate, and a lens of this type could be focused visually and at the same time produce a photographic image of acceptable sharpness.

When panchromatic films made their appearance and with them the possibility of securing a "color rendition" more true to the visual impression, the use of filters and incandescent filament lights assumed, quite naturally, a much greater significance.

It was suggested at that time (6) that it might be advisable to secure focal coincidence for the blue and the red regions of the spectrum.

Opticians responded to the suggestion and attacked the arduous problems involved in securing coincidence of focus for the C and G' lines and at the same time reducing to a minimum the secondary spectrum errors.

The difficulties of the task cannot be minimized, especially considering that the demand of the Cinematographer is for lenses of great aperture in which the paraxial second-

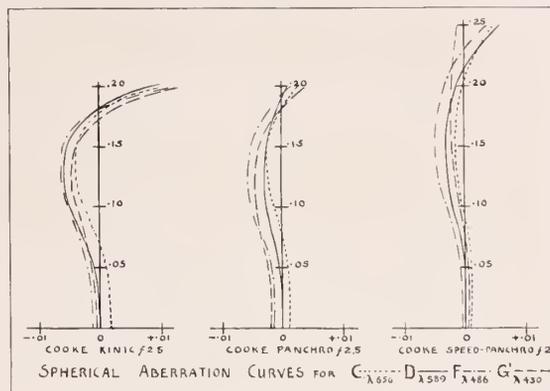


Fig. 2. Spherical aberration curves for the lines C, D, F, G' in Cooke lenses.

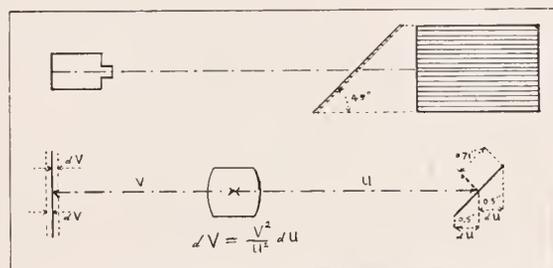


Fig. 3. Schematic drawing illustrating methods of testing for focal differences.

ary spectrum is modified by spherical aberration which is different for different colors.

In Figure 2 are shown the calculated spherical aberration curves for the C, D, F and G' lines for a Cooke Kinic f2.5 of pre-panchromatic days and for comparison the remarkable improvement secured for the same curves in the newest Cooke Panchra and Speed Panchra lenses working at the maximum apertures respectively of f2.5 and f2.

It is to be noted that these curves are determined for the lens working at full aperture and show the remaining errors for all zones and not only for the paraxial rays, and that the uncertainty of focus due to the lens is well within the uncertainties which are possibly due to the dimensional tolerances of the camera used and those due to the human equation or difference in determining the location of the focal plane by various individuals.

In the course of actual practice it has been discovered that quite often focus differences have been imputed to "chemical focus" while their causes were to be found elsewhere.

In the vast majority of lenses the inner zones are under-corrected and the outer zones are over-corrected; that is to say, the former are focused short while the latter are focused long. If a lens of an aperture of, say f2 having this kind of spherical correction is focused at full aperture and then stopped down ever so slightly, the best focus is shortened at times to an appreciable extent and this effect is more apparent the longer the focal length of the lens.

It has also been found that consideration must be given to a possible buckling of the film at the camera aperture. Cameras are designed and constructed to secure the positioning of the film at the focal plane within extremely close tolerances but the film itself has generally a tendency to curl, at times to a sufficient extent to produce a relatively considerable displacement from the focal plane.

The foregoing leads naturally to the conclusion that due to the smallness of the errors involved, it is possible and

Mounting

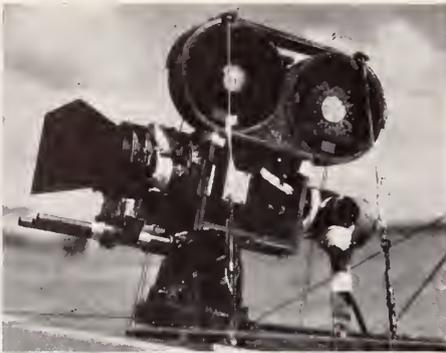


Fig. 1



Fig. 2



Fig. 3



Fig. 4

ALL camera-mounts for aerial cinematography can be divided into two classes: "Free Mounts," in which the camera can be directly manipulated by the cinematographer; and "Fixed Mounts," in which the camera is rigidly mounted, aimed by maneuvering the entire airplane, and operated by remote control. With the former, all "following shots," in which the camera follows the action of another nearby plane in the air, and most types of background shots for use in composite cinematography, are made; with the latter, all shots showing parts of the camera-ship itself (usually with the pilot "doubling" for an actor), and certain background and atmospheric shots at angles unobtainable with most free mounts.

Regardless of the type of camera-mount used, one paramount consideration prevails: it is essential that the camera be securely anchored, so that neither vibration nor wind-pressure may harm the picture. In the majority of modern airplanes, engine-vibration is a negligible factor; but except in the rare instances when we are able to use a closed-cabin ship, the pressure of the wind is a very important factor. In the majority of instances, not only do we have to contend with the pressure of the plane's movement through the air at a speed ranging from 70 to more than 300 miles per hour, but with the blast from the propeller—the "slip stream"—which greatly increases the problem. Accordingly, not only must the camera be rigidly mounted, but all unnecessary accessories must be dispensed with, and those remaining must be fastened securely with tape or wires, so that they can neither vibrate nor blow away. For the same reason, in fixed mounts, it is always a wise precaution to tie down the magazines, motor, and such projecting accessories, with wires, tightened with taped turnbuckles.

In the early days of aerial cinematography, the cameras were mounted in the plane by the simple expedient of lashing the tripod—folded, of course—to some convenient part of the ship's structure. This, however, suffers from several disadvantages: in the first place, the tripod takes up too much valuable room in the cockpit, and adds unnecessarily to the weight carried; secondly, such an installation is more difficult to fasten securely, and is usually more or less inconvenient to operate. The next step, of course, was to attach the tripod-head in place of a machine-gun on a regular Scarff machine-gun mount in military ships. This was more convenient, but unfortunately, the average machine-gun mount allows quite a bit of play—often as much as $\frac{1}{4}$ "—and although this is desirable in gunnery, it is highly undesirable in camerawork. Accordingly, the present practice of making special camera-mounts grew.

As a general rule, each mount must be designed and built specially, to suit the individual needs of the work in hand. One general principle applies to all designs: to insure the utmost in rigidity, the mount must be anchored firmly to the actual structure of the airplane itself—in some instances, to the fuselage longerons; in others, to the wing-spars. Welded steel tubing is the most satisfactory material for making these mounts, though at times, wadded construction has served adequately.

One of the more simple mountings is shown in Fig. 1. This is a fixed-type mount, used in making "West Point of the Air." As will be seen, this mount was located at the tail of the plane, just forward of the empennage. The mount consists of a flat metal plate, slightly wider than the fuselage, laid upon a sheet of sponge-rubber, which serves as protection to the covering-fabric of the ship, and as a vibration-damper. The plate is rigidly fastened to the upper longerons of the plane by four U-bolts. On the plate is a metal spider, threaded to fit the standard tripod-

Cameras for Aerial Cinematography

by
Charles A. Marshall, A. S. C.

head which supports the camera itself. The camera is trained by the usual adjustments of the tripod-head pan and tilt movements, and is then tied down rigidly by wire braces running from the base-plate to a special brace fitted on top of the magazines. A standard Bell and Howell Cinemotor is used to drive the camera: note how it was secured from vibration by sturdy strap-iron braces. Note, too, how the matte-box lock-screws, the focusing-prism lever, and all joints or fittings that might be moved by the wind, are secured with adhesive tape.

Fig. 2 shows the same mount, remodeled to permit a higher camera-position. This was done by adding a four-legged platform of steel tubing between the base-plate and the spider carrying the tripod-head.

Fig. 3 shows a simple fixed mount on the upper wing of an Army Advanced Training plane. This mount is made of flat steel and duralumin strips, curved to fit the curve of the wing, and passing entirely around the wing. In addition, the mount is secured by large U-bolts fitted around the wing-beams. The camera itself is mounted upon the same base-plate shown in Fig. 1, and insulated and tied down in the same way. In this mount, however, the camera is mounted directly upon the base-plate. It is interesting to note that this mount, while reduced to the utmost simplicity, so disturbed the smooth flow of air over the wing that it destroyed the lift of two-thirds of the upper wing.

A somewhat similar type of fixed wing-mount is shown in Fig. 4. This mount was used several years ago in making background and atmospheric shots from a large commercial plane. The same type of base-plate was employed, and bolted onto a wooden framework, curved underneath to fit the wing, and bevelled on top, to give the camera the proper inclination. This frame was, of course, secured by U-bolts fitting around the main wing-beams. A similar wooden wing-mount is shown in Fig. 5: this was used for shots made straight back from the plane.

Two of the most unusual fixed mounts I have ever used were those used for making shots with the camera beneath the plane, in "Hell Divers" and, more recently, in "West Point of the Air." The latter is shown in Fig. 6. As can readily be seen, the camera is mounted on a flat base-plate, which is suspended by four sturdy steel tubes, which are attached to the lower longerons of the plane's fuselage. These tubes are fitted to the longerons by collars, locked with bolts: in this way, the camera's position and inclination may be shifted for alignment. The mount used in "Hell Divers" was similar, but, as it was located at the tail of the plane, just forward of the tail-wheel, it was naturally smaller. The shots for which this mount was made were, it will be remembered, those showing the plane landing on the aircraft-carrier "Saratoga": they began with the plane well in the air, and continued through the approach and the landing. In order to protect

Fig. 6

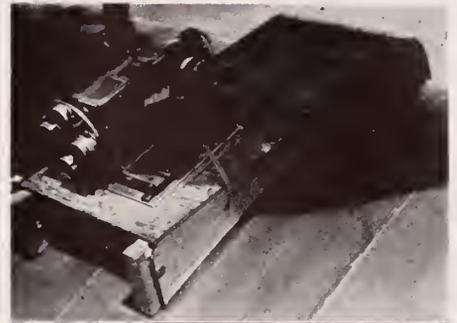


Fig. 7



Fig. 8



Fig. 5



Fig. 9





RIDDLE

ME THIS

The Riddle: What do you think of the idea of using single-film system sound for studio production—i.e., recording the sound in the camera, on the same negative as the picture?

JOHN STUMAR, A.S.C.: It might work out satisfactorily—but I doubt it. Recording both sound and picture on one film, it is inevitable that either sound or picture must suffer, for their photographic requirements are basically opposed. We all remember how badly photography suffered when we first started recording sound on film; and this is likely to repeat itself if we have to record and photograph on the same negative.

MACK STENGLER, A.S.C.: When sound came in, it set photography back at least eight years—and that with the advantage of the double-film principle. We have successfully overcome that setback, but a change to the single-film system would undoubtedly have the same effect—unless there is some radical and unexpected change in methods and equipment.

CHARLES ROSHER, A.S.C.: Of course we'd survive such a change—but we would have some pretty horrible problems in the laboratory before we got back to our present standard of picture and sound quality. Of course there would be a certain economy in the matter of film saved, but I think that this would be largely offset by the added difficulties in scoring, re-recording and "dubbing." Even aside from the scoring, all of our productions today are re-recorded in part, and often completely re-recorded: going to single-system recording would complicate this enormously, as well as making it difficult to cut closely.

HENRY T. SHARP, A.S.C.: I don't like it; when I made "Around the World in 80 Minutes," with Douglas Fairbanks, I used a single-system recorder, and the experience proved to me that either sound or picture had to suffer. In my case, I found that I had to expose so as to get a weak picture-negative if I was to get a vigorous sound-track, and accordingly the picture suffered to a greater or less extent, depending, of course, upon the light conditions under which I made the scenes. I realize that in the four years since I made that picture, many improvements have been made in both sound-equipment and sound-technique—but not enough, I think, to make single-film sound satisfactory for production use.

RAY WILKINSON, Pomomount Studio Laboratory: At the best, it would be a compromise between sound-quality and picture-quality, with both falling below the standards we are now used to. Cinematography requires one definite type of emulsion and processing, while recording requires an entirely different film and treatment, and in many instances what is definitely an advantage to one would be a disadvantage to the other. It is difficult to see how a really satisfactory compromise could be arrived at with existing materials.

A. L. GILKS, A.S.C.: Theoretically, it would be possible to reach a perfect compromise between the requirements of

sound and picture, so that neither should suffer overmuch. In practice, I doubt if it would be possible, as too many variable factors are involved. Moreover, even if this theoretically ideal compromise could be maintained consistently, it is questionable whether it might not be too delicate a matter to be commercially practical.

CHARLES STUMAR, A.S.C.: Naturally, unless unsuspected improvements have been made in recording and laboratory technique, either the sound of the picture must suffer. Probably both would, in practice. But I think that the worst objection would be the added troubles in re-recording and cutting. Today, we will often use the same sound-track under a number of scenes—and virtually all our pictures are extensively re-recorded. This would be almost impossible with single-film sound, while cutting would be much cruder, and give a less finished result.

L. GUY WILKY, A.S.C.: I think the answer can be found in any newsreel: most of these are single-film sound, and of rather poor quality, as a rule. If the picture is of the pleasingly soft quality we work toward in production camerawork, the sound is "mushy" and weak; if the sound is satisfactorily vigorous, the picture is generally too contrasty. This would be about the same if we tried production recording with the single-film system, for our aim in photography is a soft, delicate negative, while the recordist aims at a vigorous, contrasty negative for his sound-track. At present, these are satisfactorily achieved by using a soft-working emulsion for the picture-negative, and a fine-grain, high-contrast positive emulsion for the sound-track. I don't see how we could satisfy these conflicting requirements using single-film recording.

J. E. TUCKER, Asst. Superintendent, MGM Studio Laboratory: That's really a sound department problem! However, if such a change were ever made, I am confident that this laboratory could handle it satisfactorily. There are definitely established standards of quality and negative characteristics, to which we must adhere in our treatment of the picture-negative: and I am confident that our sound staff could, with only minor changes in their procedure, adapt their technique to these requirements without noticeable difficulty or loss of sound quality. It is largely a matter of balancing the sound and picture exposures so that each gets its desired effect with a single negative material and a single development.

TED TETZLAFF, A.S.C.: Of course there would be some small economy in using one length of film, rather than two; but I think this would be more than offset by the inconveniences to everyone concerned. Moreover, we are now trying to reduce the bulk of our camera-equipment, and to simplify it as far as possible: adding recording-units to the cameras would add both bulk and complication.

PAUL E. EAGLER, A.S.C.: Not so hot. I haven't had experience with single-film sound, but I've had a good deal of experience cutting pictures in the composite-print stage—and it's a terrible job. If sound and picture were on the same negative, you would have too much trouble cutting closely, handling overlaps, and the like. And of course there would be trouble in the laboratory, reconciling the requirements of sound-track and picture..

Continued on Page 262

A New Deal for the Newsreel Cinematographer

by

Joseph Hubbell

West-Coast Editor, Hearst Metrotone News



The new Akeley-Western Electric News equipment in action. The recording-unit is just above Cinematographer Greenwald's hand, under the finder-tube. Note small amplifier-case, lower left; this and a similar battery-case comprise all sound and power equipment and adds only 88 pounds to weight of camera outfit.

SOUND, for its own sake, is no longer news; accordingly, newsreel cinematographers must return to their old vocation of gathering NEWS in pictured form. This calls for a new deal in sound-newsreel equipment: no longer may newsmen be hampered by bulky equipment, nor chained to a two-ton "sound truck." Wherever possible, of course, news stories will still be "covered" in sound—and it must be good sound—but the new-day newsreel will stress news-value, and genuine motion picture reporting.

The Hearst Metrotone News is fortunate at this moment in being able to start virtually from scratch in this new-day camera-reporting. Reorganizing from a long and close association with the Fox Movietone Newsreel organization, it is able to commence operation with only the newest and most adaptable of newsreel equipment and methods.

From the start, it is recognized that there must be two basic types of equipment: lightweight sound-cameras and recorders, for use on all stories where sound is possible and desirable; and silent equipment for use in the many instances where sound-recording may be unessential or impractical. In both instances, lightness, compactness, and durability must be the governing factors.

Our sound equipment is, we believe, the last word in news outfits. The camera is the Akeley audio-camera, and the recording unit the Type "G" Western Electric portable recorder. The total operating weight of the outfit is only 182 lbs., and it is almost as portable as a silent-camera outfit. For field use, the equipment consists of the camera and its tripod, the microphone on a light tripod, the amplifier-case, a small battery-case, and the cables which connect these units. The entire outfit is light enough and portable enough so that only two men—the cinematographer and the recordist—can carry it anywhere, and operate independent of any truck or any power or other units save what they carry.

The camera, while not immediately recognizable as an Akeley camera, nevertheless retains most of the features which made the original Akeley design the premier news-

camera of the world. The familiar round box is replaced by a square metal case, surmounted by external, 1000-ft. magazines very like those used in studio cameras. The curtain-type shutter has been replaced by a rotating-disc type, which, however, still retains the invaluable 230° aperture, and which is, of course, adjustable. The Akeley matched-lens system is maintained, with standard Akeley lens-mounts; but the lens-boards are slid into a revolving turret, so that any two lens-sets may be used, and interchanged by revolving the turret. The finder-action is still through a matched viewing-lens, though the image is reflected to an eyepiece located more conveniently at the left-hand side of the camera. The camera is driven by a battery-powered, direct-current motor, located on the right side, and the action is damped by a heavy, semi-enclosed flywheel. The latest type Akeley Gyro-tripod is used; it is essentially the same as the type always used with Akeley cameras, but modified to take the newer camera.

Sound-recording is through the newest Western Electric portable channel, using the single-film system. Although not literally of the "Wide Range" type, it has virtually all the characteristics of the "Wide Range" recording, with a frequency-range from 50 to 9000 cycles. It will record speech and sound-effects with fidelity equalling the best of studio equipment, yet the entire sound equipment packs into two small cases, and weighs less than the camera-outfit.

The microphone is of the moving-coil type, and is normally mounted on a small tripod; for special purposes, where the recordist may wish to make running announcements, the microphone may be attached directly to the amplifier. This type of microphone has the advantage for news recording in that it is small, and—unlike con-

Continued on Page 261



PHOTOGRAPHY

of the MONTH

"THE DUDE RANGER" (Fox)

Frank B. Good, A.S.C.: Directing Cinematographer

Hollywood Reporter (September 12, 1934): "Like nearly all westerns it has some striking photography, in this case the photographer having picked up backgrounds of compelling beauty in the Arizona canyon and Pointed Desert country."

Doily Variety (September 12, 1934): "Photography is gorgeous—."

Motion Picture Doily (September 14, 1934): "Frank Good's photography is excellent."

"SECRET OF THE CHATEAU" (Universal)

Robert Plonk, A.S.C.: Directing Cinematographer

Hollywood Reporter (September 6, 1934): "Robert Plonk contributes photography that shines by comparison with the rest of the production."

Doily Variety (September 6, 1934): "Photography is okay."

"THE TRAIL BEYOND" (Lone Star)

Archie Stout, A.S.C.: Directing Cinematographer

Hollywood Reporter (September 6, 1934): "—the photography is very good."

Doily Variety (September 6, 1934): "Archie Stout turned in a fine job of camera work."

"THE PURSUIT OF HAPPINESS" (Paramount)

Karl Struss, A.S.C.: Directing Cinematographer

Motion Picture Doily (September 8, 1934): "Karl Struss' photography is good."

"CRIMSON ROMANCE" (Moscov)

Ernest Miller, A.S.C.: Directing Cinematographer

Motion Picture Doily (September 8, 1934): "—and Ernest Miller's excellent photography—."

"GIFT OF GAB" (Universal)

Harold Wenstrom, A.S.C.: Directing Cinematographer

Doily Variety (September 8, 1934): "Photography is swell."

Hollywood Reporter (September 8, 1934): "George Robinson photographed more than well."

"THE CASE OF THE HOWLING DOG" (Warner Bros.)

William Rees, A.S.C.: Directing Cinematographer

The Hollywood Reporter (August 22, 1934): "—and the photography by William Rees is good."

Doily Variety (August 22, 1934): "Best work in the production goes to the photographer, William Rees."

Motion Picture Doily (August 27, 1934): "William Rees' photography is good."

"LOST LADY" (Warner Bros.)

Sid Hickox, A.S.C.: Directing Cinematographer

Motion Picture Doily (August 27, 1934): "The photography by Sid Hickox is good."

"CARAVAN" (Fox)

Ernest Polmer, A.S.C.: **Theodor Sporkuhl, A.S.C.:** Directing Cinematographers

Motion Picture Doily (August 27, 1934): "The artistic photography of Ernest Polmer and Theodor Sporkuhl benefits the production greatly."

"DEATH ON THE DIAMOND" (M-G-M)

Milton Krosner, A.S.C.: Directing Cinematographer

Motion Picture Doily (August 27, 1934): "Milton Krosner's photography is good."

"THERE'S ALWAYS TOMORROW" (Universal)

Norbert Brodine, A.S.C.: Directing Cinematographer

Hollywood Reporter (August 22, 1934): "Norbert Brodine's photography is an asset."

"THAT'S GRATITUDE" (Foy-Columbia)

Henry Freulich, A.S.C.: Directing Cinematographer

Doily Variety (August 22, 1934): "Photography is flowless."

"RICHEST GIRL IN THE WORLD" (Rodio)

Nick Musuroco, A.S.C.: Directing Cinematographer

The Hollywood Reporter (August 25, 1934): "But the photography is something else again. Musuraco has done a magnificent job—."

Doily Variety (August 25, 1934): "Nick Musuroco has gotten everything into his camera work."

Motion Picture Doily (August 27, 1934): "Appointments are lavish, and the photography is in keeping with them."

Film Doily (September 8, 1934): Photography "Fine."

Continued on Page 256

One of Frank Good's set-ups for the "Dude Ranger." Lumber for this camera platform was hauled 128 miles.



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Panchromatic Negative

PHOTOGRAPHY OF THE MONTH

Continued from Page 254

"AGE OF INNOCENCE" (Radio)

James Van Trees, A.S.C.: Directing Cinematographer

Hollywood Reporter (August 24, 1934): "Van Trees' photography is beautiful . . ."

Film Daily (September 1, 1934): Photography "Very Good."

"COUNT OF MONTE CRISTO" (United Artists)

Peverell J. Morley, A.S.C.: Directing Cinematographer

Film Daily (August 29, 1934): Photography "Fine."

Motion Picture Daily (August 29, 1934): "Camera work of Peverell Marley is uniformly good."

"A GIRL OF THE LIMBERLOST" (Monogram)

Iro Morgon, A.S.C.: Directing Cinematographer

Film Daily (August 29, 1934): Photography "Good."

Daily Variety (August 29, 1934): "Piece has been well photographed—"

Motion Picture Daily (August 29, 1934): "—Ira Morgan photographed with a skillful eye."

"YOUNG AND BEAUTIFUL" (Mascot)

John Stumor, A.S.C.: Directing Cinematographer

Film Daily (August 30, 1934): Photography "Good."

"THE PARTY'S OVER" (Columbia)

Benjamin Kline, A.S.C.: Directing Cinematographer

Film Daily (August 30, 1934): Photography "Good."

"PECK'S BAD BOY" (Principal)

Frank B. Good, A.S.C.: Directing Cinematographer

Film Daily (August 31, 1934): Photography "Excellent."

"WAKE UP AND DREAM" (Universal)

Charles Stumor, A.S.C.: Directing Cinematographer

Hollywood Reporter (September 1, 1934): "Charles Stumor's photography is standard."

Daily Variety (September 1, 1934): "—and photography is excellent."

Motion Picture Daily (September 4, 1934): "Charley Stumor photographed well."

"THE MERRY WIDOW" (M-G-M)

Oliver T. Marsh, A.S.C.: Directing Cinematographer

Daily Variety (September 1, 1934): "Photography keeps the glamorous quality high throughout."

Hollywood Reporter (September 1, 1934): "Oliver Marsh with his trusty camera has done a marvelous job."

"GIRL IN DANGER" (Columbia)

Benjamin Kline, A.S.C.: Directing Cinematographer

Motion Picture Daily (August 29, 1934): "Benjamin Kline's photography is good."

Film Daily (September 11, 1934): Photography "Good."

"WAGON WHEELS" (Paramount)

William Mellor, A.S.C.: Directing Cinematographer

Motion Picture Daily (September 5, 1934): "William Mellor's photography gives the picture distinction."

"REDHEAD" (Monogram)

Iro Morgon, A.S.C.: Directing Cinematographer

Daily Variety (September 15, 1934): "Photography is good."

"CHARLIE CHAN IN LONDON" (Fox)

L. W. O'Connell, A.S.C.: Directing Cinematographer

Daily Variety (September 15, 1934): "—and photography particularly good."

Film Daily (September 13, 1934): Photography "A-1."

"HAPPINESS AHEAD" (First National)

Tony Gaudio, A.S.C.: Directing Cinematographer

Daily Variety (September 14, 1934): "Photography, particularly that of Miss Hutchinson, is very good."

"DANGEROUS CORNER" (Radio)

J. Roy Hunt, A.S.C.: Directing Cinematographer

Hollywood Reporter (September 14, 1934): "J. Roy Hunt's photography is far above average."

CHEMICAL FOCUS IN CINEMATOGRAPHY

Continued from Page 249

quite easy for the cinematographer to determine a compromise of focusing position that will assure a definition at the focal plane well within the resolving power of both film emulsion and eye.

Since the advent of large-aperture lenses and panchromatic materials, it has been customary for the writer to determine the marking of the lens graduations through visual focusing, checked by photographic tests under incandescent filament lights and abide by the graduations so determined, instead of depending on visual focusing only. With highly corrected lenses this method of calibrating proved adequate for all sources of illumination commonly used, i.e., daylight (normally filtered or not), arc and incandescent filament lights.

It may be desired to determine quantitatively the focal differences due to the accumulation of the errors expressed above.

A simple and quite accurate method is to photograph a ruled chart set at a slanting plane at 45 degrees with respect to the axis of the lens.

Figure 3 shows schematically the set-up.

The subject chart consists of a plane surface with a double line at the center and ruled with equi-distant lines. A distance between lines of 0.71" is usually adopted because they give (by trig) a horizontal displacement of 0.50" for each line.

The lens set at a definite distance (say 96" for a 2" lens) is visually focused for the double center line and then photographed with whatever illumination is desired. Suppose that the line next to the center ones shows under ex-

amination that it is sharper than the center lines, the formula

$$dV = \frac{V^2}{U^2} dU$$

dV —image displacement

V —focal length of lens

U —distance of object

dU —horizontal displacement of object

dU to be qualified with a plus or minus sign

gives the image displacement to determine the sign of dV ; that is to say, plus dU would give minus dV since the object is receding and therefore the image draws closer to the lens.

Recently the question has been quite often raised as to the influence that the use of red filters would have on the focusing characteristic of the lens.

It is quite evident that if a red filter is used in conjunction with supersensitive film the focusing characteristics of the lens do not vary since the sensitivity of this type of film does not extend into the infra-red and its peak is in the neighborhood of 650 mu wave (C line).

For the use of infra-red film (E. K. Pan K or Dupont Infra D) and infra-red filters, since the peak of sensitivity is in the neighborhood of wave length 760 to 770, it appears that no appreciable trouble should be encountered when using a lens for which the C line of the spectrum is brought to coincide with the best focusing position, especially considering that this type of film is mostly used for special effects where absolute definition is more or less important.

However, for work where details are of importance it is deemed advisable to determine experimentally the best focus

Thank you! Mr. Clarke

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FRANK B. GOOD

August 15, 1934



Weston Electrical Instrument Corporation,
598 Frelinghuysen Avenue,
Newark, New Jersey.

Gentlemen:

I have been using the Weston Exposure Meter since their introduction and have exposed approximately three million feet of motion picture film with them.

In filming "Tarzan And His Mate" many unusual photographic problems were presented, such as trucking from dense jungle to intensely bright open scenes, under water photography, and so forth, I found your meter an invaluable guide.

During the four months I was photographing the exterior scenes for "Viva Villa" in Mexico I used it constantly and under every conceivable light condition. Filter factors and exposures were accurately determined and my negative was surprisingly consistent. As a result of the "Viva Villa" work, I was assigned to the "Good Earth" production and have just returned from a seven months photographic expedition to China, where scenes for that production were made. Again under all unusual conditions the Weston was my guide.

In addition to the usual motion picture work I photographed about 5000 still pictures for research work consisting of interiors, time exposures, flash light exposures and, of course, all types of exteriors and upon many strange brands of film. It was also used to determine exposures for approximately 2400 feet of 16 mm. motion picture film. Probably my greatest appreciation of this instrument was in the calculation of Kodacolor exposures. Here was a photographic problem entirely strange to me, and the very high percentage of perfectly gorgeous results was due to your meter.

For use on my new picture "West Point Of The Air", starring Wallace Beery, I have just bought the newer model, and what a convenient, accurate beauty it is.

I believe all modern minded photographers will avail themselves of this scientific aid to perfectly expose the advanced grades of negative materials now offered.

In appreciation, I remain,

Very truly yours,
Charles G. Clarke
Charles G. Clarke, ASC

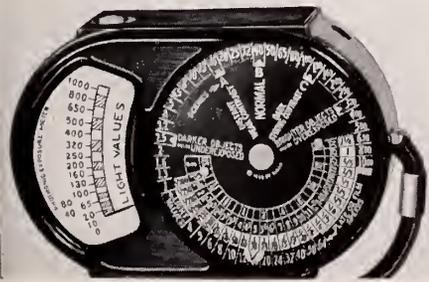
CGC:MM

VIVA VILLA

TARZAN and HIS MATE

WEST POINT OF THE AIR

GOOD EARTH



Exposures *must* be correct in professional movie-making. That's why experts like Mr. Clarke use the *proved* meter... proved by thousands of professionals and amateurs everywhere... the Weston Exposure Meter. It employs the lifetime Weston PHOTRONIC Cell... a cell with permanent electrical characteristics... not affected even by long exposure to sunlight; and the Weston Instrument... recognized the world over as the "standard" of accuracy and dependability. See both models at your dealer's today... Weston Electrical Instrument Corporation, 598 Frelinghuysen Avenue, Newark, New Jersey.

WESTON Exposure Meters



position and calibrate the lens accordingly.

Infra-red photography has definitely entered the practical still-picture field but is still somewhat in the experimental stage in motion pictures. Those inter-

ested in this fascinating branch of photography are referred to a paper by H. W. Lee (Transaction Optical Society-28-1926-27-161-71) which was reprinted almost in its entirety in the December, 1933, issue of The American Cinematographer.

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MOUNTING CAMERAS FOR AERIAL CINEMATOGRAPHY

Continued from Page 251

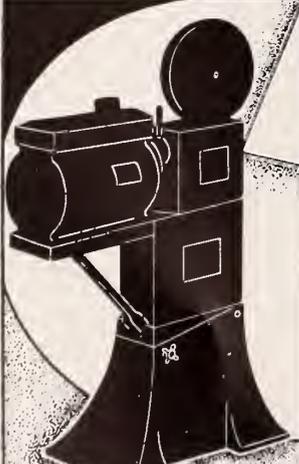
the camera from the arresting-gear on the carrier, this mount had two metal bars, rather like runners, one on each side of the camera, and just out of the field of the lens, running curvingly down from the fuselage at a point about a yard in front of the camera, and sweeping sharply up immediately behind the camera. Their action was to brush the arresting-wires aside; otherwise, these wires would undoubtedly have ripped away the camera—and probably the tail of the ship, as well.

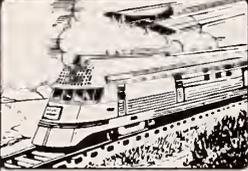
In all of these fixed types, the camera is lined-up on the ground, and is thereafter aimed by aiming the entire airplane. In this respect, military aircraft and military pilots are a great advantage, for the camera can be aligned with the machine-gun sight, and, as the Army or Navy pilot is trained in aiming his ship by use of this sight, it is easy for him to aim the camera in the same way. If the camera is mounted at an angle, or at the tip of a wing, the machine-gun sight can usually be adjusted so that the pilot can still sight the same way. In

using commercial ships, one can often rig up a workable sight of the same pattern; and as the majority of our commercial pilots and especially the professional motion picture pilots, are Army or Navy trained, the same method can be used.

When making free-mount type camera installations on military airplanes, it is always excellent to make use of part, at least, of the regular machine-gun mount. Fig. 7 shows such an installation, using the base of a regulation Tourelle type gun-mount. Everything but the base has been removed, and the camera is supported from a large steel bar which is bolted across the Tourelle. As will be seen, the camera is mounted on a regular friction-type pan-and-tilt head, which in turn is supported on a cut-down "high-hat" bolted to the cross-bar. Fig. 8 shows a similar installation in a commercial ship. In this instance, the cover was removed from the mail-cockpit of the ship, and the supporting bars placed across, and bolted to the upper longerons.

In many commercial planes, however, the cockpits—especially the rear ones, which must generally be used for photography—are too small for such an installation, and the camera must accordingly be mounted outside the cockpit. Fig. 9 shows an installation of this type. In this instance, a small platform was built of welded steel tubing. The two legs nearest the plane were fitted into collars attached to U-bolts around the upper longeron, while the two outer legs tapered inward, and joining into a single tube, fitted a similar collar attached to the lower longeron. By virtue of this collar arrangement, considerable degree of vertical adjustment is possible. The camera itself is mounted on a regular friction-head (in this case, of the ball type), which is, in turn, mounted on the supporting mount by three short cast legs





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which replace the regular tripod-legs. This illustration also shows two other types of fixed maunts: one on the upper wing, and the second atop the fuselage, just behind the mator. It will be seen that each of these is rigidly fastened to same part of the skeleton of the airplane.

One of the most unusual free-type maunts I have used was made for phatographing the power-diving scenes for "Hell Divers." The film took its name from certain dive-bombing planes used by the Navy; their bombing attack is made by diving—almost vertically—upon the target from an altitude of 10,000 to 15,000 feet, with full power on, so that the planes build up to their "terminal velocity" of approximately 350 miles per hour. In this installation, not only did the terrific wind-pressure have to be considered, but same rather unusual questions of angles and perspective. We first tried the shot with the camera maunted conventionally, and the camera-ship diving with the formation. This proved unsuccessful, for camera-ship and formation kept their regular relative positions, and the only noticeable effect was that the horizon tilted over to about 70° from the vertical. There was no sense of diving in the picture. Therefore, we built a special maunt, in which the camera, when the plane was in normal flight, lay at an angle of about 70° from the vertical, slanting back-

wards. When the ship nosed down into a 70° dive, the angle of the camera was such that the horizon was very nearly level, and the formation was definitely observed to be diving, as they appeared at right angles to the horizon.

In general, it is advisable to keep the camera as small, light and compact as is possible. Of available equipment, the Akeley camera is by far the best for this work, although the older, metal-bodied DeBrie Parva models are also excellent.



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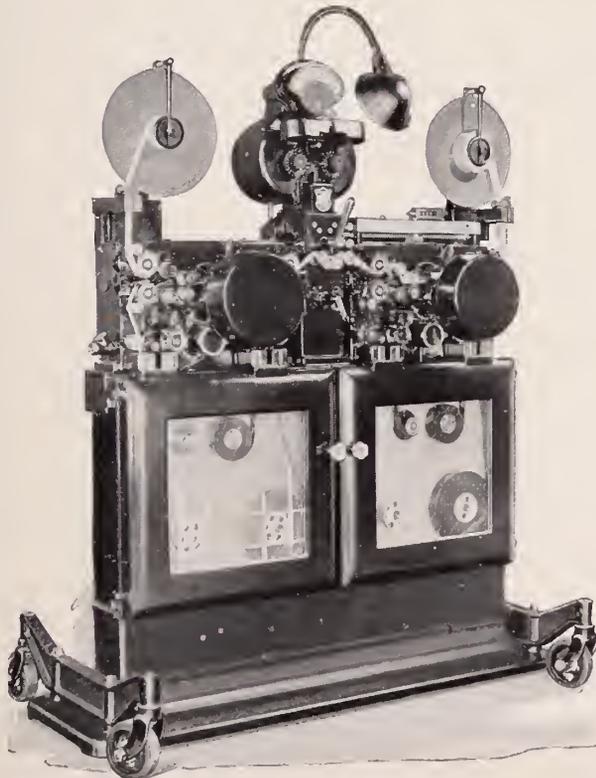
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Of production comeros, I prefer the Bell & Howell, due to its sturdy construction and general compactness. It is, of course, the best for making background shots, which must be especially steady. When using production-type comeros, it is wiser to use 400-ft. magazines, as they are smaller than the 1000-ft. type, and naturally offer less wind-resistance. An-

other difficulty with using the 1000-ft. type is that in aerial work we generally drive the comero with a lightweight cinemotor, which is not sufficiently powerful to ensure a proper take-up of more than about 500 feet of film, due to the increasing load on the take-up.

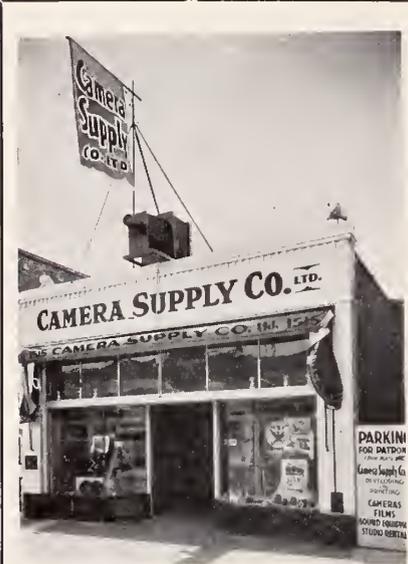
As a rule the lenses most used for this work are the 40mm, 50mm, 75mm and

4" and 6" telephotos. Occasionally, the wide angle of the 24mm lens is useful, and on rare occasions a more powerful tele-lens may be necessary. However, wherever possible, it is wise to avoid the use of long-focus lenses, as they usually project too far from the comero, and the air-pressure against such an unsupported projection tends to give vibration which may ruin the picture.

The ideal tripod-head for aerial use, regardless of the comero used upon it, is the Akeley gyro-head. The gyro-controlled movement is a great help in panning and tilting in the air, which is, at best, difficult, due to the resistance offered by the wind. Whether using an Akeley, or any other type of comero, the large, upright-image type Mitchell finder is the best, for, since you are wearing goggles, and working in a gale of wind, you cannot keep your eye close to a small finder such as that of the regular Akeley system.

In making wing-type fixed mounts, it is important to keep both comero and mount as small as possible, so as to effect the least possible disturbance in the air-flow past the wing. The mount shown in Fig. 3, as already mentioned, destroyed approximately two-thirds of the lift of the upper wing, throwing a corresponding overload on the lower wing and upon the motor. This was shown by the fact that, while the ship normally climbs to an altitude of 4500 feet in less than five minutes, with the comero in place it required more than twenty minutes to obtain the same height.

It is always advisable to use a high-powered ship for a comero-plane, as, in addition to the considerable resistance caused by the comero, the extra weight of the comero, mount, and batteries is about equal to the weight of a good-sized man, and would dangerously overload an ordinary low-powered two-place craft. Bi-motored ships are very convenient, as the comero and its operator are usually out of the slip-stream, which makes for easier mounting and convenience of operation. Several times I have worked in the engine-nocelle machine-gun cockpits of "Condor" bombers: here, the field of vision is excellent, and the occupant is excellently protected from the slip-stream by the engine and its radiator. Closed-cabin commercial aircraft are excellent in that the cabin gives great freedom of operation; but the view is often too restricted, even if one removes a door, and places the comero there—which is a questionable procedure, at best, since the comero blocks the door, and would be dangerous in an emergency. In photographing from such a machine, the comero can be mounted very simply on a bobby tripod, chained down to the floor.



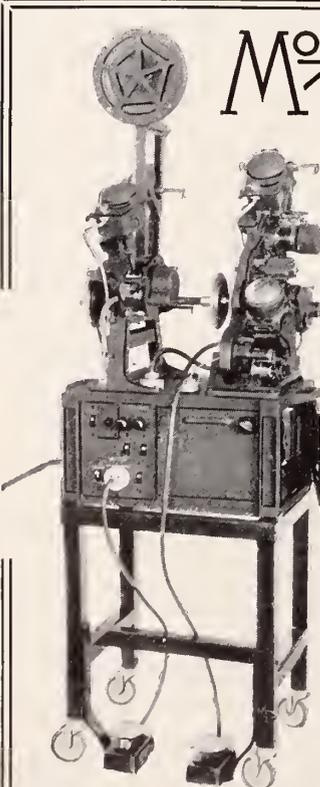
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A New Deal for the Newsreel Cinematographer

Continued from Page 253

denser-type studio microphones—it requires no supplementary amplifier close by, but may be used at a considerable distance from the main amplifier.

The amplifier assembly serves as a carrying case for all of the sound equipment except the battery that drives the camera-motor: it holds the amplifier, including the volume control and meter, the plate and filament batteries, and storage-space for the microphone and a monitoring head-set.

The battery-case contains a 12-volt airplane-type storage battery which powers the camera-motor and the recording-light.

The actual recording unit is an amazingly compact light-valve system, which is semi-permanently attached to the camera. It uses a sturdy, permanent-magnet type of light-valve, with a curved sound-gate; the whole assembly is ruggedly built and quickly interchangeable. The light-valve itself is the same type used in several of the major studios, some of which have used these valves for over two years without need of adjustment or restringing. In point of both durability and sound-quality, we have found this valve superior to any type of glow-lamp.

The motor batteries provide sufficient power for over 12,000 feet of film without recharging, and the amplifier batteries will record nearly 20,000 feet of film before need for renewal. With a single spare set of batteries, a crew can remain in the field almost indefinitely.

The photographic and sound equipments each weigh 92¼ lbs. For field use, we carry 2", 4", 6" and 12" lenses; three 1000-ft. magazines; 250 feet of cable mounted on four reels; a spare light-valve and an extra recording-light. The question of transportation is, of course, vitally important: and although this equipment can actually be carried in the rear deck of any small coupe or roadster, we are equipping our staff with Ford V-8 sedans, which allow more satisfactory stowage and operation. The rear seat of the sedan is removed, giving ample room for all the equipment. Each case has its definite place, and each is firmly stowed down when in transit. The rear trunk of the car forms an excellent locker for spares, including the extra cable, one loaded magazine, etc. On the roof of the sedan is a special triangular framework upon which the camera tripod may be set up for running shots, or for shooting over a crowd; the tripod-legs are locked down with special clamps. When making such shots, the recordist can drive the car with his amplifier on the seat beside him, and monitor through the head-phones. The entire outfit is, we believe, the lightest

and most satisfactory sound-news equipment in use.

For silent camerawork, we are using the familiar DeBrie "Parva," in the metal-bodied model, and with several innovations of our own. This camera is undoubtedly the most compact, high-grade 400-ft. camera made, and has al-

ways been a favorite for newsreel work. We have equipped the camera so that it may be operated by hand or by motor, and always at the standard sound-speed of 24 frames per second. We are rather proud of the motor: it is a tiny, yet powerful, direct-current motor about three inches square and less than two inches

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thick; it weighs 3 lbs., 4 ozs., and can be quickly fitted to the camera in place of the usual carrying-handle. When the motor is used, the regular crank is removed from the camera, and a pulley substituted; then the motor and this pulley are belted together with a 10c rubber belt from one of our most popular vacuum-cleaners—in any almost any locality, a spare belt can quickly be ob-

tained. The motor is driven by two 45-volt radio batteries, which are also easy to replace, and have a long life. The speed is controlled by a knob on the motor, and as the DeBrie has a built-in tachometer, it is easy to adjust it to the proper speed.

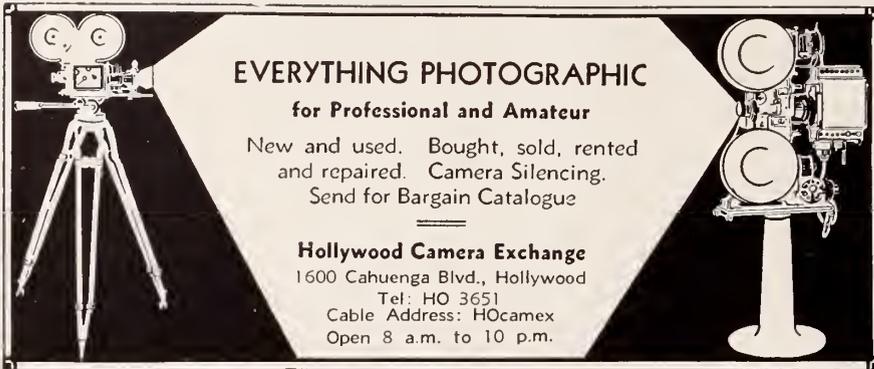
However, in many instances it will be impossible to use the motor-drive for these cameras; and to simplify the matter of cranking a consistent 24-frame speed by hand, we have devised a compact gear-box which fits over the regular crank-shaft of the camera, so that while the cinematographer turns his accustomed two turns per second, the camera is sped up to the proper sound-speed. This gear-box is about an inch and a half in diameter, and less than half an inch thick; it is held to the camera by three small screws, and takes the regular DeBrie crank.

With these two equipments, we are confident that our staff—over 70% of whom are old-time Hearst newsreel men—will be able to get back to the essentials of camera-reporting as they were before the novelty of sound chained us to cumbersome sound-trucks: getting the news—the real news—in pictures, but with the addition of the best in newsreel sound where sound is warranted. I foresee a real new deal and a new day for the newsreel: a return to the sort of newsreel reporting that made the old silent newsreels the most interesting spot on many a program, but coupled with technical advances which are already improving the standards of news-photography, and—most important of all—a wise and understanding use of sound, not as a novelty, nor as a shackle on the freedom of its operator, but in its rightful place, as a real help to news-presentation.

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Riddle Me This

Continued from Page 252

JACKSON J. ROSE, A.S.C.: If we leave the technical factors out of consideration (and surely there is sufficient ingenuity in our ranks to overcome any technical obstacles), there are still artistic considerations which present grave problems. Using single-film sound would hamper everyone — Director, Cinematographer, Recording Engineer and Cutter—in their efforts to produce artistic pictures economically.

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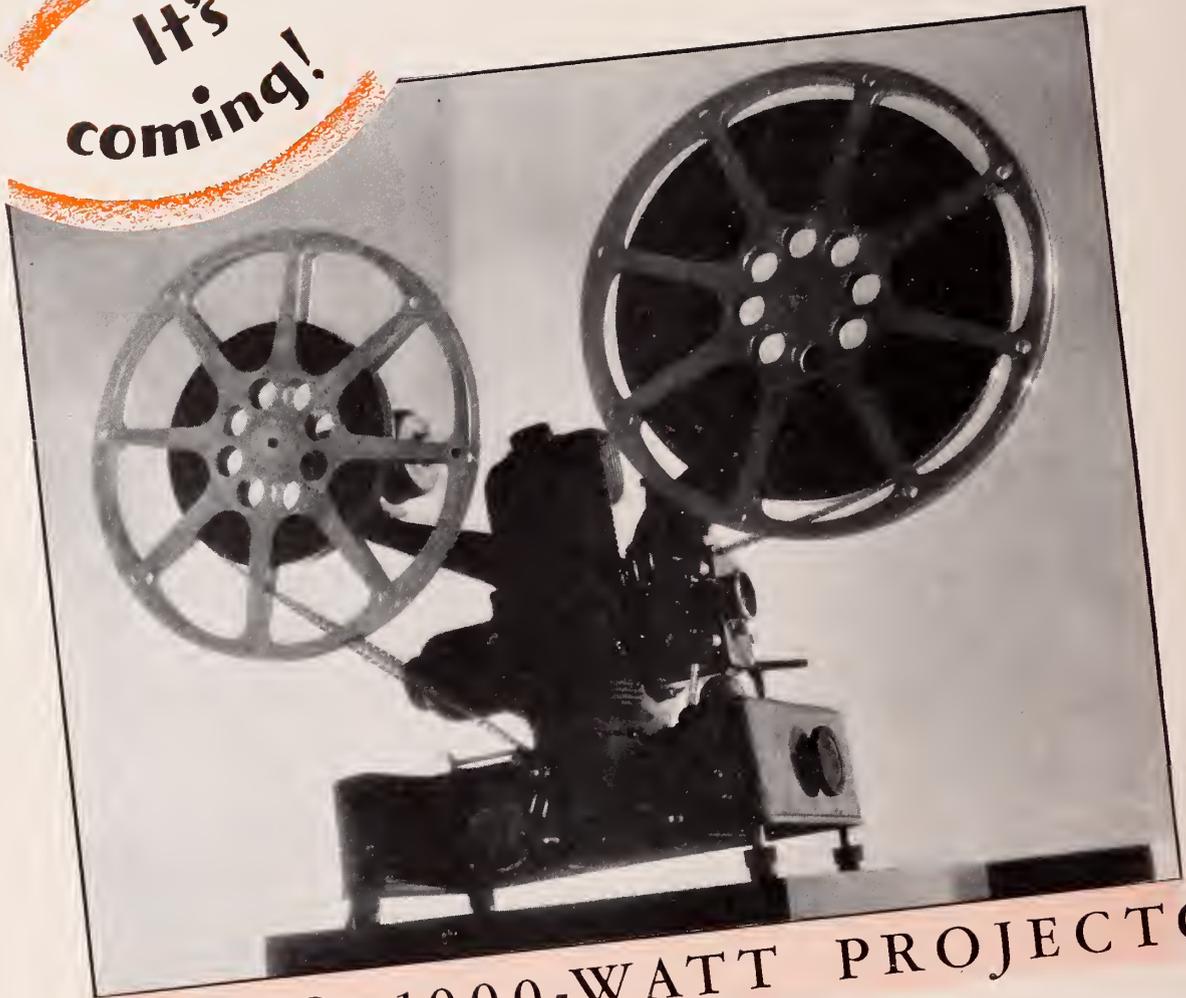
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AMATEUR MOVIE SECTION

Contents . . .

LENS TALK by Wm. J. Groce.....	268
SIMPLE Comero Trick Continuity by Arthur J. Campbell, A.S.C.....	270
HINTS on Indoor Cinematography by Arthur J. Campbell, A.S.C.....	271
MAKING Silent Movies Talk by Carl Brisson	272
HERE'S HOW by A.S.C. Members	273
CONTROL for Photofloods by Templeton W. Woad.....	274
TRICKS and Gadgets—Winners.....	275
TREND of the Times.....	276
WHEELS of Industry.....	278

Next Month . . .

● There will be another family continuity . . . one you can shoot in your own back yard. We will print the second of the series of indoor lighting by Arthur Campbell, A.S.C. Of course you will have a couple of fine surprises in the entries that will be printed in our Trick and Gadget contest. We already have a large number of real prize-winning ideas. We will try to give you one of the big ones next month.

Let's Talk About Lenses

Chromatic Aberration

by

Wm. J. Grace

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IT IS BY no means necessary for the cinematographer to be able to make and mount his own lenses for him to do the best work, but at least it should be the desire of everyone who uses optical equipment of any kind to understand the possibilities and limitations of his lenses, for thru such knowledge it is not only possible to greatly simplify his efforts toward perfection but also to do things out of the beaten track.

There are many lenses available today, many as nearly perfect for the purpose for which you buy them as human mental and physical skill can produce them. There are also many lenses not so excellent, lenses which are listed as "bargains." With optical equipment as with other merchandise, the first cost by no means determines the economy which it affords.

Altho this series of discussions on the lens is not to be construed as a guide in the purchase of lens equipment, at least it is hoped that by talking over the characteristics of lenses my readers will somehow grasp certain principles and reasons for optical procedure.

Perhaps there is no other type of product on the market today which is so little understood as the lens. I refer to lenses of every description, whether photographic or not. Of the hundreds of thousands of photographers alone, probably not one in ten thousand knows the difference, say, between a lens suitable for portrait work and one suitable for scenic work. This is no doubt due to the mystery which has been woven around lenses and optics in general, but is more probably due to the dearth of easily comprehended texts on optics. There seem to be few volumes on optics which have been written as a mean between the complexities of corpuscular and wave theories of light and the simple high school texts.

But let's not worry too much about the lack of texts. As cinephotographers we are not so much concerned with the complicated theories underlying lens design as we are in why they are necessary and what they mean to our work. And, again, we are not so much interested in how glass is made, worked, and shaped as we are in the photographic effects we get with lenses.

If you don't demand too much of this author in the way of intricate calculations and three-page statements of complex theories, perhaps the two of us, you and I, can dig up some pertinent facts concerning our lenses.

Today, practically every lens we use with our cameras, large or small, still or cine, is composed of several pieces of glass; probably all ground to different shapes and most likely made of several different kinds of glass. Why? Is

it just a base plot of Amalgamated Lens Makers to keep up the prices of their products? Hardly. In the first place, if that were the sole reason, someone would long ago have broken the traces and flooded the market with a simple, inexpensive system of lenses. The reason, dear reader, is that we ourselves have practically forced lens designers and makers to put out the multitude of lenses which are available today. We needed this kind of lens to correct this fault, we needed that kind of lens to correct another fault, sometimes we needed a lens to correct both faults at once plus a few more we found.

I say "we" advisedly, for it has been an indirect demand. We wanted to make this or that kind of picture, and because we created a market demand, camera manufacturers passed the buck on to the lens makers.

Ten or twelve years ago, color correction in lenses, as an example, was little discussed. The films we had then were colorblind so we didn't know lenses had to be corrected. Along came panchromatic stock which created a need for lenses which would at least make an attempt at focusing all colors in the same plane, because where the old film saw only a limited portion of the color range of nature and wouldn't record the rest of the colors anyway, the new panchromatic began to take notice of the lack of color correction of the lenses.

Without delving too deeply into the technicalities, let's accept the fact (which can be proven theoretically and experimentally) that different colors are of different wavelengths and therefore travel at slightly different speeds, so that red light (which has a longer wavelength than purple, at the other end of the visible spectrum) travels faster than purple light. No doubt you have yourself noticed a simple example of how the red lettering of a projected lantern slide seems closer to you than the blue or purple letters of the same slide.

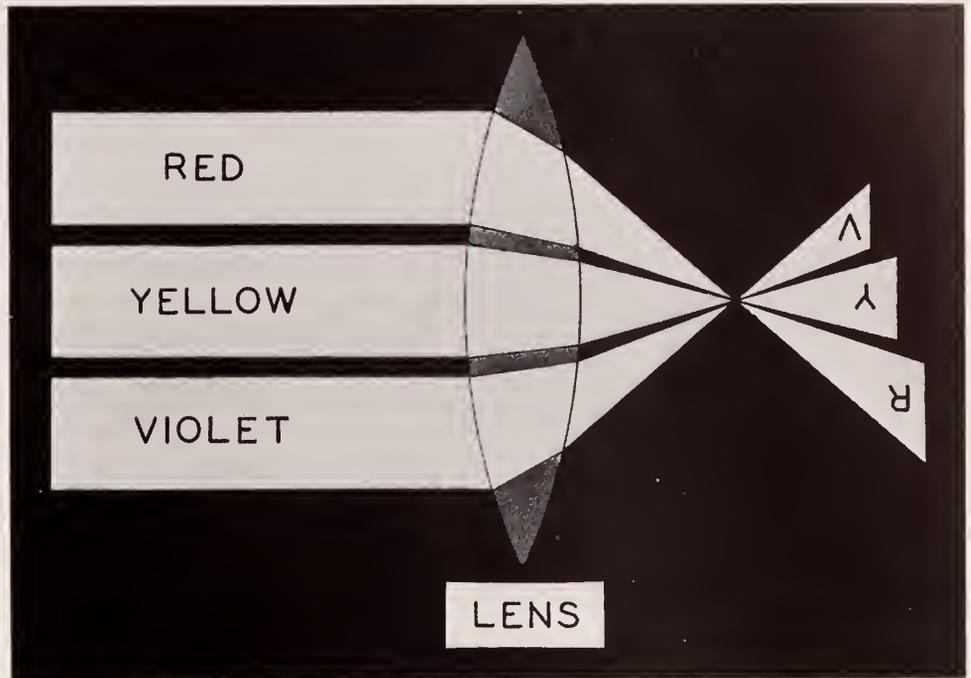
Now, red portions of an object will focus on a different plane than will the violet portions of the object, unless the lens is corrected for that phenomenon.

Errors in images formed by lenses are called aberrations [def.: (optics) deviation from the true focus]. Just now we are concerned with chromatic aberrations, or deviations from true focus caused by light of different colors coming to focus at more than one single plane. Figure 1 shows how a lens which has not been achromatized (color corrected) would render red, green and violet test objects placed in a plane perpendicular to the lens. It is obvious that a single object of a color made up of red and violet pigments might be impossible to focus sharply.

If we were to turn the optical system of Figure 1 around end for end, it is easy to understand why the red letters of the lantern slide mentioned three paragraphs back seemed to stand out in front of the rest of the lettering.

Not only does chromatic aberration affect the focus of a photographic objective, but the picture is not true in its perspective. Red portions of the object would cause a larger or magnified image than would those portions which are violet-colored (or, for that matter, any other color of the spectrum, proportionately). Thus, it is important that a lens to be used in photographic work be achromatized, or color corrected in layman's terms.

The question has no doubt arisen in your mind, "If the red lettering of the lantern slide stood out in front of the rest of the lettering, why don't the reds in color motion picture work also stand out?" The answer is simple: Most



In a lens not corrected for chromatic aberration, the colors of the spectrum do not focus all in the same plane.

lantern slide lenses are not corrected for chromatic aberration, for they usually are designed for black-and-white slides. Most modern motion picture projection lenses are however, achromatized.

It will become evident to you as we progress in our discussion of lenses that it would be almost impossible to grind lenses in such a shape that the important corrections are made in the grinding alone. A lens could be ground to make it free of one, or two, or perhaps even three different kinds of faults, but even if all faults could be corrected in the grinding, the cost would be prohibitive. Of late years, however, the very substance of lenses has been the subject of intensive study and laboratory work, with the result that lens designers have breathed sighs of relief that they have had more leeway in their work. Of course, the more numerous are the glasses offered designers, the greater the number of combinations and hence the more possibilities of getting too complex.

All glass is not alike, just as all steel is not alike. Perhaps you've noticed (or have you?) the growing number of steel alloys which are available. Anyway, layman that you may be as for as steel is concerned, you **have** noticed that the steel of the new high-speed trains is quite unlike its older brothers even in appearance. Steel used to be just a mixture of iron and carbon, but now it has molybdenum, chrome, tungsten, etc., and so on, **ad infinitum**, mixed with it to give it different characteristics.

So it has been with glass. There were formerly but two kinds of glass—crown and flint. About fifty years ago (which is a short time if we remember that relics of the ruins of Nineveh include a quartz lens, and some tablets inscribed with matter too fine to be read with the naked eye show that 6000 years ago optics were at least known) Abbe and Schott were given financial aid by the Prussian government and set up experimental laboratories at Jena, now one of the leading glass works of the world. They tried adding any number of different compounds to common glass to see what could be produced. Some of them did little to change the characteristics of common glass, and others made the glass too cloudy or too soft, but they did find

certain combinations which gave results then desired. Naturally, the process is still incomplete, for some combinations are too hard to produce or are too unstable (yes, glass can change in shape or chemical structure), and the list constantly changes, adding new glasses, dropping old ones.

The Bousch and Lomb Co. lists at least two dozen different varieties of glass as stock merchandise, and others can be made up to special order. The same is true also of other glass works in other parts of the world. The more important glasses are ordinary crown, borosilicate crown, fluor crown, borium crown, ordinary flint, baryte flint, borate glass, and phosphate glass. Each can be supplied in several types.

But let's get back to chromatic aberration and how it is cured. It is known that every substance transparent enough to transmit light will bend the light rays according to its "index of refraction." Some will bend the light more than others. By combining several kinds of glass in a lens design, a lot of ills can be cured.

By using a certain type of glass for one of the elements of the lens and then neutralizing one of the faults of that lens by using in another element a glass which has a different index of refraction (refraction means bending or deflecting light rays), the different colors can be made to focus all on the same plane, without disturbing the other necessary conditions for a good lens.

The actual computation of lenses really has little interest to the average cinemographer, for it is perhaps best that he forget about the mechanics of its construction, except for the knowledge of its capabilities, and concentrate on its intelligent use. Therefore, suppose we skip over the details of achromatism with the knowledge that if we buy a lens of a reputable make and design, this fault has been taken care of by men who are more expert than you or I might ever be at juggling indices of refraction and like quantities.

Next month we will discuss other characteristics of lenses, and from then continue to still more, until we have at least a working knowledge of that precision device—our lens.



Continuity With Simple Camera-Tricks

by
Arthur J. Campbell, A. S. C.

AMATEUR movie cameras always stop with the shutter closed—which makes the simple trick of interrupted motion very easy. If you put the camera on a tripod, stop it in the middle of a scene, and remove some person or object from the picture (everything else remaining in place) before continuing the action, on the screen you'll have the effect of the removed object suddenly vanishing. If you reverse the idea, and put the object in, instead of removing it, your audience will see it suddenly appear, apparently from nowhere. It is an interesting trick, even though it is simple enough to be done well by anyone, with any amateur camera. It is the basis of our story—

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THE FAMILY MAGICIAN

Credit Title:	Cast
Junior
His Mother
Jack
JoeHis friends
Bill
The Skeptic
The Man with the Car.....

Scene 1. Long-shot on a street. Junior and his friends are returning from school: Junior wears glasses, and is a

somewhat "bookish" appearing boy; his friends are typical boys. They walk down the street, straight into the camera.

Scene 2. Lang-shot; reverse angle from Scene 1. The boys are walking down the street, away from the camera. In the distance a car is seen, parked.

Scene 3. Close-up of a tire-pump: a pair of hands is working the pump-handle up and down, going out of the picture at the top of stroke.

Scene 4. Long-shot of the car: it has a flat tire, and a man (back to the camera) is busily engaged pumping it up. Obviously, he is a book-salesman, for the car is full of books, and his coat, slung over the door, has its pockets filled with sales-books and papers.

Scene 5. Medium long-shot, from low set-up. In the foreground is the tire-pump, with the perspiring book-agent bending over it; in the background, the boys approach. They see the car and the man, laugh and come toward them.

Scene 6. Long-shot, as Scene 4. The man is still pumping, and the boys troop in and line up around him, backs to the camera. Some of them ape him, working imaginary pumps, etc.

Scene 7. Medium-shot: the man stands up and mops his brow with a handkerchief, then turns toward camera, noticing the boys.

Scene 8. Close-shot, panning from left to right, showing the boys, one by one, as they ape the man, pulling out handkerchiefs and wiping their foreheads, too. Junior alone doesn't follow suit, merely watching.

Scene 9. Close-up of the man. He smiles, and speaks to the boys:

TITLE: "Give me a hand . . . and I'll give you a book."

Scene 10. Medium long-shot of the boys. They indicate "nathing daing." Junior, however, nods, and steps forward.

Scene 11. Same as Scene 5, but with Junior pumping, while the boys sit on the curb and razz him. FADE OUT.

Scene 12. FADE IN. Close medium-shot of the man, sitting in the car; he hands a book to Junior, standing beside the car, and drives off. The boys gather around Junior.

Scene 13. Close-up of book: its title is "'How to be a Magician."

Scene 14. Close-shot of the boys' faces, crowding to look over Junior's shoulder. They all speak at once:

TITLE: "Let's have a show!"

Scene 14a. Cut back to a short flash of Scene 14, then FADE OUT.

Scene 15. FADE IN: Lang-shot of interior of a room. The boys are getting ready for Junior's magic-show. They have just finished stringing up Mather's Spanish shawl for a back-drap; Joe and Jack bring in a small table. Junior, clad in an old frock-coat and top-hat (both much too big), and carrying a magician's wand, is supervising. WIPE TO:

Scene 16. Reverse-angle of Scene 15: all the neighborhood boys (and girls, too, if you wish) are crowding into the room and scattering themselves over the chairs, couch, and on the floor. Jack and Joe squat in the foreground, playing on mouth-organ and jew's-harp; Bill, in the background, stands taking "tickets" at the door.

Scene 17. Close-shot of Bill: on a table beside him is a jar or small goldfish-bowl, into which he drops the 2 pins admission of the children as they come in.

Scene 18. Close-up of the bowl, as the pins drop into it. It is quite full.

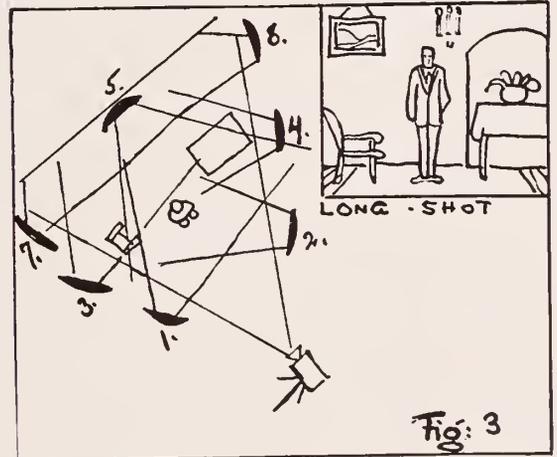
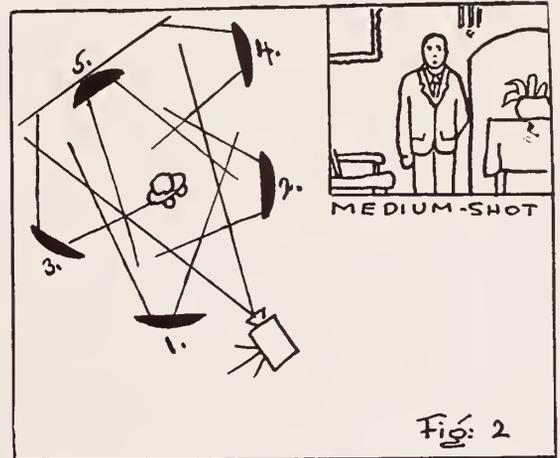
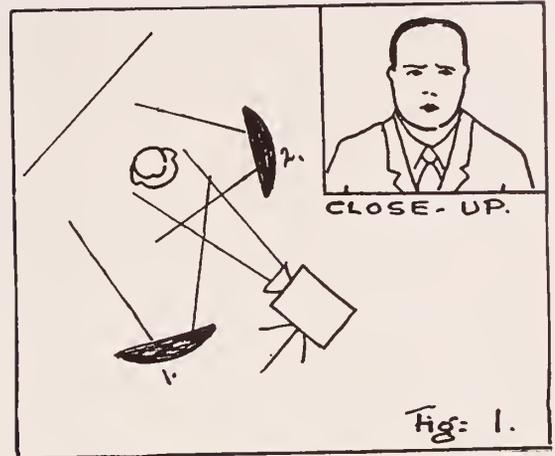
Hints on Indoor Cinematography

by
Arthur J. Campbell, A. S. C.

BELIEVE it or not, the amateur cinematographer can use less light than the professional—and, if he knows his lighting, get equally satisfactory results. The effective speed of SuperSensitive reversal films is virtually identical with that of the films used by the professional: but the amateur has the decided advantage in the matter of equipment. For example, he has available lenses much faster than those generally used in the studio: most professional cameras are fitted with lenses working at $f:2.7$ to $f:2.3$, while amateur cameras frequently have lenses rated at $f:1.9$, $f:1.5$, or even $f:1.3$. The shutters of amateur cameras usually let in more light, too; for while the average studio camera has a shutter whose maximum opening is about 170° , the average amateur camera's shutter-opening exceeds 200° , and is in some instances as great as 216° . Therefore, where the professional cinematographer must use, say, a 1000-watt lamp, the amateur can do just as well with one of 500 watts, or a Phataflaad.

On the other hand, the amateur is somewhat hampered as to the matter of space, for where the professional has a roomy studio stage in which to work, the amateur must shoot most of his interiors in his home where, however spacious the rooms may be for living purposes, space for camera, lights and such photographic necessities is decidedly at a premium.

Long-shots are the most difficult part of the interior problem. Close-ups and medium-shots can be made in almost any room, but long-shots require more lighting equipment, and the camera must be farther back from the subject, to include the desired field. So it is a good plan to study your house carefully beforehand, and select the rooms and angles best suited to making long-shots. Wide-angle lenses—especially the 15mm ones—are extremely useful, for they permit you to get a long-shot with the camera much closer to your subject than with the normal 1" lens. Also, it is often possible to place the camera in one room, and shoot through a doorway into the next room, getting a long-shot that would otherwise be impossible. All of these things must naturally be planned far before starting to shoot; similarly, it is wise to inspect the electric outlets in the rooms to be used, so that you will know just where to plug in each lamp. Extension-cables ending in a junction-box with two, four or more outlets are a great convenience, while with Phataflaad equipment it is well to use an extension with a dimming attachment, so that by running the bulbs at low power while "lining up" your lighting, you



may conserve the short useful life of these bulbs. If you are going to use a large number of lamps, it is also a good idea to arrange things so that, if possible, part of them will be on one of your house-circuits, and the rest on another, so you won't overload the house-wiring. Similarly, take a look at your fuses—for if your circuits are fused too low, you may blow out a fuse in the middle of a shot!

Another important thing to attend to in photographing indoors is the foundation under your tripod: there are a good many slippery floors in the average home, and if you don't look out, your tripod may slip and spoil an excellent shot. A little square of carpet that can be tacked down temporarily will prevent this, as will also a short, Y-shaped chain connecting the three legs of the tripod.



How it's done: Mr. Brisson, matching his words to the lip-movements of the projected picture, sings into the "mike" of home-recording phonograph at left, making his own talkies.

Making Silent Movies Talk

by
Carl Brisson

A FEW months ago, my brother gave me a 16mm home-movie camera, and we began making a movie record of our experiences in America. It was lots of fun, and provided a wonderful souvenir of our stay in Hollywood; but one day a pessimistic friend tried to take the joy out of it by remarking, "Isn't it too bad, Carl, that you can't make these pictures in sound, and have a record of the voices of your friends, as well as their pictures?"

That made me wonder if perhaps I couldn't at least try to get some sound in my movies. Of course, sound-on-film recording was out of the question, since there are no really amateur recording outfits available, and I'm much too new a novice to build or use a special 16mm recorder. But how about sound-on-disc? I had a home-recording gramophone, an Eastman Cine-Kodak, and a Filmo projector: surely I ought to be able to combine these and get some passable sound pictures!

I tried it—and to my surprise I found it surprisingly

easy to make acceptable amateur talkies. Goodness knows, my pictures aren't perfect—a studio sound-man would find plenty of flaws in my tone-quality and synchronization—but as a strictly amateur proposition, they are all right, and gave me lots of fun in the making. Here's how I do it:

First of all, I make my picture—silent. Let's say it is a picture of myself, talking and perhaps singing. I talk and sing exactly as though I were making a talking film, speaking the words I want to record, and making a careful note of all that is said.

Then the film is processed in the usual manner, and edited. When this is done, I project it a number of times, while I talk and sing, rehearsing until I can synchronize my words with the pictured lip-movements and action. Then I project the picture again, and talk and sing into the microphone of my home-recording phonograph, making a disc record of the sound part of the picture. If I've rehearsed properly, the sound will be pretty well synchronized with the picture.

When I want to show my little talkie, all that is necessary is to put the film in the projector and the record on the gramophone, and start them together: with a little practice, it is possible to start the two machines off so nearly in step that, even though they aren't connected in any way, the sound and picture are surprisingly well synchronized.

Of course, the ideal arrangement would be to use a 16mm sound-on-disc projector, such as the Animatophone or Filmophone, in which the record-turntable and the projector are mechanically connected. Then, if you mark a starting-frame on the leader of your film, and mark the starting-point of the record, you simply can't have any trouble with synchronization.

The greatest advantage of the whole idea is that you can make your picture anywhere, under any conditions, and since the sound-part is recorded later, at home, you don't have to worry about any unwonted noises which would surely trouble you if you made your recording at the same time you made the picture. And it is really surprising what you can do in the way of putting in sound-effects: one of my talkies, for instance, was made at the beach, and when we recorded the sound later, my brother and I had a lot of fun making surf-noises, and the like. There is also a lot of amusement in gathering together the people who appeared in your picture for a recording party, when you make the sound part of the picture, and climax the evening's entertainment by the premiere performance of your home-made talkie.

Making talkies this way isn't expensive, either. You can get the record-blanks at any music store: the little six-inch records are four for a quarter, and the larger, longer-playing 10-inch blanks are fifty cents apiece. The playing-time of these records, of course, depends upon the speed at which they are made and reproduced: most of the home-recording gramophones have two-speed turntables, allowing you to record at either the standard commercial-recording speed of 78 revolutions per minute, or at the standard talking-picture record-speed of 33-1/3 r.p.m. Naturally, the latter is more economical, as it gives about double the playing-time; the sound-quality of the higher speed is perhaps a bit better, but not enough so to offset the economy of the slower speed. Recording at 78 r.p.m., the small record gives a playing-time of about one minute, and the larger record plays about 3 1/2 minutes; but at 33-1/3 r.p.m., the small record plays nearly two minutes, and the larger, 7 minutes. Reduced to terms of screen-time, the 10-inch record, at 78 r.p.m., will "sound" 100 feet of 16mm film, while at the slower "talkie" speed, the same record will provide sound for a 200-foot reel. If you take

Continued on Page 283



HERE'S HOW

by A. S. C. Members

PLEASE explain the term "hand test" as used in the article by George J. Lancaster, A.S.C., in your September issue; also, what are the "3N5" and "5N5" filters he refers to?

—I. L. M., Taft, Cal.

The term "Hand Test" refers to the practice, followed by all cinematographers when on location, of making short test-shots as a check on atmospheric conditions, filtering and exposures, and developing them on the spot—by hand, as distinguished from sending the film back to the studio laboratory. Apparatus used for this ranges from a simple changing-bag and a bottle of developer to miniature-camera developing outfits and specially-built "test boxes." The practice is suited only to negative film, and can hardly be recommended to amateurs.

The filters you ask about are two in which a light yellow color-filter and a neutral-density filter are combined into a single unit. The 3N5 is an Aero 1 color-filter combined with a .50 Neutral Density filter; the 5N5 combines an Aero 2 color-filter with a .50 Neutral Density. On SuperSensitive film their factors are, respectively, 4 and 5; on regular Pan, 5 and 8. They are useful for giving the nice correction of an Aero filter and at the same time toning down harsh contrasts, glaring areas, and the like.

—George J. Lancaster, A.S.C.

I AM planning to do my own reversal work, using a drum-and-tray system. Is it necessary to use a solid, opaque drum for this, or could I use a slatted or "squirrel-cage" type?

—W. M. W., Detroit, Mich.

An opaque drum is not an absolute necessity, though it is undoubtedly a good safeguard, as it would prevent the "flashing" light from passing through the film and overexposing or fogging the film on the opposite side of the drum, and also would reduce undesirable reflections from the film-base. However, for the type of work you will probably be doing, the solid drum is unnecessary;

I have used the open drums myself, with very acceptable results. However, be sure and have enough slats in the drum to round its contour out well: otherwise you will get "rack flashes" at the points where the film bends sharply.

—Hollis F. Maise, A.S.C.

ARE there any prepared solutions available for tinting and toning reversal film (8mm or 16mm) to produce colored effects?

—J. F. L., Los Angeles, Cal.

Most of the solutions sold for toning or staining still photos, and especially lantern slides, will do excellently with reversal film. Probably the most easily obtained are the "Tabloid" toners and "Soloid" stains, which come in tablet form, and are very easy to use.

—Fred W. Gage, A.S.C.

I HAVE tried making pictures with my miniature camera and Infra-Red sensitive film, and I notice that green grass and foliage is rendered very light. Why is this—I had thought that green absorbed red light, rather than reflecting it?

—B. M., Jr., Hartford.

You are right in thinking that green absorbs red light—but the green coloring-matter (Chlorophyll) in foliage also reflects the invisible Infra-Red rays very strongly. Thus, using Infra-Red-sensitive film and a filter such as the Wratten 70 or 88, which exclude most of the visible rays but pass the invisible Infra-Red, the strong reflection of the Infra-Red from the chlorophyll-green foliage will naturally make the foliage photograph light.

—Elmer G. Dyer, A.S.C.

I HAVE read that Panchromatic film, used with filters, has great power to cut through haze, but recently I have tried Panchromatic film in my 16mm camera, using a 2x filter—and found very little benefit in haze-penetration. Why?

—E. H., Boise, Idaho.

Used with the proper filters, Panchromatic and SuperSensitive film are excellent for cutting through haze. These

emulsions are more strongly sensitive to red, yellow and green light than is the older Orthachromatic; but they still retain some preference for blue light, which is the strongest component of most haze. Therefore, a filter must be used which will hold back enough of this blue light to allow the other rays from the distant subject to register on the film. What you have probably done is use a filter which does not do this sufficiently. Many filters marketed for amateur cameras were designed before the introduction of Panchromatic and SuperPan amateur films, and are really intended for use only on Ortha. Thus, a "2x" filter of this type would be only a questionable "1x" for Pan, and valueless for Super. For your purpose, I would recommend either a strong orange-yellow filter like the Wratten "G" (5x on Pan, 3x on Super) or a red filter such as the Wratten "23-A" (6x on Pan, 3x on Super). In extreme cases, an even heavier red filter might prove useful, as it would hold back even more of the blue rays, allowing the weaker but more desirable ones to do their work on the film.

—Daniel B. Clark, A.S.C.

I HAVE a set of 500-watt photographic lights; if I want to use more lamps, or cover a larger area, will it be necessary for me to get the same type of lamps, or can I use Photofloods together with my present equipment?

—J. C., Brooklyn, N. Y.

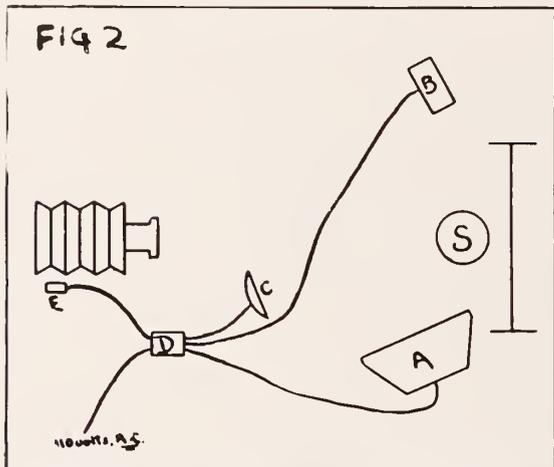
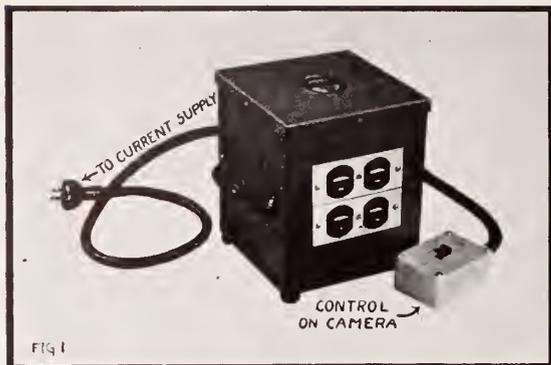
It is quite possible to use Photoflood lamps in conjunction with the older photographic 500-watt Mazda lamps. Granted that you use the Photoflood bulbs in equally efficient reflectors, you will find the light-output of the two types very similar, though the light from the Photoflood is usually, due to the frosted globe, slightly "softer" in quality. The only exception worth noting is in making Kodacolor interiors: in this, the chromatic difference between the whiter light of the Photoflood and the yellowish light of the ordinary high-power Mazda is sometimes noticeable. The special "Photoflood" ratio diaphragm supplied for Kodacolor interiors corrects for this whiter light, whereas the yellowish Mazda light often gives your picture a slightly reddish tone.

—Wm. Stull, A.S.C.

Control for Photofloods

by

Templeton W. Wood



Typical hook-up. A, 2 No. 4 Photofloods; B, 1 No. 1 Photoflood; C, 1 No. 1 Photoflood; D, Economy Coil; E, Remote Control Switch.

FROM the time photoflood lamps were first put on the market, manufacturers of lighting devices have recognized the necessity for dimming, when the lamps are not in photographic use, in order to conserve their life. A series-parallel switch is usually provided. This was adopted, not because it was a satisfactory way to solve the problem, but because it was the least expensive way.

Such a system of control has many disadvantages. When the lamps are in series, the light is so dim as to make it impossible to know in advance what the light balance will be at full "speed." When the operator is ready to make the exposure, he must make the rounds, and turn a switch on each light source. If a portrait sitting is being made, the sudden burst of light, as the lamps are thrown into "high," is very disconcerting to the subject, and may require a pause, so that the eyes may become accommodated to the new intensity. The lamps can be controlled only in pairs. If an odd number of lamps is used, the odd lamp cannot be controlled.

Since electricity is distributed in the United States, almost without exception, in the form of alternating current, the designer used the principle of the transformer as his starting point. This precludes the use of the device on direct current, but direct current supply is so exceptional that it need not be considered.

Having ascertained from the engineers of the lamp manufacturer that a small photoflood, operated at ninety volts, would have a life of from twelve to sixteen hours, this value was decided upon as the low "speed" of the coil, the high "speed," of course, being the line voltage of 112. There was another reason for this decision. Since

the heart of the device is a specialized form of a transformer, called an auto-transformer, considerations of size, weight, and expense dictated that the low "speed" should be no lower than necessary to give the lamps a satisfactory life. The greater the difference between the primary and secondary voltages in an auto-transformer, the larger, heavier, and more expensive the device becomes.

The general appearance of the coil is shown in Figure 1. It is a cube of approximately seven inches, and it weighs about fifteen pounds. The steel case, finished in green enamel, contains the auto-transformer. At the back, the cable, marked "to current supply," is plugged into any baseboard outlet. This outlet should be fused according to the number of lamps used.

Each small photoflood takes approximately two amperes at 112 volts. The other cable, marked "control on camera," terminates in a snap switch, enclosed in an aluminum box. Each cable is ten feet long. In the face there are four standard receptacles into which the lighting fixtures are plugged. The coil will handle ten or more small photofloods. If the larger, No. 4, lamps are being used, or if a combination of the larger and smaller sizes is in operation, the device will handle them with equal efficiency, provided a total load of about 2500 watts is not exceeded. It is equally satisfactory for still or motion picture work.

Figure 2 explains the manner of use. The coil is placed on the floor at a convenient point, and the supply cable plugged into a baseboard outlet. The cable to which the switch is attached is brought to the back of the camera and hung on the tripod, or otherwise disposed of conveniently. The lighting units are plugged into the receptacles on the face of the case, and the switch on the tripod is thrown backward and forward to find the "low" speed. The lamps are allowed to remain in "low" during the period of set-up, focusing and adjusting, ample light being provided for the ready accomplishment of these functions. Just before making the exposure, the operator throws the switch on the tripod to "high," makes the exposure, then throws the switch back to "low" again. By following this procedure, a conservative estimate of the average life of the smaller photoflood is from eight to ten hours, and for the larger one, from forty to fifty hours.

The advantages of this method of control are now apparent. The most important, unattainable with the series-parallel system, is the ability to make the set-up and arrange the lighting with the assurance that the light balance will be the same at high "speed" as we see it at low "speed." Control being by voltage, alone, neither the number of lamps connected, nor their wattage, can have any

Continued on Page 281



TRICKS

and GADGETS

Here we present the first winners of our new "Tricks and Gadgets" Contest. You'll agree, we hope, that they are mighty useful ideas for amateur filming, which any amateur can adapt to his requirements. We'll wager, too, that you have some ideas which are just as good—in fact, we're betting the prizes listed on inside back cover that you have! So send in your tricks and your gadgets; they may win you a prize.

A Professional-Type Finder

The finders usually supplied on 16mm and 8mm cameras (especially the earlier and less expensive models) don't correct for parallax: that is, they aren't accurate when the subject is close to the camera, so that in close-ups you'll often cut off part of a forehead, or leave out one side of your subject, according to the position of the finder. So I built a professional-type finder for my Cine-Kodak. It gives a nice, big image; and a simple wheel, rotating in a com-like movement, corrects for parallax. It is easy to construct, and will work, not only with the Cine-Kodak, but with any box-type camera, 16mm or 8mm alike. I get a thrill out of using this finder in shooting my films, for it not only looks professional, but it really is professional equipment.

The body of the finder is a simple cardboard box, or least eight inches long, and covered with imitation leather. At one end the box is closed with a tin front (which may also be covered with the leather). In the center of this front is mounted a meniscus lens of 6-inch focal length; the lens from an old "Brownie" camera will do excellently for this. At the focal point of the lens—that is, a point six inches down the tube from the lens—is a ground-glass screen, mounted with liquid solder in the metal aperture of a 4½x6cm film-pack container. Just behind the ground-glass cut a small slot in the side of the box, to admit matter to mask the finder when you use lenses of longer focal-lengths: these matters may be made of heavy paper or celluloid, cut away to give the exact field of the desired lens. The box of the finder overhangs the ground-glass by about two inches, so as to shade it and give you an easily-visible image. It should be pointed black inside.

One side of the tin front (the side nearest the camera) is extended, cut out, and curled to make the female part of a hinge. The other half of the hinge is on extension of another tin piece attached to the camera, as shown. A removable pin holds the finder on its hinge, and a piece of bent clock-spring prevents it from swinging out on its pivot.

The parallax adjustment is provided by a shaft, running the whole length of the finder-box, with an eccentric wheel projecting at the rear. This wheel bears against the side of the camera under the pressure of the spring, and, as the shaft is set off center, turning the wheel will cause the

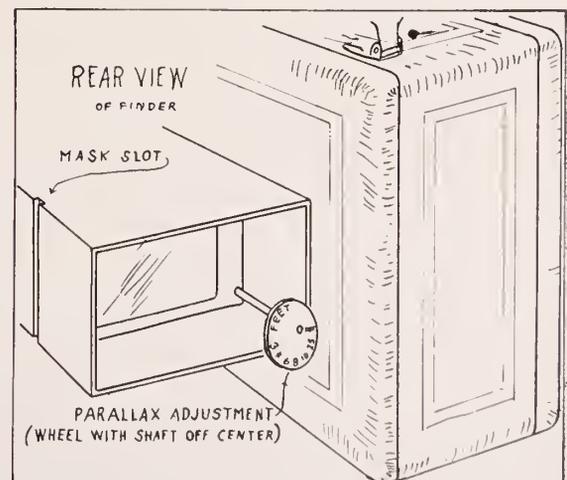
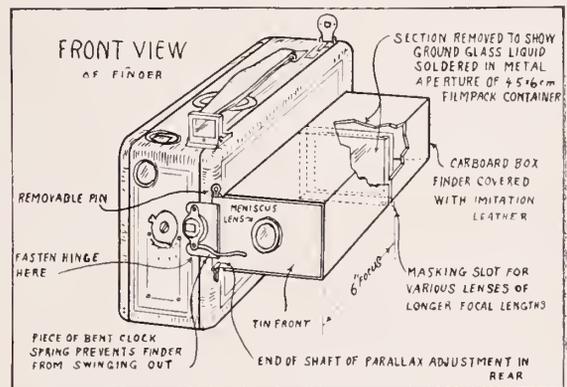
finder to pivot: it is a relatively easy matter to calibrate the wheel so that the finder is accurate for any distance. In my own Cine-Kodak, for instance, the regular finder is directly above the lens, so there is no horizontal parallax: using this as a guide, with the auxiliary finder mounted beside the lens, it is easy to calibrate the finder-marks quite correctly. It is a good idea to paint the end of the wheel white, so you can mark the calibrations in pencil until you know they are accurate, after which you can engrave them in the metal.

LOUIS A. INSERRA,
Omaha, Nebraska.

Title-Turntable

Sometimes it is necessary to have three separate Opening Titles in one's picture. Why not present these titles in a rotating fashion, as is done professionally? An old phonograph turntable will do the trick. Cut cardboard to the

Continued on Page 281





TREND of

THE TIMES

A Super-Comero

● The largest camera in the world has just been put into use by the United States Coast and Geodetic Survey and is used for reproducing nautical charts and airway maps. The camera weighs fourteen tons and is thirty-one feet long. The photographer stands inside the camera in a specially built chamber. Two years were required to finish this large product.

Fast Color Film

● According to a news item in *Camera*, published in Switzerland, a fast color film is available in Europe manufactured by Agfa. This is termed the Agfacolor-Ultra Film. It is sold in ordinary film-packs or rolls for any size camera. No filter is said to be necessary and exposures are listed as ranging from a 10th of a second to a hundredth of a second.

This means instantaneous color photography.

Third Dimension Photography

● The French *Photo-Revue* publishes an interesting article on third dimension photography. The new principles described permit an amateur of even limited means to carry on a few interesting experiments.

One of the features of this process is that it gives all angles of the subject photographed the same as the eye sees it. The photograph when finished gives the impression of the object floating in the air, and by looking at it sideways you actually see the sideview of the photographed subject. In spite of some very convincing experiments the whole is still in an experimental stage.

Since the finished result is visible only by projection or transparency, this may open up new fields for research.

The following method was described in the making of the experiment:

A sheet of black paper which has been pierced by a great number of small pin-holes is placed flush to an unexposed plate in the dark room. This is exposed to an ordinary electric bulb. The plate is developed and reversed. After it is dried the black paper is placed over it again in the identical position it occupied during the exposure process. A

ground glass is placed on top of this lighted from behind. Looking through the holes you will see the photographed lamp apparently floating in space. From all sides the image will seem a perfect plastic image.

The black paper must be the same size as the plate. The pin holes must be about 15 per square inch. Holes to be kept exact distance from each other. Paper and plate to be placed between two ordinary photographic glass plates. Any printing frame will hold all of them together. Place electric bulb about 20 inches from the frame; expose about 4 minutes. Develop plate and make positive print on another plate. Replace black paper on positive plate. Place ground glass plate between light in a box and positive plate then stand away about 5 yards. At first you may not see anything. Move your head from side to side until you see the photographed lamp. Approach it slowly. Get as close as you can and look at it from all sides. The effect is startling. If you approach too close the image goes out of focus and then will disappear. Retreat and the image will appear again.

Fast Lenses

● At the recent Leipzig Fair in Germany the Photographic Section had several outstanding novelties to offer. The trend of Photographic progress is seemingly towards newer and faster lenses and higher speed emulsions.

Several new fast lenses are claimed to be just as sharp and have as great a depth of focus, wide open or shut down.

The Supracomar manufactured by the Plaubel Werke has a focal length of 4.5 cm with a speed of $f1:2$.

A world record is claimed by the Astro Works with their new Tachone at $f0:85$ destined for cinematographic cameras.

A great number of miniature cameras embodying all kinds of new features were on display.

Also a new Leica attachment which enables the operator to focus his image on a mattglass several times the size of the actual image photographed.

Considerable interest was aroused by the new Minifex miniature camera which takes a picture 13×18 mm; Lens Astro-Tachar 5cm with a speed of $f0:95$.

Agfa exhibited samples of their new Fine-Grain emulsion "Finopan" which

allows Leica enlargement without grain to a dimension of 30×40 cm. This new Finopan is slightly less sensitive, corresponding to a speed of 20-21 degree Scheiner.

Automatic Loop Adjustment

● A U. S. Patent (No. 1,958,152) has been issued to Etienne Oehmichen, of France, for an invention described as "means for mechanical adjustment and automatic maintenance of film-loops during passage of film through cinematographic apparatus."

Another Cine Color

● According to foreign trade papers a new cine color process has been invented by Richard Gaschop and Carl Pokorny, chemists, called by them the Irix Color Phata. This process is said to be based on a negative gelatine relief which serves as a matrix for printing in 3 colors. Other details are not available, but it is difficult to imagine how a perfect contact and sharpness can be secured with this method.

New Studio Lamp

● A new rifle-type lamp is said to have been perfected in France by a manufacturer of Marine Lighthouse equipment. By the use of a new type reflector they claim to effect a 70% saving of amperage. For the present the lamps are only built to take 500-watt lamps. The new lamp is called the Hollaphane.

Miniature Film Pocks

● A German manufacturer of raw stock has devised a new and ingenious method of packing raw film for miniature cameras. It eliminates the measuring of film in the dark room when loading. This film comes in a light-tight package sufficient for 10 loadings. Each length is separated by an incision easily felt by the hand in the dark.

New Miniature Comero

● A new German miniature camera for 35mm stock is being marketed by the German Eastman Kodak, Ltd. This little camera is said to be very much along the lines of the original Leica camera and sells for around \$30.00 at the present rate of exchange. It is equipped with a compur shutter and an $f3.5$ lens.

The 16 mm. camera of professional scope

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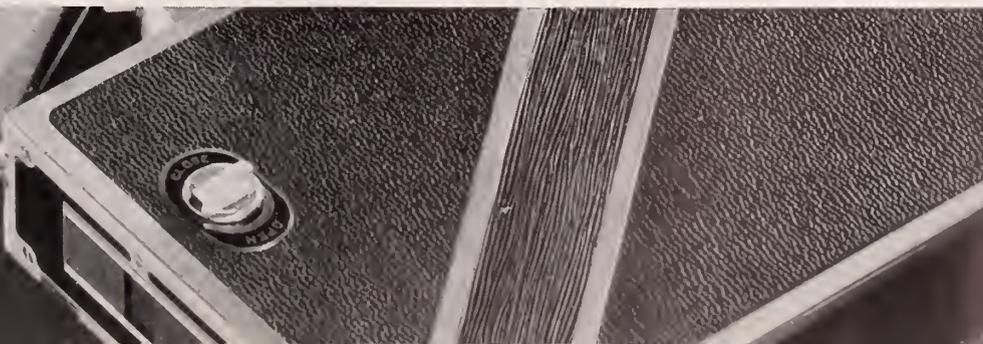


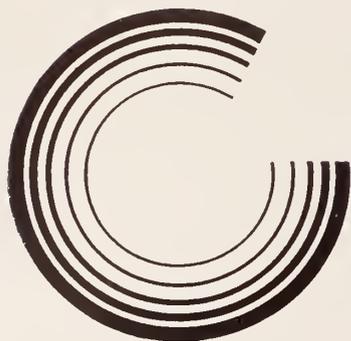
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WHEELS OF INDUSTRY

16mm Sound-on-Film Projector

● According to announcement made by the Ampro Corporation, that company is now manufacturing a 16mm sound-on-film camera. They operate under license granted by R.C.A. Victor Company according to their statement.

Slow-Speed Device for Leica

● A new attachment which gives shutter speeds from 1 to $\frac{1}{8}$ th second exposures on the previous models of the Leica has just been announced by E. Leitz, Inc., 60 East 10th Street, New York City.

The new slow-speed device is especially useful to owners of Leica cameras other than the model F, which has these slow speeds built into its mechanism, as it makes possible slower automatic speeds by simply attaching the device to the camera over the shutter release button. Owners of Leica models A, C, D, and E will welcome this device because the slowest speed their shutters are capable of, automatically, is $\frac{1}{20}$ th second. Many have had their cameras converted into the model F because of these slower speeds. With this device now available, conversion is not necessary.

New Miniature Projector

● As an addition to the series of Udimo projectors, E. Leitz, Inc., 60 East 10th Street, New York City, is announcing the new miniature projector known as the UMINO. The small projector is unique in that it accommodates not only film slides (both single frame $\frac{3}{4} \times 1$ -inch and double frame $1 \times 1\frac{1}{2}$ -inch), but also 2×2 -inch glass slides.

The miniature projector measures $2\frac{1}{2} \times 5 \times 7$ inches, and weighs only $2\frac{1}{2}$ pounds complete. A highly-corrected projection lens is supplied in focusing mount, and the illumination is supplied by either 50- or 100-watt, 110-volt lamp. For special requirements, an adapter may be installed whereby the illumination is furnished by a standard automobile storage battery, using a low-voltage lamp. This new projector is manufactured in the United States.

Sound-on-Film Catalog

● Klein & Goodman have issued a 16-page catalog of their sound-on-16mm-

film subjects available for rental. It includes 200 subjects with a total of 400 reels. These are broken down into Features, Westerns, Super Specials, Musicals, Novelties and Revues, Travel, Cartoons, Sport Subjects and Educational. Catalog will be mailed on request to Klein & Goodman.

Bass Rental Catalog

● Bass Camera Company announces a new 64-page 16mm Film Rental Catalog. This catalog includes silent pictures, sound on disc and sound on film, according to the announcement of this company, and will be mailed upon request within a radius of 1000 miles of Chicago.

The same announcement tells of Bass Bargaining No. 214 which will also be mailed on request.

B & H Branch Library

● The Bell & Howell Film-Sound Rental Library announces the establishment of the following branches: Auditorium Supply Co., Minneapolis; Burgart Bros., Tampa; Photoart House, Milwaukee.

The library is said to specialize in 16mm sound-on-film subjects and claims over twenty branches in various cities of the country.

Lens Folder

● A new six-page folder on Bausch & Lomb Tessar Lenses has just been issued at Rochester. This folder is illustrated with examples of photography from this series of lenses and carries schematic drawings showing the arrangement of the elements in the barrel.

Six primary uses of the Bausch & Lomb Tessars are listed indicating the versatility of this series. These uses are given as: action, or news pictures; child portraiture, aerial photography, nature pictures, copying and enlarging and medical and biological.

Revised "Leica" Darkroom Manual

● The familiar brochure, "Developing, Printing, Enlarging Leica Pictures," by Willard D. Morgan and Karl A. Barleben, Jr., F.R.P.S., has just appeared in a sixth edition. Essentially the same as earlier editions, it has been revised and amplified to include the latest in methods and equipment for miniature camera darkroom work. Especially valuable is

the added information on the popular Paraphenylene-Diamine developers: not only are general formulae given, but special formulae for definite types of film, including super-speed, regular pan, and special fine-grained panchromatic emulsions. Another welcome addition treats the Lumiere Filmcolor and DuPont Dupac natural-color processes.

There is a chapter on the use of photo-electric exposure meters, by A. T. Williams, of the Weston Electrical Instrument Corp. Other added information concerns the latest "Leica" darkroom and copying equipment, and the new technique of enlarging with illumination control and Photoflood lamps.

Brick-Board

● A new material, designed to take the place of cast-plaster brick panelling for set-construction, has been patented by David S. Garber, Art-Director for Universal Studios. The new product, known as "Brick-Board," is understood to be made of a paper-pulp composition, which may be colored throughout in any desired shade, rather than painted on the surface alone. It is held to be waterproof, excellent acoustically, and, according to Garber, will be placed on the market within the next month.

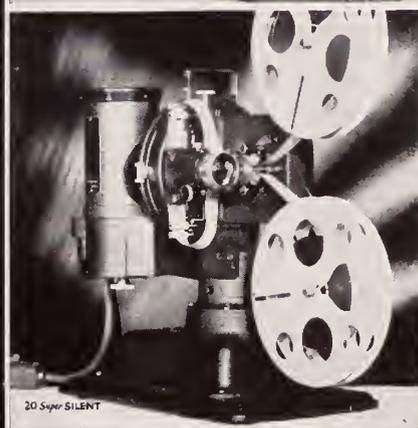
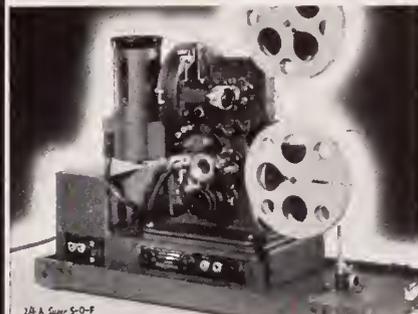
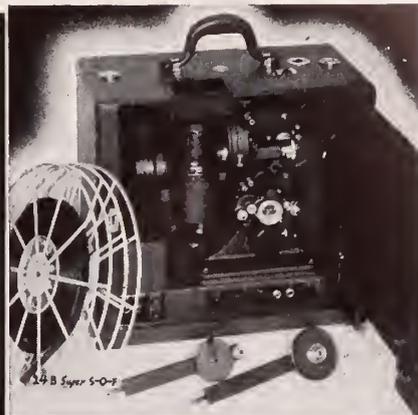
Single-Exposure Leica Camera

● Many miniature camera enthusiasts often wish to make one exposure and develop it immediately. With the usual camera this may not be so convenient. With this idea in mind, E. Leitz, Inc., offers the Oliga Single Exposure Leica camera. The Oliga is an interesting little device. It consists of a metal housing, the front of which is threaded to accommodate any of the Leica lenses, and the rear is fitted to accommodate a special ground-glass focusing screen and special film holders interchangeably. A special lsbor shutter which fits over the lens and provides the exposure-speeds completes the outfit.

The film holders are sturdily constructed of metal, and hold a single $1 \times 1\frac{1}{2}$ -inch film which may be cut from a 35 mm film roll. Sharp focus is established by the ground glass back.

The Oliga camera is convenient for making test shots, for copy work, and for all other uses where but one exposure is necessary.

The NEW 16^M/_M Leaders !



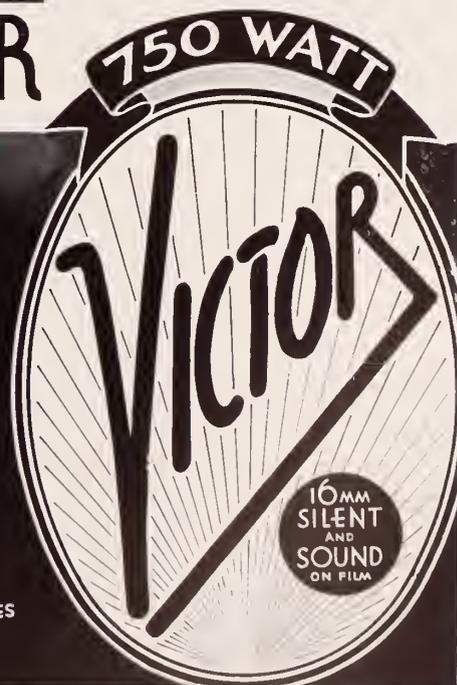
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CONTINUITY WITH SIMPLE CAMERA-TRICKS

Continued from Page 270

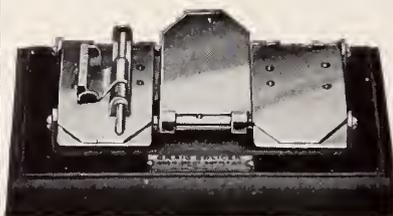
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Scene 19. Lang-shot, over the heads of the audience. Two sheets have been strung up, as curtains: Jack and Joe rise up from their "archestra pit" and draw them apart, revealing Junior, standing beside a table in the center of the "stage." He bows deeply; cut just as he starts to rise.

Scene 20. Close-up of Junior, just straightening up from his bow. He has made himself up with gorgeous painted mustachios and gattee; he speaks:

TITLE: "Ladecz and Gentulmun! The Great Mogul will now astound you with his mystic Magic!"

Scene 21. Medium long-shot, panning from left to right, showing the audience applauding wildly.

Scene 22. Medium-shot of Junior. He takes an apple from his pocket, and lays it on the table. He removes his hat, and places it over the apple. He waves his wand, taps his hat once, and when he raises the hat—the apple is gone. Junior bows.

Scene 23. Same as Scene 21: the audience is quiet, astanished.

Scene 24. Medium-shot, as Scene 22. Junior puts the hat on the table, makes another pass—and when he raises the hat, the apple is there again.

Scene 25. Medium-shot of audience. One youngster gets up and speaks:
TITLE: "Aw, that ain't a real apple!"

Scene 26. Close-up of Junior. He tasses the apple straight into the camera.

Scene 27. Close-up of the boy who spake; he catches the apple, looks at it, and surprisedly bites into it as he sits down.

Scene 28. Medium-shot of Junior. He picks up an egg, and puts it under the hat. When he raises the hat, there is a chicken! He covers the chicken and waves his wand.

Scene 29. Close-shot of the hat: Junior lifts it, and reveals a cat in place of the chicken.

Scene 30. Medium-shot of Junior. He covers the cat with the hat, waves his wand, and when he raises the hat, the cat has vanished.

Scene 31. Close-up of Junior, speaking:

TITLE: "Now—the greatest trick of all! I'll make somebody DISAPPEAR in front of all of you! Step up, please—anyone."

Scene 32. Close-up of Junior as he finishes speaking.

Scene 33. Lang-shot of audience.

Unbelievably, they stare at each other; finally the young skeptic who ate the apple gets up and walks toward the camera, approaching until he completely fills the screen.

Scene 34. Lang-shot of Junior. The Skeptic comes up on the "stage" and turns to face the camera. Junior takes a large black cloth and waves it around a moment, then holds it up in front of the Skeptic, so that the boy is completely hidden.

Scene 35. Series of very short "flash" big-head close-ups of the children in audience—wide-eyed and expectant.

Scene 36. Same as Scene 34. Junior draps the cloth—and the Skeptic is nowhere to be seen. Junior bows proudly.

Scene 37. Lang-shot of the audience. They applaud wildly, then crowd forward, all talking at once.

TITLE: "Make us all disappear!"

Scene 38. Medium lang-shot of Junior, as the children crowd around him. He motions them to get back.

Scene 39. Reverse angle from Scene 38: the children drap back a few steps and wait expectantly.

Scene 40. Medium close-up of Junior. He makes several passes with his wand.

Scene 41. Same as Scene 39. The children are standing, waiting—and suddenly they all vanish.

Scene 42. Medium long-shot of Junior. He smiles proudly, looks around over the vacant seats, then takes off his hat, puts down his wand. Then he wanders over to a chair, sits down in it, and falls asleep. SLOW FADE OUT.

Scene 43. FADE IN SLOWLY. Medium close-up of Junior, in bed and asleep. His mother's hand is shaking his shoulder, trying to awaken him. In his arms is clutched the book, with the title, "How to be a Magician" showing prominently.

Scene 44. Close-up of Junior, with the book, if possible, also in the picture. He smiles contentedly in his sleep. FADE OUT.

THE END

The vanishing tricks can be done very easily. Simply put the camera on a tripod, and when you reach the part of the scene where you want the disappearance, stop the camera. While it is stopped, remove whatever is to disappear, taking pains that nothing else moves; then continue your scene. If you do it carefully, the stop won't show on the screen.

Tricks and Gadgets

Continued from Page 275

size and shape of a phanograph record and print your three, four or more titles on this circular title-card, spacing them equally around the disc. Then shoot the first title for the required length of time. Then revolve the turntable until your next title is centered, expose this for the required length of time, and continue to your next title. (Of course, the camera must be continuously functioning throughout the foregoing procedure.)

A clever variation of the above trick is to center your camera on the rotating center of the turntable, center and lay your first title on the table, and start both camera and phanograph into functioning. Stop both when the title arrives at the 180° point of its revaluation (that is, when your title is upside down), place your second title on top of the first (also in an upside-down fashion), and again start camera and phanograph into functioning simultaneously. When your title reaches the right-side-up position, stop the phanograph (turntable, of course) **only**, expose the title for the required length of time, and again resume turntable rotation until the 180° point (upside-down title) has been reached. Here you place your third title and repeat the above procedure. Be sure to expose your first title for a few seconds before rotating the same.

On the screen, this mysterious changing of titles will be amusing to watch, for as soon as one title has been read, it will revolve once, but a new title will have taken its place during the revaluation.

LOUIS A. INSERRA,
Omaha, Nebraska.

Minnecam Portraiture Guide

● George W. Hesse, known as a contributor to these pages, is the author of "Portraiture with the Miniature Camera," recently published by the Fama Publishing Co., of Canton, Ohio. While perhaps not as fully illustrated as a work on this subject should be, Mr. Hesse has treated his subject in workmanlike fashion, and covers in a very practical fashion, every essential phase of miniature-camera portraiture, from the exposure to the finished, mounted enlargement.

Among the topics discussed are the actual making of the portrait—composition, posing, lighting, exposure, and the like; make-up for portraiture (suggested as a substitute for retouching, which is, of course, impossible with miniature negatives); developing the negative—including formulae for fine-grain and physical development, intensification and reduction; making the print, including several excellent developer formulae; tinting and toning prints; and data on finishing, spotting and mounting portrait-prints.



Ballet Russe "Union Pacific". Actual performance photo by Lester-Pickett, LEICA SUMMAR f:2, 1/40th sec.

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Control for Photofloods

Continued from Page 274

influence whatever on the law "speed" as long as the capacity of the device is not exceeded. High "speed" and low "speed" are sufficiently close to each other to make the judging of the relative photographic values of colors simple. Centralized control is a great convenience. One switch, at the back of the camera, controls all the lights. There is no violent burst of light when the switch is operated as there is with the series-

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parallel system. And, finally, it is worth repeating that low "speed" is constant, regardless of the number of lamps connected, as long as the capacity of the device is not exceeded.

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HINTS ON INDOOR CINEMATOGRAPHY

Continued from Page 271

The reflective values of wall-surfaces are also important, especially in the longer shots. Naturally, a dark wall will require more light than a highly-reflective, light-colored wall.

Such a wide variety of lighting-units is available to the amateur filmer that it is hardly necessary to discuss the matter of equipment here. Moreover, it is not necessary to restrict yourself to any one type of lighting-unit, for Photofloods and the older type 500- and 1000-watt

units may be used together. The main thing is to have plenty of lamps, for while you can make excellent close-ups with but two lamps, you will need half-a-dozen or more units for really satisfactory long-shots. It is wise to equip yourself with several of the inexpensive Photoflood units which have rubber-covered clamps: not only are these units very handy, but they are very useful in backlighting, etc., for you can clamp them to curtain-rods, moldings and the like, and get lights from higher positions than most stand-lamps permit. Certain types of reading and bridge lamps, when fitted with Photofloods, also make very useful photographic lighting units. Certain accessories will prove invaluable: tracing-cloth or oiled-gelatine diffusing screens, for example, will give you a nice soft light especially desirable for photographing women, while concentrator "snouts," described in the March, 1934, issue of this magazine, are a great help in backlighting, as they help bridge the gap between ordinary lamps and the spotlights so few amateurs can afford.

When it comes to the actual lighting, the illustrations may be useful. Fig. 1 shows a typical close-up lighting. Two lights are sufficient, and the light is balanced by having one light—in this case, the one on the right of the camera—considerably closer to the subject than is the other. In close-ups, it will be noticed, the units used for lighting the subject can usually do double duty and illuminate the background as well.

Fig. 2 shows a medium-shot: for this, five lamps are the minimum needed for satisfactory lighting. The units numbered No. 1 and No. 2 still serve the same purpose as in the close-up—lighting the subject. Lamps Nos. 3 and 4 are intended primarily to light the background, and lamp No. 5, which is placed high, out of the picture (preferably one of the clamp-type Photoflood units) is for backlighting the subject, to separate him from the background.

In Fig. 3, we see a long-shot: naturally, as a greater area is included in the picture, a greater amount of light is needed, so we use seven lamps. Again lamps 1, 2 and 5 provide front and back light for the subject, while lamps 3 and 4 are assisted by Nos. 6 and 7 in lighting the "set." This is, of course, merely an elementary layout: for in actual practice you will find use for several additional units in lighting the set, the furniture, and the like—adding to the effects of depth and relief with highlights on curved surfaces, casting interesting shadows, and so on. Low-powered bulbs in the wall-fixture should be turned on—not for any photographic value, but because, if they definitely appear lit, you

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will have a logical source from which your backlight will appear to come.

Several practical suggestions can be made: for instance, never attempt such shots (or any serious camerawork, for that matter!) without a goad, deep lens-shade—and never let the direct rays from a lamp strike the glass elements of your lens; this would produce a flare or "ghost." Likewise, don't be afraid to place your stand-lamps high on their supports—preferably well above the head-level of your subject. If you are working in Kodacolor, you will need at least double the amount of light you'd use for black-and-white—especially in frontlight. Remember that your effect depends, not alone upon light, but upon the balance of light and shadow—so, wherever you can, keep a watchful eye out for opportunities to paint upon your set with interesting shadows. Lastly, notice that in the illustrations the subject is not crowded close up against the back wall, but (especially in the longer shots) brought well out from the wall. In a close-up, it is not so important to play your action well away from the walls; but in longer shots it is imperative. Otherwise, you will not be able to light either subject or set properly, or to get a natural effect. It is a good idea to make it a rule that the greater the area covered in your shot, the farther out from the wall the actors should be placed. Above all, try to make your effects natural, rather than artificial, for you aren't lighting your set merely to illuminate it, but to give a natural and artistic effect. And once you understand lighting, artistic, as well as mere illumination, is easy.

Making Silent Movies Talk

Continued from Page 272

proper care of them, these records—while by no means permanent—last surprisingly well.

Most of these home-recording phonographs have provision for recording from radio-programs, too: and you frequently use this feature when you want to record a musical accompaniment for silent films such as scenics, and the like. Most radio performers are glad to accommodate with requests, and it is easy to arrange to have them play the number you want to use for a score on some definite programme, when you can record it. I have even used such request numbers to provide an orchestral accompaniment to songs I wanted to record for one of my pictures.

It is also possible to get some interesting results synchronizing your pictures with commercial phonograph records. For this, since the sound is already made, you simply use a portable phonograph, and play the record while you photograph the picture; your actors, of course, talk and sing with the record—and the result on the screen is that your actors appear to

be singing with, for example, the voice of Bing Crosby or Marlene Dietrich—or even my own voice!

Best of all, this system makes it possible to make home talkies no matter what sort of film equipment you use, for obviously the idea will work just as well with 8mm or 9.5mm equipment as with 16mm. In this respect, it is absolutely the only way I have heard of for getting sound with the smaller films.

Incidentally, when I talked about the idea with some of the real old-timers of

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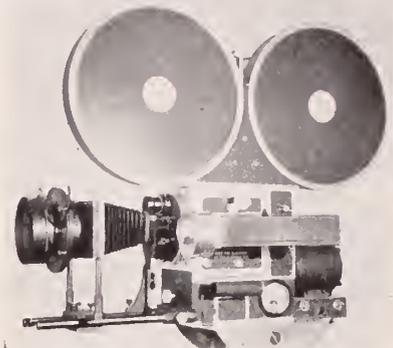
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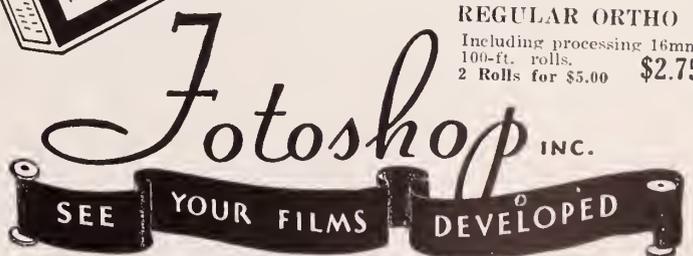
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This Contest is open ONLY to AMATEURS. No professional cinematographer will be eligible to compete.

The Contest ends at midnight of October 31, 1934. All pictures must be entered by the closing date or they will not be considered. Entries, mailed or expressed, bearing a date not later than October 31, 1934, will be accepted.

Pictures submitted in this contest will be judged for photography, composition, direction, acting, cutting and entertainment value. The judges will include outstanding and widely known cameramen, directors, actors, writers and a group of nationally known motion picture critics.

The decision of the judges will be absolutely final and there can be no appeal from their decision. Announcements of the awards will be made as soon after the close of the contest as possible and checks and prizes will be sent the winners.

Pictures may be submitted either by individual amateur movie makers, or they may be submitted by amateur movie clubs. However they must be photographed on 16 millimeter, 9½ millimeter or 8 millimeter film. Each entrant must have his entries accompanied by the sworn statement which will be sent him to fill out. No pictures will be accepted which were photographed on 35 millimeter film and then reduced.

Contestants may enter as many subjects as they desire. One entry blank will cover all subjects put in the contest by that entrant.

The contest is open to amateurs and amateur clubs anywhere in the world.

The \$1000 in cash will be divided very simply. There will be a grand prize of \$250 for the best all-around picture. There will be from 10 to 15 prizes in the various classifications of \$50 each. There will be such classifications as Scenic, Travel, Educational, Scenorio, Home Movie, Kodacolor, Technical and any other classifications which might be brought forth by the entries made.

The American Cinematographer reserves the right not to declare a prize for any classification, if in the opinion of the judges, there is not a picture submitted sufficiently good to be classed as a prize-winner.

The American Cinematographer also retains the right to make duplicates of such prize-winning pictures as it may indicate, for free distribution to clubs and amateur organizations throughout the world.

If you intend to enter the contest please send coupon on this page for official entry blank.

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Please send me one of your official entry blanks. I intend to enter one (16mm 8mm 9½ mm) picture in your 1934 contest. I understand my entry must be in your office not later than October 31, 1934.

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Book on Miniature-Camera Color Pictures

• "Color Photography with the Miniature Camera" is the title of a booklet just received from the Famo Publishing Co., of Canton, Ohio. In it the author, Luis Marden, makes a welcome addition to the literature of both natural-color

photography and miniature-camera work, as he details many processes developed since the publication of most standard works on color photography, and treats excellently the hitherto virgin field of natural-color picture-making with "Leica," "Contax," "Rolleiflex" and kindred miniature apparatus.

Among the many processes discussed are: Lumiere "Autochrome," "Filmcolor" and "Lumicolor;" Agfocolor plates and films (including the Agfocolor lenticulated Keller-Dorion 35mm film-system); Finlay color plates; Trichrome Corbra; Belcolor; Three-color bromoil transfer and gum-bichromic printing from color-separation negatives; DuPont "Duplic" and Eastman "Zelcras" bi-poc two-color processes; Ives' "Polychrome;" Pinatype; Dyebro; and imbibition printing from Ives' "Polychrome." All necessary formulae are given, as are full practical instructions for exposure, developing, printing methods, and mounting. A brief historical resume of the basic facts underlying all natural-color photography is appended.

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TRICKS

GADGETS

Another Contest

Here's how it works. Send us in tricks you have done in filming with your 8mm, 9½mm or 16mm camera. Explain them to us so that we can explain them to others in the pages of American Cinematographer.

For every one we publish you will be entitled to your choice of one of the prizes listed below.

By Gadgets we mean little pieces of equipment you have built, designed or devised. Equipment that works. Little gadgets you have added to your camera, projector or otherwise. For instance, we heard of one fellow who built a splicer out of a mouse-trap . . . that's a gadget.

What kind of gadgets have you made . . . what sort of tricks do you do with your camera or equipment? If necessary send us a rough sketch or a snap shot of your equipment if it will help describe it better and quicker.

Here's Your Chance to Win Equipment or Film

Frequently we have published what might be termed tricks. Such as making distorted effects by pouring sweet-oil over a glass in front of the film. Others have been published from time to time.

In the way of gadgets we have reported many things from the building of a complete 16mm camera by amateurs down to making their own reels.

What Have You Done?

Here are the prizes . . . you may make your choice of any one of them.

Beltipod	Two Rolls of 8mm Film
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... and other features

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NOVEMBER,
1934

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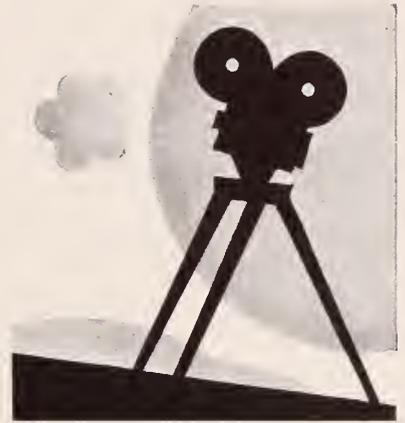
Volume 15 NOVEMBER, 1934 Number 7

What to Read

PHOTOGRAPHIC Modernism and the Cinematographer by Karl Struss, A.S.C.....	296
USING Supplementary Lenses by Frank B. Good, A.S.C.....	298
INGENIOUS Cinematographic Short-Cuts by Walter Blonchord.....	300
RIDDLE Me This by A.S.C. Members	301
PHOTOGRAPHY of the Month.....	302
PROFESSIONAL Equipment	303
TREND of the Times.....	304

Next Month

- One of the members of the American Society of Cinematographers will discuss camera rhythm as it applies to cinematography. This should prove an interesting analysis of one of the artistic sides of picture-making.
- The technical side of the studios will contribute a descriptive article on the port the matte plays in cinematography. Its uses and economy will be thoroughly discussed.
- There will be other contributions from prominent directors of photography.



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Photographic Modernism and the Cinematographer

by

Karl Struss, A. S. C.

THE relationship between the so-called "Modern" school of photography and cinematography is a subject frequently discussed whenever photo-pictorialists or cinematographers foregather. Frequently in such discussions, I have heard cinematographers censured for not patterning their work more closely after this school; at other times, I have heard them as stoutly praised. The question is one, I believe, which should be of interest to all of us, whether engaged in still or motion photography.

This "Modern" school of photography is above all, a school of surrealism. Examination of any representative group of such prints reveals that, in almost every case, the artist is at great pains to achieve abnormally striking effect, either by unconventional composition, dynamic patterning of lines and masses, or by accentuatedly realistic rendition of textures. In more than a few instances, realism is carried to the length of exaggeration—especially by the portraitists, who make a fetish of securing exaggeratedly literal renditions of flesh tones and textures, and take great pains to reveal every possible facial blemish.

It is to be admitted that these portraits generally succeed in their apparent purpose: they certainly seize the eye of the beholder immediately, and often arrest it with an aesthetically paralyzing shock. Many prints of this type, modified slightly for commercial use, have proven themselves gripping advertising media.

This conception has undeniably infused new vigor into photography. It has made the still photograph a much more dynamic and interesting artistic entity than ever before.

But it is questionable whether the "Modernistic" technique has anything to offer the cinema—at least under existing conditions.

Cinematography in present-day dramatic films is not an end, but a means to an end, whereas the still picture is often, if not always, both the means and the end itself. Cinematography, while allowing ample room for artistic individuality, must necessarily subserve the dramatic element—the story. It must always remain the vehicle for this story, and as such, it may never call attention to itself at the expense of either story or players. Psychologists have frequently commented upon the fact that the essential appeal of the cinema is the illusion of reality, which enables the audience to merge itself into story and players, and thus to experience vicariously the situations and emotions delineated on the screen. If this illusion is to apply, the photographic treatment of the story must be such that the audience is unconscious of the camera: the viewer must forget that he is watching a series of projected shadows, and lose himself in conscious and subconscious self-identification with the pictured players.

Treatment of the average screenplay by the methods of the surrealistic school of still photography would hardly give this effect. It can hardly be said that the results of this technique are unobtrusive, since the technique over-stresses eye-arresting design or over-detailed textural rendition. Applied to a dramatic film, such treatment would tend strongly to distract audience-attention from story to photography, and even, in extreme instances, to contemplation of the facial and physical defects of the players—all of which would at once destroy the illusion of reality, and accordingly lessen the entertainment-value of the production.

If modern-day dramatic cinematography may be said to belong to any school, it would be that of "idealized realism": we must strive to convey an impression, not alone of actuality, but of **perfected** actuality. Our aim is to show players and settings, not merely as they are, but as the audience would like to see them. Each scene must not only appear actual, but idealized to the extent at least of minimizing all disturbing elements. Very few of our players, for instance, have absolutely perfect complexions; and still fewer approach absolute perfection of line and contour. Accordingly, since audiences quite understandably prefer to see their favorites presented favorably, if not, perhaps, literally idealized, it is the Cinematographer's duty to minimize these physical imperfections, just as a portrait photographer must strive to please his clientele by presenting his subjects both faithfully and favorably.

In doing this, the Cinematographer's technical opportunities are greatly restricted in comparison to those of the portraitist. Where the still-photo worker has almost endless opportunities for controlling his results by modifying his purely photographic treatment of the negative, by retouching, and by infinite manipulation in the printing processes, the Cinematographer's sole point of control is in the photographing; the processes of development and printing are virtually automatic, and permit only a very minor degree of control. Thus, the Cinematographer must see to it that the picture he wants to see on the screen is impressed, complete in every particular, upon the negative when he makes his exposure. Make-up, diffusion, lighting, and carefully-chosen angles are the chief tools with which he must work.

This requirement inevitably debars him from much of the "Modernist" technique, the more so since his subjects—and accordingly, his picture—are in constant motion. A lighting-effect, for example, which might at one angle be strikingly effective, both photographically and dramatically, must often be discarded because a slight movement in either subject or camera would change the angle to one which would, with that lighting, show the subject unfavorably. This is naturally complicated when more than one player is in the scene, for a lighting or angle which may be effective for one, will often be equally unfavorable for the other player. There is, of course, the occasional exception of films of the "What Price Glory?" or "Lost Patrol" genre, in which the mood of the story demands surrealistic photography; but these are decidedly in the minority.

The reverse of this problem is often true, too: indeed, I believe that one of the basic attractions of the photographic moderns is the excellence with which their technique **suggests** motion in an actually static, motionless rendition. More than a few of the modernists owe their suc-



How motion can alter a forceful shot. Lighting and subject are the same in both pictures; note that while the upper picture is quite effective, the changed position in the lower picture makes Lee Tracy's familiar features unrecognizable.

cess not so much to the understanding or application of pure photographic artistry as to an unusual knack of "freezing" motion with a speed camera.

If you will examine the matter closely, I believe that you will find that much of this photographic modernism, in truth, had its inspiration in the achievements of the silent cinema. Aside from photo-pictorial representations of still

life, in which design has always played an important part, I do not believe that you will recall much photography of what is called the "Modernist" or surrealist school prior to the release of the sensational German and Russian silent films of the early part of the last decade: notably "The Cabinet of Dr. Caligari" and "Variety," photographed by Karl Freund, A.S.C., and the Russian films of Eisenstein and Tisse. It is to these films that much, if not all, of the "Modern" school owes its being—or, rather, to certain sequences in these films, since, despite their various innovations, they conformed to the laws of cinematography, making their unconventional technique a means to an end, rather than the end itself, and utilizing the conventional in its place, as well as the unconventional.

Many branches of Modern photography have borrowed greatly from the cinema—even of the more conventional aspects of the cinema. For example, the use of ultra-low camera-angles, so frequently seen nowadays in landscapes, was used by photographers of "action dramas" long before anyone dreamed that the cinema and cinematography could claim a place among the Arts. Similarly, the angles chosen by the photographers of architectural subjects follow cinematographic practice as long evidenced in both exterior and interior cinematography, of capitalizing upon the design potentialities of a structure. In the same fashion, much of the Modernist portraiture is much more closely related to cinematic "close-up" technique than to conventional portraiture, while both interior and exterior lighting plainly show the influence of the Hollywood Cinematographer.

It is in the "Semi-Modern" school, as represented chiefly by the advertising photograph, that the cinematographic influence shows most plainly. In these pictures, the aim is definitely to tell a story in pictures; the means used are closely akin to the cinematographic, and the result is definitely closer to the "Modern" than to the more conventional schools of photography. In these pictures, the technique is, as a rule, such that the picture might well be a production still from a Hollywood studio, not only in purely photographic phases, such as lighting, make-up, and general treatment, but also in what might be termed "photo-narrative" technique: the subjects are not posed for personal or compositional effect alone, but definitely to tell a story—whether it be Soap, Cigarettes, Scotch or Cheese. Thus, whether the picture is a full figure, a group, or a big-head close-up, the treatment—like that of a motion picture scene—is not alone for the picture, but for its message, the story.

There is, however, one branch of cinematography which might do well to borrow more extensively from the photographic "Moderns," even as they themselves have borrowed from the dramatic cinema. This is the newsreel. It is admitted that the newsreel weekly of today needs a new impetus if it is to maintain its position: may not this well come from a more virile visual treatment of the news-events? If really forceful silent films of the majority of events were shown, rather than the tame and colorless scenes of today, which so patently show the restriction of bulky, cumbersome sound-equipment, our newsreels would make a great step forward. Imagine the renewed interest in even the more prosaic news-events if presented on the screen with the force and virility of "Modernist" still photography—plus motion!

Using Supplementary Lenses

by
Frank B. Good, A. S. C.

WITH the development of centralized special-effects departments in most studios, the use by production cinematographers of special supplementary lenses has of late decreased. None the less, such lenses can frequently prove invaluable in meeting special photographic problems.

These lenses may be roughly divided into two classes: those that alter the angular field of the normal lens with which they are used; and "trick" lenses, which multiply or distort the image. Almost invariably, these lenses are incapable of forming a real image, and must therefore be used in conjunction with a normal photographic lens.

In the first group are the supplementary objectives which narrow the angular field covered by the lens, resulting in a larger image of any given object than could be obtained by the photographic lens alone: such lenses are commonly called magnifying lenses. Under the same general classification are supplementary lenses which have exactly the opposite effect, namely, to apparently increase the angular field of the lens, resulting in a relatively smaller image of any given object; these are commonly known as diminishing lenses.

In the former instance, a positive, or converging lens is used for the supplementary objective. This type of lens, it will be remembered, casts a real image, which may be focused upon a ground-glass or film. In actual use, the camera-lens is focused upon the aerial image formed by this photographic lens, and accordingly, the compound image cast on the film.

The diminishing-lens, on the other hand, is of the negative, or diverging type. Such a lens cannot cast a real image, but forms a virtual image, apparently in or in front of the lens, and which may be seen by looking at, or into, the lens. In use, such a lens is mounted in front of the camera, and the photographic lens is focused upon this virtual image. The angular field embraced by such a lens can be considerably greater than that of a conventional photographic lens, and accordingly, the compound image on the film embraces a wider field, but with the image of any given object considerably smaller than would be the case with the smaller field of the photographic lens alone.

There are, of course, many practical difficulties incident to the use of such supplementary lenses. Obviously, such a lens must work under severe optical difficulties: it is usually a single lens, rather than a multiple combination like most modern photographic objectives. Therefore, many of the aberrations which are corrected in normal lenses by the use of different types of glass, with varying curvatures, etc., are always present to some extent in a supplementary lens. Spherical and chromatic aberrations are often inevitable, while in most such lenses the marginal definition falls off very rapidly. Inevitably, the majority of these flaws are transmitted through the camera lens (no matter how carefully corrected it may be) and to the picture. Similarly, distorting the angle of view generally results in some distortion of the image. However, if the curvatures of the supplementary lens are carefully calculated and accurately ground, these aberrations may be held to a minimum, and the lens made satisfactory for use in the special types of scene for which it is needed.

On the writer's last picture, "The Dude Ranger," use

was made of such a lens, which enabled us to film scenes which would otherwise have been absolutely impossible. The lens used was of the diminishing type, and had been specially imported some time ago by Harry Neumann, A.S.C. The lens is of the concavo-convex type, and evidences fewer aberrations than any other such lens of my experience. It was mounted in a special mount attached to the matte-box arms of the camera, and replacing the matte-box. While it could, of course, be used with any lens, the greatest advantage naturally followed its use with a 24mm photographic objective. The horizontal angle embraced by the 24mm lens alone is approximately 50°, while the use of the diminishing lens increased this angle to about that of an 18mm lens, or approximately 62°, and without objectionable distortion.

The sequences on which this lens was used were made at the Grand Canyon, and in Zion National Park, on locations which, while of greatest natural beauty, it would have been impossible to secure satisfactory results with even the widest-angled normal lens. One scene made on the rim of the Grand Canyon permitted us to show, not alone dramatically adequate figures of the players, but a wide expanse of the background, as well. The players were on a rock jutting out over the edge of the canyon, while the camera was set up on the curving rim, about thirty feet from the actors. The players were placed in the upper half of the picture, and the extreme angle afforded by the diminishing lens allowed us to get pleasingly large and undistorted images of them, yet to show below them the full 5,000-foot drop down to the Colorado River, and to utilize some pictorial clouds above them. This shot would have been impossible otherwise. The problems encountered in Zion Canyon were equally difficult. The sequence was enacted in a small canyon, with the 2,500-foot high "Angel's Landing" towering in the background. Even with a 24mm lens, only a small part of this could be shown—and the shot would not be effective, either dramatically or photographically, if restricted to only a small part of the canyon and the base of the outcrop. Therefore, the diminishing lens was used, and we were able to include sufficient of the canyon floor to give us an ample stage for the action, together with the whole of the peak, with plenty of "head-room" to make use of the fluffy clouds in the sky above.

We used this diminishing lens largely for long-shots, of course, and always with the 24mm lens. It did not alter the effective speed of the photographing lens, nor did it make any change in the manner of focusing. Due to the excellence of the particular supplementary lens used, very little distortion was noticed, except when objects very near the lens moved into the camera, and even this was within permissible limits. Naturally, with such an extreme wide angle, no matte box could be used, and finders were accurate only as a very rough guide in keeping following-shots centered. While we used a standard Mitchell camera, we were forced to use special, short arms to support the

Continued on Page 306



Spectral Sensitivity of Agfa Superpan

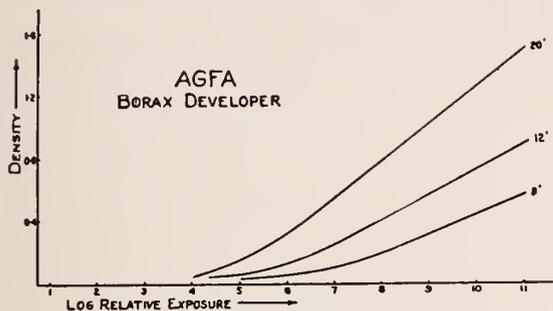


FIG. 2. - Characteristic curve of Superpan: Agfa borax developer.

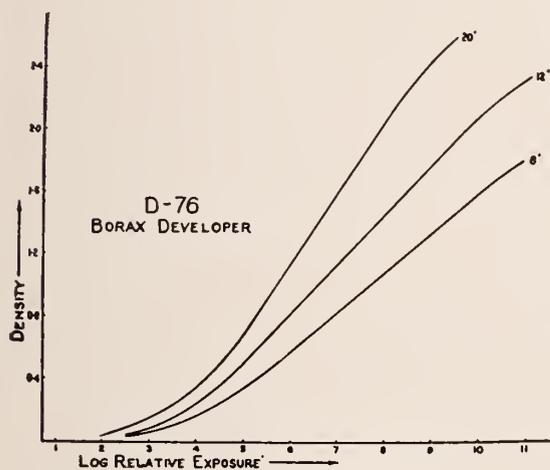


Fig. 3. Characteristic Curve of Agfa Superpan: D-76 Developer

New Agfa Negative

by
Dr. Herbert Meyer, A. S. C.

IN MANUFACTURING negative film for general photographic use, that is, for reproducing natural subjects in continuous monotone, the most important point is that of embodying in such a film the finest characteristics possible to answer all practical needs. For this reason it is not, for instance, advisable to just manufacture only a type of extreme sensitivity to light, if in doing so other im-

portant factors are neglected. Unfortunately, physical laws exist in photochemistry which limit the possibility of going to extremes in perfecting certain properties in the emulsion except at the expense of other valuable characteristics.

To name just a few of these and their relation to other ones we refer to the following:

The possibility of increasing blue sensitivity is limited by the danger of increasing grain, fog, and that of decreasing keeping quality.

The endeavor of the manufacturer to reduce grain-size is hindered by the danger of losing speed and steepening of the gamma.

From this it will be seen that, while the perfecting of a single property in the film does not offer any difficulty, thorough judgment and ample theoretical and practical knowledge is needed to find the combination that will produce the finest all-around results.

The new Agfa Superpan has been designed and is manufactured with this consideration foremost in mind.

Gradation and shadow speed in Superpan have been carefully balanced to avoid any undesirable increase in grain-size. In fact, it would be correct to state that this film-type has been especially built to answer the request for finer grain, which, in the opinion of the manufacturer, represents the most immediate need for improvement.

Other properties of Agfa Superpan, which make it distinctly different from similar types available on the market, consist of the following:

Superpan is provided with a gray anti-halo layer that is located between the base and the emulsion. This offers the only guarantee for complete absorption and prevention of halation by light reflection. The gray tint of this layer becomes somewhat lighter in the developing process, which is considered an advantage, as it helps to restore the correct balance of the printer scale that was distorted to a certain extent when gray-back types were introduced. This reaction, however, does not affect the processing solutions in any way. Special mention is also made of this peculiarity for the reason that, not knowing of it, one might receive the impression that Superpan, judged from comparative Cinex test strips, is lacking in speed.

A further special feature of Superpan consists of a very thin gelatine layer spread on top of the emulsion, which serves to protect it against abrasions.

The emulsion itself is composed of two layers, each having distinctly different photographic characteristics. The upper layer, when exposed in the camera, registers the shadows and medium tonal parts, while the second layer reproduces the highlights.

Exposing Superpan in a sensitometer, one will find the straight part of the characteristic curve extending far over the medium range of densities that are obtained in common practice. This unusual latitude is of value not only to the cameraman because it takes care of the distortion of tone values caused by over-exposure, but because it indicates to anyone familiar with emulsion-technic, that Superpan is an emulsion type with unusual keeping quality, and therefore well protected against sudden or uneven changes in gradation which, with progressing age, cause disuniformity in emulsion batches.

Figures 2 and 3 show the characteristic curves for two different developers and different developing times. Figure 4 gives the time-gamma curve.

Discussing the color-sensitivity of this type we again point to the thoughts that were expressed in the introduction

Ingenious Cinematographic Short-Cuts

by
Walter Blanchard

MAKING a crane-shot without a crane—getting a dolly-shot without a dolly—a zoom-shot without a zoom lens—or light-effects without lights! These are some of the daily achievements of the men who photograph "quickies"—independently-made productions where everybody works on short rations of time, money and equipment. In a major studio, the cinematographer has every possible resource at his disposal, and time and money are of less importance than perfect results: but the cinematographer making the average independent film must get results without wasting either a moment or a penny. A major-studio feature may cost from \$100,000 up, and have a schedule of three to six weeks; independent budgets run from \$20,000 to about \$100,000, and schedules from six to ten days. In the majors, a dozen scenes represent a nice day's work; but to meet an independent schedule a cinematographer must turn out from fifty to a hundred scenes per day. Retakes, delays, and special equipment are impossible, and the indie cameraman must improvise right and left—and get it right first "take."

On one such picture, Jerome Ash, A.S.C., needed a large camera-crane or boom, though the budget wouldn't permit him to rent a regular one. So he made one: he placed a saw-horse on top of a parallel, and across it laid same heavy planks, for his crane-arm. At one end, of course, was the camera and its crew; and as there were no weights which could be placed at the opposite end for a counterbalance, a member of the stage crew was pressed into service, and ran in and out from the fulcrum—a living, moving counterweight. The shot was a success.

For a similar shot, in which the crane was required to roll as well as to move, Alvin Wyckoff, A.S.C., improvised a boom by placing two 2x6-inch planks, properly braced, across the axle connecting a pair of old flivver wheels. With a weight on the projecting short end of the planks, and the camera on the long end, Wyckoff had an excellent rolling crane, at no cost.

Robert E. Cline, A.S.C., on location at Big Bear lake, was suddenly told that the film must end with a dolly-shot, in which the camera moved up the hill to the lovers in their final embrace, then raised to shoot over them, showing the lake below the brow of the hill. And no dolly or small crane was available! But Cline made a track from 2x12-inch planks, one end resting on the ground, and the other supported by a parallel. Another 2x12, with a "high-hat" nailed upon it, was the camera-dolly. A chain-type auto-jack was buried in the ground under the track, and provided the crane-action, while a generous application of axle-grease upon both track and "dolly" block made the movement smooth.

Cinematographer Ash recently had to make a dolly-shot with the camera moving up a long, narrow banquet-table, which was rendered narrower by many tall candlesticks. It was impossible to suspend the camera normally from overhead, for the candlesticks were so tall, and so close together that the camera could not go between them, nor could they be removed. So Ash mounted a parallel on an old four-wheeled dolly, extended a stout plank from the parallel over the table, and hung his camera—upside-down—beneath the plank. Loading the feed magazine of his camera with the film reversed, he made his shot backward: for though the camera would not pass between the candlesticks, the thin magazines would, and did! Reversing the film, end for end, in cutting, made the scene run forward properly.

James S. Brown, Jr., A.S.C., recently needed a zoom-shot to cut into a sequence in which a player supposedly fell from a high building. Brown placed a pulley in a window, on the top floor, and suspended a DeVry hand-camera—lens down—from a wire. When this wire was suddenly paid out, the camera dropped down, revolving as it fell. The result was a perfect shot of what the falling man would see.

Brown also rigged up an interesting revolving-head support for his DeVry. The camera slid into a square frame of strap-iron, attached to a shaft centered with the lens. Two old bicycle-wheel hubs served as bearings for the shaft, and a bent tube made a crank. The strap-iron base could be clamped to a tripod, or nailed to a post or parallel.

Cinematographer Ash, in need of Akeley-type shots when the budget denied him the use of such a camera, mounted his DeVry on a gun-stock, with the shutter-release connected to a trigger. With this, he was able to make swift follow-shots almost as satisfactorily as with an Akeley. Later, in filming an air comedy, he made a low-flying plane do impossible stunts when he photographed it with this outfit and revolved the camera.

How would you film a train-wreck if you could neither wreck a real train, nor use a miniature? Cinematographer Cline did so once by jerking a tripod-leg to tilt the camera as the train stopped: well-chosen camera-angles, which did not show the ground, gave the effect on the screen that the train tilted crazily. In the later, post-wreck scenes, the same idea of tipping the camera, with the actors leaning against the train at the same angle as the camera, carried out the illusion.

Cinematographer Brown, when a comedy called for a follow-shot of a dog chasing a cat, buried an old Ford axle in the ground, letting one wheel remain above the surface. On this, he built a wooden platform for the camera, and an upright with a wooden beam extending over the picture-field, permitted him to keep the animals in place with invisible wires—while they pulled the camera-turntable around with them.

Alvin Wyckoff tells of a night-effect shot, in which he showed a cottage, apparently lighted and with the light from its windows streaming out on the ground. No lights were available, but white paint on the window-panes, white rock-dust carefully spread on the ground, and a red filter gave a perfect effect.



RIDDLE

ME THIS

The Riddle: It has been suggested that cameras might be made to operate more efficiently, and with less noise, if the take-up magazine, instead of being belt-driven, were powered by a separate, small motor. What do you think about the idea?

J. ROY HUNT, A.S.C.: There's a lot to be said on both sides of the question. However, it is noticeable that a number of other machines used in the studios—recording machines, and the like—use a separate motor to drive the take-up, apparently with good results.

THEODOR SPARKUHL, A.S.C.: Surely some more positive arrangement than the present belted drive would be an advantage. In Europe, I have used many cameras in which a friction-drive was used for this purpose, and found it excellent. Moreover, such a drive is absolutely noiseless.

F. M. STAMPER, Asst. Head of Camera Dept., Paramount Studio: Something that would give a more positive drive than our present leather belting would be very helpful. Under normal conditions, the belt-drive is adequate, but at other times it has serious disadvantages. For example, when you are using a "synk" motor (which is not usually as powerful as our regular motors), and have the heavy load occasioned by a nearly full magazine, there is a good deal of drag and slippage. Also, when on location, the damp atmosphere early and late in the day and at night makes the belt drag, even with the otherwise adequate power of our sound motors. On the other hand, our magazine-noise does not come from the drive, but from the film-slop; and eliminating the belt certainly won't eliminate this noise.

ANDRE BARLATIER, A.S.C.: No. It is not the belt itself that makes the noise, but the pulley, the spool, the magazine and the film itself. Just to put on a motor won't silence any of these noises. Besides, the motor itself will add some new noises. For example, there will be the hum of the motor itself; then, you will have to have gearing between the motor and the take-up, to allow for your varying speed as the roll gets larger—and this, too, will make a noise. So you will just be adding more noise to something that is already noisy. On the other hand, some more positive drive would be a big help: I would suggest some type of shaft-drive, perhaps with the shaft built right inside the magazine.

LEON SHAMROY, A.S.C.: Offhand, I don't like the idea. It just means adding more parts—more complication—to our cameras, when we ought to be simplifying them. Our cameras today are essentially the same as they were ten years ago—but with a lot of added parts and gadgets. It's time for something new—something designed from the beginning for modern conditions, not old equipment cluttered up with makeshift additions. Adding such a drive to present cameras would be merely adding a lot of extra parts to give more chances of mechanical and electrical troubles.

J. DEV JENNINGS, A.S.C.: As far as normal production cameras go, I don't think such a drive would be of much advantage, for it would be more likely to add noise and complication than to remove them. For high-speed cameras, where noise isn't important, some more positive type of drive might benefit; I am inclined to favor either a geared shaft-drive, or a friction-drive. There's quite a problem, though, in making such a drive compensate for the varying ratios needed, and still be simple.

WILLIAM H. DIETZ, A.S.C.: Speaking from the viewpoint of the special-process cinematographer, I do not believe that it is necessary. The greater part of our shots are made silent, often at speeds well above normal. For this work, we have found that the old style spring-belt take-up drive is by far the best, as it gives little slippage, even at high speeds. It is, of course, noisy, and sometimes this is a disadvantage, as, for instance, when working with animals, who hear the noise and grow camera-conscious. So, while a separate take-up motor might perhaps be desirable for production cameras, I believe that for special-effects work we would do better to retain the simpler belt-drive.

ALVIN WYCKOFF, A.S.C.: I don't believe there would be a great deal of advantage in it. If the aim is silence, the motor-noise would probably cover up the magazine-noise, but it wouldn't eliminate it. If the aim is a more positive drive, a separate motor, even though driving through some type of clutch or friction mechanism, would still have much the same slippage as our present leather slippage-belt drive. In order to handle the load when the take-up magazine is nearly full, the motor would have to be large and powerful; this would alter the balance of the camera, and give more parts to be cared for, especially since such an auxiliary motor would have to be synchronized with the main motor, and pick up at least as fast as the camera-drive. After all, the Assistant Cameraman has enough mechanism to care for already—so why add unnecessary parts?

ARTHUR TODD, A.S.C.: I think it would only be adding unnecessary complication. As it is, the magazine is one of the quietest parts of the camera: most of the noise comes from the motor, the intermittent, and the movement of the film itself. Only after these have been really silenced will there be any excuse for altering the efficient slippage-belt drive we now use. In designing an entirely new camera, however, it might be worth while to consider a positive take-up drive similar to that used on the Akeley camera which drives both feed and take-up through a positive gear-and-clutch arrangement, and is silent and dependable.

HANS KOENEKAMP, A.S.C.: I don't see any particular advantage in the idea, either for production cameras or for high-speed special-effects equipment. It looks likelier to add noise than to remove it—and certainly it is adding extra equipment to be kept in order, and to be watched while the camera is running. If any change in take-up drive were to be made, I would suggest some direct shaft-and-clutch drive from the camera mechanism itself, and powered by the same motor that drives the camera.

Continued on Page 309



PHOTOGRAPHY

of the MONTH

"THE GAY DIVORCEE" (RKO)

David Abel, A.S.C.: Directing Cinematographer

Vernon Walker, A.S.C.: Photographic Effects

Daily Variety (October 1, 1934): "—with the photography of David Abel and the photographic art effects of Vernon Walker being outstanding in workmanship quality."

Hollywood Reporter (October 1, 1934): "—and David Abel contributes class 'A' Photography."

Film Daily (October 3, 1934): Photography "A-1."

Motion Picture Daily (October 3, 1934): "The film is well photographed."

"MENACE" (Paramount)

Benjamin Reynolds, A.S.C.: Directing Cinematographer

Daily Variety (October 2, 1934): "Photography is very good."

Hollywood Reporter (October 2, 1934): "Benjamin Reynolds' photography is above average."

Motion Picture Daily (October 3, 1934): "The photography by Benjamin Reynolds aids much in offsetting the gruesomeness of this type of murder-mystery story."

"DOWN TO THEIR LAST YACHT" (RKO)

Edward Cronjager, A.S.C.: Directing Cinematographer

Film Daily (September 22, 1934): Photography "Good."

Motion Picture Daily (September 22, 1934): "—and Edward Cronjager handled the photography, which deserves praise."

"THE FIREBIRD" (Warner Bros)

Ernest Haller, A.S.C.: Directing Cinematographer

Hollywood Reporter (October 5, 1934): "With the aid of Ernest Haller at the camera, he composes pictures of great beauty. The photography and lighting throughout are magnificent."

Motion Picture Daily (October 5, 1934): "The photography of Ernest Haller is good."

"WHAT EVERY WOMAN KNOWS" (M-G-M)

Charles Rasher, A.S.C.: Directing Cinematographer

Motion Picture Daily (October 4, 1934): "There is fine photography by Charles Rasher."

Film Daily (October 5, 1934): Photography "A-1."

"KID MILLIONS" (Sam Goldwyn)

Ray June, A.S.C.: Directing Cinematographer

Hollywood Reporter (October 15, 1934): "Photography by Ray June is beautiful."

"LOVE TIME" (Fox)

Arthur Miller, A.S.C.: Directing Cinematographer

Daily Variety (September 21, 1934): "—photography okay."

Hollywood Reporter (September 21, 1934): "Photography by Arthur Miller is conventionally beautiful."

"WEDNESDAY'S CHILD" (RKO)

Harold Wenstrom, A.S.C.: Directing Cinematographer

Daily Variety (September 21, 1934): "Photography is okay."

Hollywood Reporter (September 21, 1934): "Harold Wenstrom contributes his share of beauty in the photography."

"STUDENT TOUR" (M-G-M)

Joseph Valentine, A.S.C.: Directing Cinematographer

Hollywood Reporter (September 21, 1934): "The photography is uniformly good."

Motion Picture Daily (September 24, 1934): "There is good photography by Joseph Valentine."

"WE LIVE AGAIN" (Samuel Goldwyn)

Gregg Toland, A.S.C.: Directing Cinematographer

Daily Variety (September 22, 1934): "The superb photography by Gregg Toland is notable."

Hollywood Reporter (September 22, 1934): "Really, not enough can be said for the photography by Gregg Toland—"

Film Daily (September 24, 1934): Photography "Expert."

"TOMORROW'S YOUTH" (Monogram)

Jack Mackenzie, A.S.C.: Directing Cinematographer

Hollywood Reporter (September 22, 1934): "—and Jack Mackenzie's photography is better than the film deserves."

Motion Picture Daily (September 24, 1934): "The photography by Jack Mackenzie is satisfactory."

"READY FOR LOVE" (Paramount)

Lean Shamroy, A.S.C.: Directing Cinematographer

Daily Variety (September 25, 1934): "Photography of Leon Shamroy is excellent."

Hollywood Reporter (September 15, 1934): "Photography is okay."

"ONE EXCITING ADVENTURE" (Universal)

Norbert Brodine, A.S.C.: Directing Cinematographer

Hollywood Reporter (September 26, 1934): "The photography is really something—"

"The one thing worthy of the whole whimsy-farcical idea is the photography by Norbert Brodine, that really is something worth looking at"

Daily Variety (September 26, 1934): "Norbert Brodine has photographed very well."

Motion Picture Daily (September 28, 1934): "The photography of Norbert Brodine is okay."

"BY YOUR LEAVE" (RKO)

Nick Musuraca, A.S.C.: Directing Cinematographer

Hollywood Reporter (September 27, 1934): "Nick Musuraca's photography is very good."

Motion Picture Daily (September 28, 1934): "The photography by Nick Musuraca is good."

GIMBAL MOUNTED "EYEMO" FILMS BICYCLE RACES

● In photographing "Six-Day Bicycle Race," an unusual photographic problem was encountered by Elmer G. Dyer, A.S.C. In photographing process backgrounds and running insert scenes it was necessary to mount the camera on a motorcycle which encircled the track with the bicycles. The dramatic effect demanded that the camera be maintained in a level position, in order to show how the bicyclists took the steeply-banked turns. Ordinary equipment and methods were found unsuitable, and an "Eyemo" camera, fitted with electric motor and 400-ft. magazines was used.

Therefore Dyer and Mike McGreal, head of the Warner Bros.' Camera Department, adapted a gimbal mount, ordinarily used for marine filming, for use on the motorcycle. A steel framework, somewhat similar to a conventional luggage-rack, was built over the rear wheel of the motorcycle. Upon this was welded a standard studio lamp-socket of steel tubing, and into this the base of a specially-made U-shaped yoke was fitted. The yoke replaced a similar member of the gimbal-tripod, and supported the gimbal-head. This head, working on the general principle of the universal joint, was counterweighted, so that regardless of the inclination of the support (in this case, the motorcycle) the camera remained level. As will be seen, the mount

was prevented from swinging up and down by rubber airplane shock-cord. It is stated that this is the first installation of its kind known.

The mounting of the Mitchell-type



finder above the camera, to replace the normal Eyemo finder, is also interesting, and adapts the camera excellently to this type of work, which demands a large and accurate finder.

NEW SET-PLATFORMING SYSTEM

● A new system of set-platforming has been patented by David S. Garber, well-known Hollywood Art-Director now with Universal Studios. The invention is claimed to feature standardized construction, greater flexibility, reduced cost, and a safety-factor greatly in excess of that of present construction practice. According to Garber, the cost of present methods of set-platforming averages \$1.00 per running foot, while the new system reduces this cost to approximately 22 cents per running foot.

The system is composed of standardized units throughout, being based on standardized wooden cat-walk (floor) sections, which fit into standardized U-shaped wooden supports, which are, in turn, suspended from the roof-girders of the stage by chains. These chains are attached to hooks which fit over the roof-girders, and which may, if desired, be secured in place with nails. The height of the lamp platform is adjusted by hooking the U-shaped supports onto the chains at different heights. All of the hooks into which the chains are

fastened are fitted with patented safety-locks, making it impossible for the chain to become detached accidentally. The chains are to be marked at regular intervals with bands of distinguishing colors, further simplifying the height-adjustment.

The flexibility of the chains not only permits placing the platform at any desired height, but also allows it to be placed at any angle necessary to conform to the construction of the set. The floor-members are quickly locked into place in their supports, and further rigidity is given by horizontal braces between the supports. Each chain has a tensile strength of 5,000 lbs., and since, according to Garber, the maximum load normally imposed upon any one chain seldom exceeds 500 lbs., this suspension system has an unusually high safety-factor.

Garber has also patented a quickly-adjustable spotlight parallel, which should be a useful auxiliary to the system just described. The same standardized cat-walk construction is used, but

instead of being suspended, the platform is supported from the floor by extensible legs somewhat resembling an extension-ladder. Cross-bracing between these end-supports is carried sufficiently high to allow normal camera-work, etc., underneath without interference. The parallel is mounted on small wheels, and should be very portable.

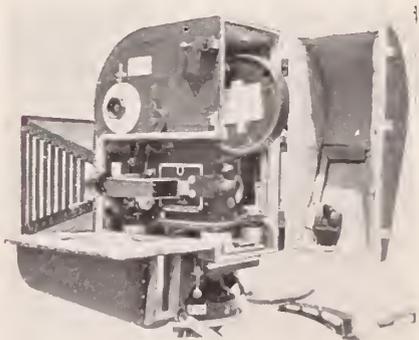
New Warner Blimp

● A new type of camera-silencing blimp is being put in service at the Warner Bros.-First National Studios, according to Mike McGreal, head of the Warner Camera Department. The blimp was designed by Al Tondreau, of the Studio's mechanical engineering staff, and Maj. Nathan Levinson, of the Sound Dept., and constructed under the supervision of Frank N. Murphy.

Its outstanding features are simplicity, accessibility and convenience. Wherever possible, locking handles have been reduced to one, making for quicker operation: the left-hand opening, which gives access to the camera-movement and finder, has but a single handle, as does the hinged sunshade, through which access to the lenses is had. The entire rear section is hinged, and locked by two handles. Unusually large windows are provided at the rear of the blimp, through which footage-meter, finder, etc., may be observed.

The finder itself is inside the blimp, and mounted closer to the lens than is possible with exterior-mounted designs. It is interconnected with the focus-control, and automatically corrects for parallax as the focus is changed. The sunshade is unusually large, to accommodate wide-angle lenses, and has Kains-type louvres on the left side, so that the finder may be mounted close to the camera.

The base upon which the camera itself is mounted has four-point, rubber-insulated suspension, and a special holder is placed inside of the blimp for standard 3-inch filters. The base of the sunshade



contains a large optical-glass window, placed relatively close to the lens. The blimp is of cast aluminum, lined with sound-absorptive materials, and is said to have excellent sound-proofing qualities.



TREND of

THE TIMES

Etching Glass

● Revue Photo-Cinema gives the following recipe for engraving glass which may be of general interest. Mix together in an ebonite or wax bottle the following:

Water6 fl. ozs.
Ammonium Fluoride14 os.
Sulphuric Acid (concentrated) .4 fl. ozs.

When thoroughly mixed, add 10 ozs. of Barium sulphate, and the ink is then ready for use.

Apply to the glass with a new pen-nib, and leave for five or six minutes. If the deposit is then wiped off with a damp rag, a line will be found on the glass. As this mixture is extremely caustic, the greatest care should be taken that it does not fall on any organic substances, and spills should be neutralized at once by a little ammonia on a rag.

This will neutralize the hydrofluoric acid released from the solution.

Telephoto Reflex Lens

● The Astro Co. of Berlin is introducing an unusually long focal length lens for the miniature camera. In addition this lens has the reflex feature.

It consists of a reflex mirror, a long-focus lens and an eye-piece for focusing. This particular lens has a focal length of 800mm (nearly 31½ inches) and has a maximum aperture of f5. Other lenses of varying focal length between this figure and 150mm (approximately 6 inches) are also available.

One will realize the great magnification of this lens from the fact that when photographing an elephant at 100 yards the 31½" lens renders the animal too large to be completely included in the picture.

This lens is roughly 30 times as large as the miniature camera on which it fits. The complete attachment including cases weighs about 22½ pounds and the price is about a thousand dollars.

Built-In Screens

● A British publication on Homebuilding and Architecture brings an interesting item for Cinematographers.

The designers of homes take into consideration the rapidly-growing number of Cine Amateurs and submit plans for new homes which include a special surfaced wall section in the largest room in the house. This wall has a beaded screen finish that will serve as a projection screen.

New Miniature Camera

● "Exakto" is a new miniature reflex camera using 35mm film. This new camera is built and marketed in Germany by the Thagee Werke of Dresden.

It is equipped with a compur shutter that has a range from 1/1000 of a second to a time exposure of 12 seconds.

It has a built-in automatic release for self-photography and a very fast lens with a speed of f1.2.

Double Plate Process

● "La Photo Pour Tous," a French publication, tells of the possibilities of a new French portrait process. The process calls for glass plates without the anti-halation coating. Two plates are exposed together, one behind the other. The first image will be normal and sharp and the second very soft and indistinct. When printing, the two plates are put together and a very artistic and soft-focus portrait will be the result. This process practically eliminates all retouching. The finished print is the result of the sharp and the very soft plate combined. Of course, great care must be taken that the two images synchronize perfectly.

Stereo Tripod

● A very interesting tripod attachment for still cameras is being marketed in Germany. It consists of a sort of sliding rod with inch markings.

This enables the amateur to make stereo pictures with an ordinary single-lens camera. After taking the first picture, the camera is pushed over sideways on this new tripod attachment, and the second exposure can be made. The inch marking will assure the necessary displacement in order to obtain the correct stereo angle.

Simple Retouching

● A French photo publication acquaints us with an interesting photographic process that allows the amateur to make very artistic prints with a new simplified retouching method.

Mostly all amateurs shrink from retouching their negatives because it takes a skilled person to do good retouching. However, with this process, all correction can be made by a beginner.

Put your plate into the holder of the enlarger in the usual manner, focus your image on a clear piece of paper. Make sure to fasten the paper with tacks. Then take a very thin piece of tissue paper and stretch it over the image, fastening it at three corners only. Make your retouching with an ordinary pencil lightly on the tissue paper. Always remember that every mark you make will be white on the print. Having made the corrections wanted, slip your unexposed enlarging paper under the tissue paper, taking care that your corrections match with the image. Expose and develop as usual.

Your first attempt will be rather crude but with a little practice exceptionally beautiful effects can be obtained. Remember the paper acts as a diffuser as well.

New Dubbing System

● The "Film Suisse" tells about a new dubbing system invented by an Hungarian, Karl Pulvary. His invention was recently demonstrated at the International Cinematographic Congress at Venice, Italy. According to various European technical papers it was enthusiastically received. It was absolutely impossible to detect the slightest variations from the original sound track.

The basis of his invention is a double sound track, one for the original sound and a second track for a special recorder that registers the actual vocal sound into a non-language track which when projected compels the dubbing artists to use the same lip-movements as in the original sound version. There are no technical details available of the construction of this special recorder.

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PHOTOGRAPHY OF THE MONTH

Continued from Page 302

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"LADY BY CHOICE" (Columbia)

Ted Tetzlaff, A.S.C.: Directing Cinematographer
 Motion Picture Daily (September 29, 1934): "Theodore Tetzlaff's photography is an artistic contribution."
 Film Daily (October 6, 1934): Photography "Fine."

"SIX DAY BIKE RIDER" (Warner Bros)

Warren Lynch, A.S.C.: Directing Cinematographer
 Daily Variety (September 28, 1934): "Photography, particularly the race stuff, is excellent."
 Hollywood Reporter (September 28, 1934): "Photography is first rate throughout, and the cameraman deserves special credit for the racing stuff, which was undoubtedly hard to get and was exceptionally well done."

"365 NIGHTS IN HOLLYWOOD" (Fox)

Harry Jackson, A.S.C.: Directing Cinematographer
 Hollywood Reporter (September 28, 1934): "Photography top-notch."

"ANNE OF GREEN GABLES" (Radio)

Lucien Andriot, A.S.C.: Directing Cinematographer
 Daily Reporter (October 15, 1934): "Splendid photography by Lucien Andriot—."
 Hollywood Reporter (October 15, 1934): "—and the photography is consistently good throughout."

"THE WHITE PARADE" (Lasky-Fox)

Arthur Miller, A.S.C.: Directing Cinematographer
 Hollywood Reporter (October 17, 1934): "—and the camera work of Arthur Miller is of similarly high order."
 Daily Variety (October 17, 1934): "Arthur Miller's photography is top-notch."

"CAPTAIN HATES THE SEA" (Columbia)

Joseph August, A.S.C.: Directing Cinematographer
 Daily Variety (October 13, 1934): "Joseph August's photography is top-notch."

Hollywood Reporter (October 13, 1934): "Joseph August had done lovely work with the photography."

"ENTER MADAME" (Paramount)

Theodore Sparkuhl, A.S.C., and William Mellor, A.S.C.: Directing Cinematographers
 Hollywood Reporter (October 18, 1934): "Photography standard."
 Daily Variety (October 18, 1934): "—photography are up to the general excellency of the other contributions."

Using Supplementary Lenses

Continued from Page 298

diminishing-lens, as the normal Mitchell matte-box arms would have projected far enough forward to be included in the picture. The actual arms used were approximately 2/3 shorter than normal. For the same reason, it was necessary to be sure that the front tripod-leg did not project too far forward, and to see to it that no member of the company stepped even slightly beyond the camera: a person standing beside the camera, and as far forward as the front of the ordinary sunshade, would have found his shoulder filling one side of the screen!

The purely "trick" lenses are really a subject in themselves. While embodying the same general optical principles as the supplementary lenses just discussed, the "trick" lenses are designed to produce effects of a definitely distorted nature. Naturally, the more conventional magnifying and diminishing lenses have been used for trick effects, usually for comedy or weird effects from unconventional set-ups; but the majority of the "trick" supplementary objectives are specially designed to give absolutely abnormal effects—usually with multiple images. Such lenses usually consist of large optical flats, with prisms or small supplementary lenses cemented to them. Some of these multiply the image, expanding a single player, for example, into several; others reverse the image; and still others, made with combinations of small lenses which can be rotated, perhaps in two directions at once, give a stationary central image with identical images revolving around it. Such lenses are usually designed and built for a specific shot. In America, the use of such

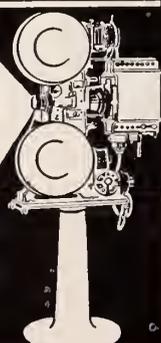


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"trick" lens-supplements has been in a great measure superseded by the use of optical printing; but in Europe, where optical printing is not so widespread, these "trick" lenses are still in rather

general use. It was undoubtedly by the aid of such optical supplements that the bewildering optical effects in such films as "Variety" and "Metropolis" were achieved.

side of a comero-cor, and o comero-platform on the other. Thus, driving along o mountain rood, shooting through the wing ond down ot the volley below, his octors appear to be flying high in the oir.

INGENIOUS CINEMATOGRAPHIC SHORTS

Continued from Page 300

Dwight Werren A.S.C., was faced with the some problem, but os o girl hod to opear in the lighted window, there hod to be reel light. He solved it by photographing on the shodowed side of the house, ond, with a system of reflectors ond mirrors, reflecting o strong beam of sunlight through onother window, into the room in question, ond out again from o mirror behind the ployer.

To stoge on explosion without actually wrecking o set, Cinematographer William C. Thompson, A.S.C., set o pan on the floor, close to the comero, ploed some flosk-powder in it, ond fired the flash at the moment of the "explosion." He followed this with smoke from o smoke-pot, ond, under cover of the smoke, made a quick lop-dissolve to o shot showing the set with the furniture disorranged, os though scattered by o blast. Cinematographer Ash, when no smoke-pot is ovailoble, tells of using o

small roll of film, tightly bound with o wire. The inner end is pulled out an inch or so, and lighted; then pressed down into the roll. The result is an excellent smoke-pot.

Robert Cline, when in need of close-ups of o horse-back rider and neither a mechanical horse (to be fitted to o comero-cor plotfarm) nor any trick process work were aavailoble, hos ridden alongside on another horse, and corried o DeVry or Eyemo in his hond. Thompson goes this one better, in hoving mode close-ups of o rider supposedly on o bucking horse—without ony horse at oll. A saddle is placed on one end of o see-sow, the comera on the other—ond with energetic stage-honds rocking the see-sow, no horse could buck better!

Another of Thompson's tricks is filming on oviator dropping bombs—without ever leaving the ground ar even using on oirplone! He built o wing on one

A S T R O F 1.8
L E N S E S F 2.8

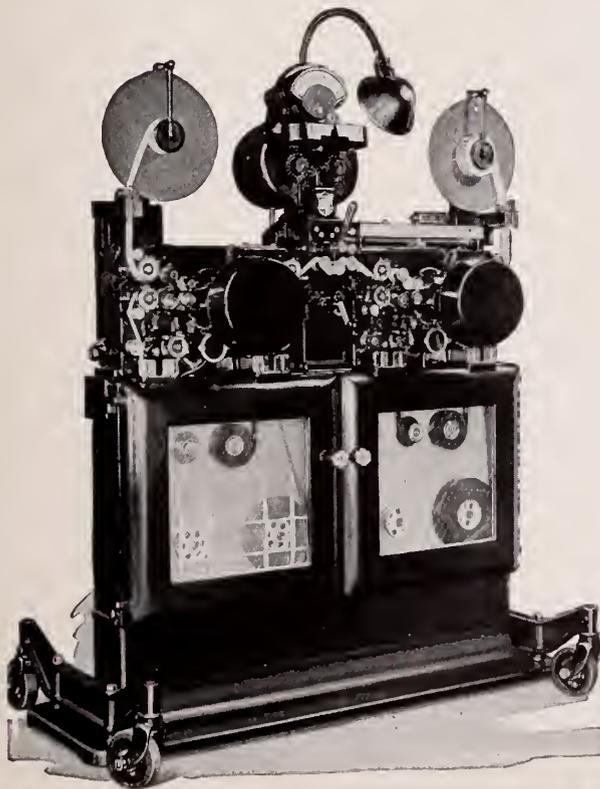


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PHOTOMETER FOR DETERMINING THE TIME OF EXPOSURE FOR PHOTOGRAPHIC PICTURE TAKING. No. 1,974,492. Issued Sept. 25, to Mox Helfenstein, Lucerne, Switzerland.

SOUND ATTACHMENT FOR MOVING PICTURE PROJECTORS. No. 1,974,921. Issued Sept. 25, to Herbert F. Jermain, New York City, assignor, to Movietoneews, Inc., New York, N. Y.

FILM CONVEYING METHOD AND APPARATUS. No. 1,974,935. Issued Sept. 25, to Leonard T. Trolond, Combridge, Mass., assignor to Technicolor, Inc., New York City.

DESIGN FOR A FRAME FOR A PHOTOGRGAPHIC MACHINE. No. 93,376. Issued Sept. 25, to Michael Annick, Scranton, Pa., assignor to F. Wesel Manufacturing Compony, Scranton, Pa.

PHOTOGRAPHIC MATERIAL. No. 1,974,524. Issued Sept. 25, to Arpad von Biehler, Dessou in Anholt, Germony, assignor to Agfa Ansco Corporation, Binghompson, N. Y.

OPTICAL COMPENSATING SYSTEM (A Motion Picture Projector). No. 1,974,573. Issued Sept. 25, to Jacob F. Leventhol, New York City.

LENS FOR IMAGING SPACED OBJECTS IN REGISTER. No. 1,974,574. Issued Sept. 25, to Jacob Fronk Leventhal, New York City.

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TALKING MOTION PICTURE MACHINE. No. 1,974,688. Issued Sept. 25, to George Francis Myers, Jockson Heights, N. Y.

APPARATUS FOR MAKING SOUND AND PICTURE RECORDS ON FILMS. No. 1,974,709. Issued Sept. 25, to Berthold Freund, Berlin, Germony, assignor to Internotionole Tobis Mootschoppij, N. V., Amsterdam, Netherlands.

METHOD OF MAKING SOUND RECORDS. No. 1,974,710. Issued Sept. 25, to Berthold Freund, Berlin-Schoneberg, Germony, assignor to Internotionole Tobis Mootschoppij, N. V., Amsterdam, Netherlands.

FILM MEASURING DEVICE. No. 1,974,758. Issued Sept. 25, to Joseph H. Spray, Rutherford, N. J., assignor to Worner Bros. Pictures, Inc., New York, N. Y.

SHUTTER FOR MOTION PICTURE MACHINES. No. 1,974,759. Issued Sept. 25, to Albert W. Tondreou, Hollywood, Calif., assignor to Warner Bros. Pictures, Inc., New York City.

CAMERA. No. 1,974,842. Issued Sept. 25, to William A. Block, Montclair, N. J., assignor to Foirchild Aeriol Comero Corporation, Woodside, N. Y.

TELEVISION. No. 1,974,911. Issued Sept. 25, to Heinrich Buecker, Hohenlimburg, ond Hubert Buecker, Hogen-Kobel, Germony.

Colored Roin Drops

● In a recent M.G.M. production it was noticed that roin drops which were of great impotence in certoin scenes were hardly visible on the screen. M.G.M. comero experts hod the ingenious idea of tinting their artificial roin slightly red. The result was very satisfying.

Yowitz in Hollywood

● Murray Yowitz of Fish-Schurmon Corporation, American representotives of Jena Gloss Works of Schott & Gen will be in Hollywood the middle of November to present to the studios, cinematographers ond light manufacturers lenses ond other items manufactured by their principles. Among other things Yowitz will demonstrote some of the lomp lenses handled by his compony.

**Hollywood
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Riddle Me This

Continued from Page 301

WARREN LYNCH, A.S.C.: Our present type of take-up drive is quite dependable enough—and nothing could be quieter than the leather belts we now use. Adding a separate motor for the take-up would not only add a good deal of bulk to the outfit (such a motor couldn't be very small) but it would add complication, and uncertainty. A little noise could perhaps be prevented by eliminating the openings through which the belt enters and leaves the camera-case: but a simple shaft, which could even be placed in the waste space between the magazines, would take care of this. But for positive drive, I couldn't ask anything better than the belt coupled with the clutch used at Warner Bros. studios.

GAETANO GAUDIO, A.S.C.: I don't think there's any need for it—with our present cameras. In a new design, it would be all right to try to improve the take-up, as well as a lot of other things; but remaking our old cameras, piece by piece, is too much like rebuilding a used car—no matter what you do, when you're through, you still have a used car!

New Agfa Negative

Continued from Page 299

to this article. Considering the knowledge and experience of a large research laboratory that occupied itself for years with the discovery and the chemistry of photographic sensitizers, it will be apparent that the possibilities for employing extremely high red or yellow-green sensitizers are practically unlimited. However, the selection of sensitizers for Superpan has been guided solely by the thought of creating a product of highest general utility.

The present Superpan is distinctly different from former types manufactured by Agfa Ansco, especially regarding its color-response to red, which has been considerably lowered to avoid overcorrection mainly noticeable in flesh tones.

Below is given a list of daylight filter factors carefully checked and covering the commonly used Wratten filters:

Filter	Factor	Filter	Factor
K 1	1.6	12	2.5
K 2	1.9	C 5	6
K 3	2.2	56 B	7
AERO 1	1.25	3 N 5	4
AERO 2	1.50	5 N 5	5
G	3	25% ND	1.8
21	3.5	50% ND	3.1
23A	4	75% ND	5.6
25A	5	100% ND	10
29F	12		

Referring once more to the finegrain

feature of Superpan as above mentioned, it should be observed that Agfa Ansco does not see the necessity for offering a finegrain film especially designed for

background shots, because the grain size of Superpan is already such that its use for background photography is heartily recommended.

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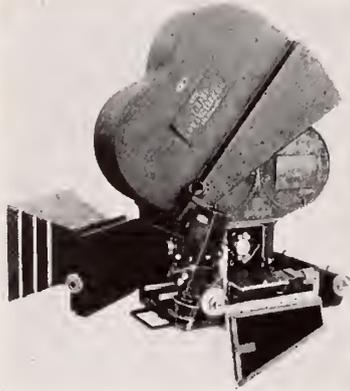


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New Small Crane

The Paramount Studio has placed in service a new small crane, designed and fabricated entirely within the studio. The wheelbase is six feet, the extreme width is thirty inches, and the weight approximately 900 lbs. At the lowest possible camera-position the lens-center height is 26 inches, and at the greatest elevation, seven feet.

The crane-mechanism provides both hand and power hoist, the latter driven by a D.C. motor and fitted with a variable-speed drive and automatic stops. The camera may be raised or lowered from one extreme to the other in any period from 14 seconds to 32 seconds.

The design is generally conventional, and aluminum alloys are used throughout. The steering wheels may be rotated through a 180° arc, so that the device will turn in its own length, pivoting on the rear wheels. At this end are two auxiliary rubber casters, normally fitted into the frame, and clear of the floor, but which may be dropped to lift the weight from the regular wheels for diagonal moves. Interchangeable handles operate this mechanism and the tie-down jacks, so that the footboard is normally left clear of obstructions.

The hoist is hand-operated from a crank on the main operating platform. The electric motor is under this platform, and controlled by a single switch at the base of the arm, in front of the platform, which serves as both switch and rheostat control. The motor is thrown in and out of gear by a control in front of the platform. The usual seat and lamp sockets are provided, and the camera is mounted on the standard blimp-type friction-head used at Paramount. In the crane this head is fitted with a special levelling mount, pivoted front and rear, and adjustable with leveling jacks at each side.

The crane was produced in the studio's Precision Machine Shop, under the supervision of Wm. Rudolph, with Arthur Zaugg as project-engineer. Virgil Miller, A.S.C., Camera Department head, and his staff collaborated on the practical phases of the design. Ben Reynolds,

A.S.C., one of the first users of the device, estimates that it can save over an hour per day by eliminating the need of changing heavy blimps from standard to baby tripods, perambulators, and the like, and by speeding up changes of set-up.

DEVELOPING TESTS ON LOCATION

● The problem of making exposure, filter, or other photographic tests on location is greatly simplified by the test-kit shown in the illustration. The outfit consists of a sturdily constructed case, in which are compartments for four one-pint Thermos bottles and two "Leica" "Correx" developing-tanks. A small tray (not shown) fits in the center of the box, being set directly over the "Correx" tanks, which rest in specially shaped compartments, and stand on their edges. In this tray is packed a changing-bag, together with any small accessories—such as thermometer, reserve prepared developer, and the like.

In use, the four Thermos bottles contain, respectively, developer, hypo, and water, with the fourth in reserve, to hold additional water, hardener, or whatever may be necessary. The "Correx" developing reels hold six feet of 35mm film, and are very easy to load in the changing-bags: they will take a full six-foot test, or several shorter lengths, all of which can be developed at one time. If necessary, two thicknesses of film may be developed at once, by placing them in the reel back to back, so, for example, two six-foot tests, or twelve one-foot tests, may be developed at once in each tank.

My own experience has proven that this outfit is a great asset to the cinematographer on location: any test-strips that are necessary may be developed right on the location, using the exact solutions used in the studio laboratory, and viewed within fifteen minutes after exposing.

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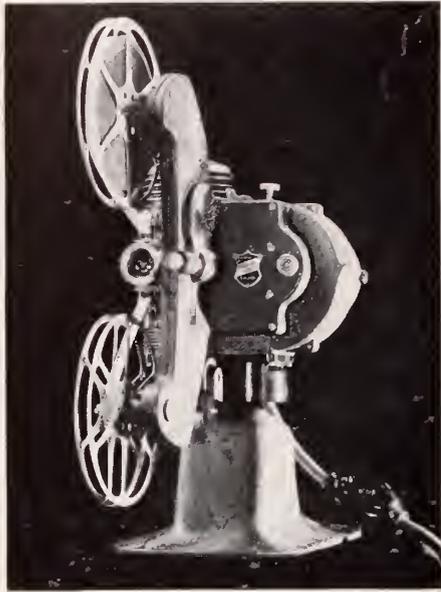
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AMATEUR MOVIES

NOVEMBER,
1934

this issue

Talk on Lenses
Home-Made Trick Titler
Under Sea Movies
Indoor Cinematography
... and other features

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AMATEUR MOVIE SECTION

Contents . . .

TALK on Lenses by William J. Grace.....	316
A HOME-MADE Trick Titler by E. Ludes.....	318
THE FAMILY Physician by Arthur J. Campbell, A.S.C.....	322
AN AMATEUR Makes Underseo Movies by William Stull, A.S.C.....	323
PRACTICAL Suggestions by Karl Hole.....	324
HINTS on Indoor Cinematography by Arthur J. Campbell, A.S.C.....	325
WHEELS of Industry.....	326

Next Month . . .

- William J. Grace will contribute another of his illuminating and interesting articles on lenses.
- Arthur J. Campbell, A.S.C., will have another article on lighting.
- The big news of the month will be the announcement of the prize winners in the **AMERICAN CINEMATOGRAPHER** 1934 amateur movie contest.

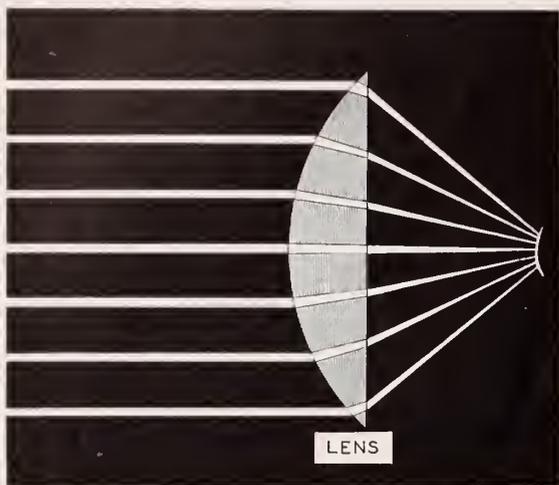


Fig. 2. In a lens not corrected for spherical aberration, light rays through different portions of the lens do not converge to a single point of the image.

LAST month we became acquainted with a fault of the simple lens known as chromatic aberration, or deviation from true focus caused by different colors of light focusing at different focal planes. We learned also that this fault has been eliminated to a large extent in modern combination lenses thru the use of different kinds of special glass which combined the chromatic aberrations in such a way that, for all practical purposes at least, they cancel themselves and hence focus all colors in the same plane.

Chromatic aberration is, of course, by no means the only fault which must be corrected if the photographic lens (or objective as it is often called) is to image faithfully the details and dimensions of the objects before it.

To name them, other aberrations include: spherical aberration, astigmatism, curvature of field, coma, and distortion of shape (i.e. "pincushion" and "barrel"). Before proceeding it might be well to call your attention to the fact that the term aberration refers not only to the result of improper plane of focus, but to true proportional rendition of the image.

Suppose we delve into the effects of spherical aberration and see what causes this aberration. In Figure 2 is shown a simple lens having a spherical surface, the rays of light passing thru the lens not meeting at the same point on the plane of focus (or focal plane). It will be seen that the rays which pass thru the outer portions of the lens do not converge to the same points which pass thru the central portion of the lens. This is because of the fact that a spherical surface does not properly focus all rays of the whole beam due to its shape.

Production lenses of any surface shape other than spherical are difficult to produce, altho some telescope lenses for precision purposes are hand-worked to the shape of a parabola, which does bring all the rays to a true point. There are other ways to reduce spherical aberration, however, than giving the lens the correct shape, and because of the need for keeping the production costs as low as possible, these alternate means are employed in even the best of commercial lenses.

It will be quite apparent that the amount of spherical aberration can be reduced by simply reducing the used portion of the lens with a diaphragm, because the rays are then not allowed to pass thru the outer portions of the lens. Even a very inexpensive lens can often be made to yield acceptable images if it is stopped down enough, but of course this cuts down also on the amount of light pass-

Let's Talk

ing thru the lens and therefore requires a longer exposure time.

If it were commercially feasible to manufacture lenses having surfaces other than spherical, spherical aberration would not be necessary to correct, for a parabolic surface would automatically eliminate this form of fault. Commercially, however, it is simpler to construct the lens of complementary surfaced lenses which cancel out spherical aberration. Of course, the more elements to a lens combination, the more light loss.

And that brings us to another fault of lenses. This fault is the property of losing slightly the total amount of light delivered to the film. The amount of actual loss caused by the glass itself is so small that it seldom enters into the calculations of the lens designer, unless, of course, the glass has a discernible color. The cause of the loss of light in its passage thru a lens is not due to actual absorption by the glass but by reflections. Every time a ray of light passes from one medium to another, there is a certain amount (about 4%) which is reflected instead of transmitted.

Figure 3 shows how this small portion of light is lost, at least as far as the film is concerned, each time it passes from one element to the next. Since this 4% is lost at each surface, it is evident that, from the standpoint of making the lens as fast as possible, the number of elements should be kept at a minimum. Balsam cement decreases the loss somewhat, but it is affected by temperature and humidity, and is used as little as possible because lenses are made to be used under almost every conceivable condition.

An interesting example of reflection as it affects photographic work is the manner in which, under certain conditions, the shiny surface of the film emulsion reflects light back to the lens to cause film flare. If the last surface of the lens combination (the surface nearest the film) has a curvature of certain dimensions, it is possible that the light which the film reflects back to this surface will be re-reflected by this last surface back to the film. Under some conditions, the re-reflection is focused roughly in spots and causes white spots on the film sometimes called "ghosts." Under certain other conditions, this re-reflected light is rather widely dispersed and weakly covers the whole picture area. This has the effect of making a "weak negative," or one in which the true gradation of tonal values is partially destroyed by this unwanted illumination on the film. In short, the picture is flat; it lacks contrast.

Before we go into the other aberrations of lenses, may we look briefly at one more point illustrated in Figure 3. Notice that reflections take place even in the film itself, this reflection being commonly termed "halation." The brighter portions of the image appear to have a halo around them. This rather disagreeable effect is much less with film than with plates, and with the non-halation backing now made on films of all kinds, both still and movie, this effect is practically eliminated. In your own words, your pictures are sharper, more contrasty, truer to life than were your pictures of a few years ago.

But speaking of aberrations, we seem to be "aberring" a bit ourselves. We started out to discuss lens aberrations,

About Lenses

Spherical Aberration

Reflections

Astigmatism

by
Wm. J. Grace

*Written especially for the
AMERICAN CINEMATOGRAPHER, November, 1934, issue
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and became sidetracked on the subject of reflections. Let's take up now the rest of the list of lens aberrations, or faults which hinder the rendition of correctly focused images.

As we shall presently see, spherical aberration, coma, curvature of field, and barrel and pincushion distortions are really all forms of astigmatism, generally speaking. Before we define astigmatism, suppose we examine (and, perhaps, memorize) the following three rules for the perfect optical instrument:

1. Every ray of a pencil of light emanating or reflected from a given point of the object must either converge to or diverge from a single point of the image, after passing thru the instrument.
2. If the object is a plane perpendicular to the axis of the lens, the image of any point of that plane must also lie in a plane perpendicular to the same axis.
3. Even tho the dimensions of the image may be different from the dimensions of the object, the proportion must remain the same.

Any departure from any of these three rules and the instrument is not perfect, altho we may be satisfied to accept minor faults under certain conditions.

One of the translations of the Greek word "stigma" is "point." A stigmatic image is one in which all points of the image correspond to points in the object; it is a true, point-by-point image. If the image is formed by an imperfect optical instrument, that image is astigmatic, as is the lens or mirror which produced it. (Note: Since we are concerned here only with lenses, we shall henceforth use the term "lens," instead of the more general term "optical instrument.") If the lens is so made as to agree with the requisites for stigmatism, the lens is a corrected astigmat, or anastigmat. Note the peculiar progression of prefixes—stigmatic, astigmatic, anastigmatic.

Not only as a matter of historical interest, but to note particularly the evolution of the modern lens, may we here review the march of lenses from the simple meniscus lens to the present day anastigmat.

Those of us who have been making still pictures for any length of time can remember the stir of enthusiasm which greeted the introduction of the anastigmat lens on a commercial basis. Altho the progress in lens design and manufacture preceded by some years the commercial application, the lenses we are going to mention are by no means so old that even the younger of our brotherhood cannot remember that the talking point of this or that new camera was "it has the new rapid rectilinear lens."

The meniscus lens, which was the first lens, was a simple thing of one element. After being corrected for chromatic aberration to some extent, it became an achromat. Its speed was so slow, however, that the more insistent demands of early photography for faster lenses, lenses capable of gathering in more light, caused the lens makers to place two achromats back to back. This combination increased the speed possible without getting into too many other troubles, but not enough—only about 100% increase (from f11 to f8). Two similar achromats were thus combined to increase overall lens speed, and the lens was known as a "rapid rectilinear," or RR lens.

The speed of the rapid rectilinear lens was about the only drawback to its use, for its field was flattened properly, and spherical and chromatic aberrations well corrected. It is still used in some work in which its slow speed is not a disadvantage, because of its low cost.

Continued on Page 332

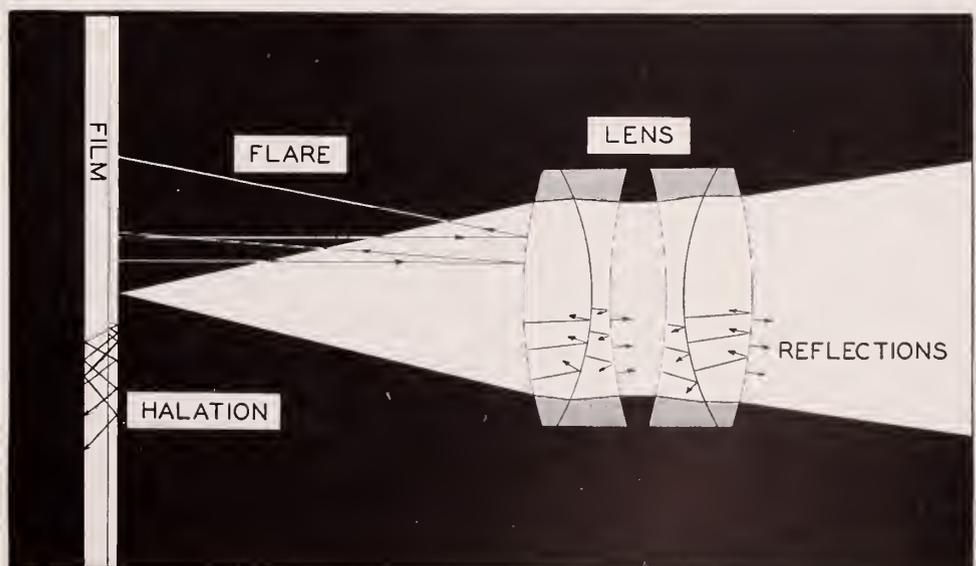
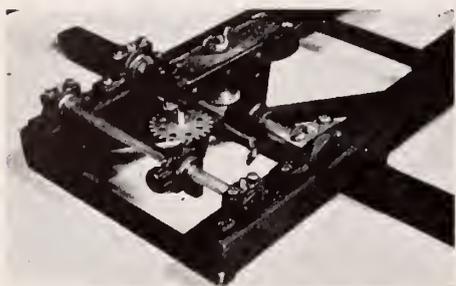


Fig. 3. Showing how light is lost by reflection between lens element surfaces. Also, note cause of film flare and halation.



Top picture shows bed of titler constructed of wood... measures 4 ft. long by 8 inches wide. Feet made to swivel on one side for compactness when stored. Bottom picture one view of camera bed, requires little explanation... Rods upon which base is supported and upon which it slides laterally, is 1/4" shafting. Main base support is 4" shaft hanger... Rear support made from pillow block.

(Continued next page)



A Home

First lay out two of the 1" square wooden strips so that they are 6" apart (inside). Nail a strip of the 1/2" square wood across the top of each end. Follow this with a center piece and then two more between the center and ends, making a total of five cross strips evenly spaced and holding the long 4' pieces absolutely parallel. Now, for strength, run some more 1/2" stripping from one cross strip to its neighbor, crossing from one side of the bed to the other, as in bridge construction. Run another strip from this same side of the bed, back to the other side between the next two strips, and so on between each cross strip, in zig-zag fashion. The whole should now be rigid. (The wire brads are used for the nailing process except where otherwise indicated.)

Between the first two cross strips on each end, and on each leg of the bed, running parallel with the latter, nail strips of the 1/2" wood. This side now becomes the bottom of the bed and provides a flat support for the feet which will be added later.

Turning the bed right side up so the cross pieces are on the bottom, lay a strip of the 1/2" wood, running the entire length of the bed, on the bottom cross pieces and against the 1" square strips on each side. Nail these two strips firmly in place, taking care that they do not retain any warp in the nailing process. (The more accurately you nail this bed, the more accurately will the carriage run.)

Now we are ready for an easy, but somewhat tricky, operation. Cut two 1/2" square wooden strips 3' 8" long. Nail these even with one end (which hereafter will be the end away from the camera) and in such position that they are resting on top of the 1" square strips for half their width, while the other half projects over the inside of the bed.

This done, by looking at the end away from the camera, it may be seen that a groove is thus formed with a 1/2" face on the bottom, 1/2" of the 1" square strips for the sides and 1/4" of the 1/2" strips for a top. Your bed is now complete except for the legs and the camera mount.

The legs of the bed are two pieces of the 1" square wood 20" long, and are mounted in such fashion that they may be "swiveled" or folded away when the machine is not in use. Six and one-half inches from one end of each leg drill a hole for a 10-32 screw. Seven inches from one end of one side of the bed and the same distance from the other end on the other side of the bed, drill a similar hole. Enlarge the hole on the bottom of each foot and the top of each hole in the bed to such a distance that the head and nut of the holding screws will not project. Fasten in place with a 10-32 machine screw and nut and cut the screw even with the top of the nut. Lock in place by tapping between nut and screw with a pointed punch. The legs should swivel.

From the piece of 1 1/4" angle iron, cut two pieces one inch wide. Drill two No. 27 holes in one side of each piece and (if using flat-headed wood screws) countersink from the inside of the angle. Next, drill a similar hole in the center of the remaining side of the angle. Fitting these to the free side of the legs is next in order.

IN PREPARING an article of this kind where constructional details are given so that readers may build a similar machine, it must be remembered that individual requirements may vary. For instance, some who read this may own a round-bottom camera while others have square-based ones. Or the lens axis of your camera may be a different height from the one described herein. Obviously, to benefit the most readers, I can only attempt to describe how I built the machine to suit my own particular needs and leave any variations to my reader.

As a preliminary let me say that I wanted a titler to match, in tricking ability, my new Cine Kodak Special. I had nothing definite in mind at the start other than the fact that whatever I built must not only be capable of various and sundry trick effects, but must also be small and compact enough to keep in an apartment house. This meant that elaborate and heavy "basement" installations were definitely out as far as I was concerned. The material used would have to be light and yet give a maximum of rigidity and reliability in use. Further, it had to be a practical machine and not toy-like. Since the new camera was especially adapted for tricks, the titler had to take full advantage of this fact. Stop-motion and dissolves, back-winding and double-exposure all had to be taken advantage of—if I were to be satisfied. That this machine does all this—and more—I leave to your good judgment.

In this article I shall endeavor to cover as fully as possible, the details of construction. Application and uses of the titler in action will be given in a succeeding article. Suffice to say here that favorite tricks such as wipe offs, chase offs, zooms, retreats, bomb announcements, scroll, twists, turns and adaptability to various sizes of field are all within easy scope of the unit. Masks may be cut of black or white material to provide for positive or negative filming, and many variations of the afore-mentioned tricks are possible.

To begin actual construction you will find the following tools necessary: hammer, screw driver, pliers, a jig saw with a fine metal cutting blade, a hand drill and various standard wire-gauge drills, a vise. You will have to have a machine shop do the tapping of various parts unless your workshop includes such luxuries.

Made Trick Titler

by
E. Ludes

Twist the legs until they are at right angles to the bed and hold in place while an angle is screwed to the outside of the 1" bed strip and fastened with wood screws by means of the two holes. Screw a round-headed screw through the single hole into the middle of the foot. Now remove this single screw, twist the leg so it is not quite under the angle and drive the screw home again, taking care not to twist it any further than it goes when the angle is interspersed.

The leg should be on the side of the angle toward the far end of the bed. Now press the leg against the angle, taking care that the screw head is above the latter, and with a sharp-pointed scribe, mark the width of the screw on the angle. Remove the angle itself now, and place in the vise where you proceed to saw a slot indicated by the marks just made and the hole itself. This slot is to admit the round-headed wood screw in the leg, without having to remove it each time the leg is folded. When slot is sawed and filed smooth, grind or file the top of the angle where the screw first enters the slot so that it may be tapped in place easily.

Replace the angles, put the legs in place and tighten the round-headed screw in the leg. The feet are now solid, yet may be tapped out of the slot and folded against the bed, making the whole bed go in a narrower space. You will find that the screw in the leg gets in the way of the folding process, but a slight pressure downward will cause the "swivel" to give enough to let this screw pass under the bed runners.

Now to construct the saddle, or camera mount. We'll have to ask your pardon for being a little detailed in the following description, but for the benefit of those with cameras different from mine it will be wise to discuss the "whys" of the construction.

First, I built, in oak, an exact replica of the saddle on the Eastman Special Tripod, which, as you know, was designed especially for the Cine Kodak Special. Next, mount two $\frac{3}{8}$ " pillow blocks at the camera end of the bed with the end of the blocks coming flush with the end of the bed, and in the center of each 1" strip. For precision's sake, insert the $\frac{3}{8}$ " rod in these blocks when mounting, and drill fastening holes for 10-32 machine screws all the way through the bed. (It will be well to mark the exact position of each block before this so that they may not be interchanged when mounting. The holes in these blocks are not centered accurately and this will avoid mounting mistakes.) Before screwing these blocks tight, or before mounting **both** of them, mount one and **true the shaft with a square so it is absolutely parallel with the bed!** Then mount and tighten the other one. The same process is followed with respect to the $\frac{1}{2}$ " pillow blocks and shaft

which is mounted in front of these. In my case, the centers of the shafts are mounted 2/13-16" apart, but this figure is not necessarily required.

The 2" shaft hanger with 1 1/2" hole is now fastened to the lower side of the camera saddle and the saddle squared **accurately** with the shaft hole. In getting the line on mounting the saddle and shaft hanger, extreme care must be taken that accuracy is maintained. The hole for the camera-mounting screw is to coincide with the 1/4" hole in the shaft hanger, so mount a 1/4" piece of rod in this hole while fastening the two.

With a hand clamp, or by means of the vise, or bath, true the saddle and shaft hole as mentioned before and drill two holes through the wood and shaft-hanger part with a No. 33 drill and repeat on the other part. Remove the saddle and rod, tap the shaft-hanger holes just made with a No. 27 drill. Countersink the top of these holes in the wooden saddle so the screw heads do not project. Fasten the assembly together carefully with 6-32 screws. Repeat on the other leg—making four screws in all.

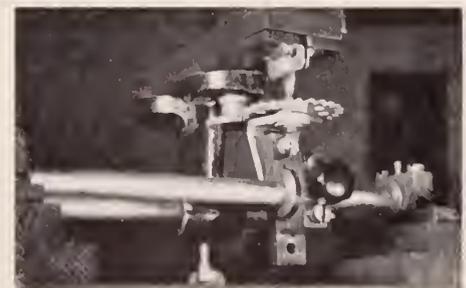
Rather than go into a long description of the camera-mounting screw here, I leave that to the ingenuity of my readers, with the dry comment that this screw is a 1/4-20 thread, and the head may be held away from the foot (for ease of operation) by using washers for spacers.

Next, drill and tap the following for set-screws (any size, though the larger, the better): the center of each of the four mounted pillow blocks, the center of an extra $\frac{3}{8}$ " pillow block and the oil hole of the 2" shaft hanger. Insert the 1/2" shaft (8" long) in the proper blocks and interpose the shaft hanger (upside down—with the saddle on top). Get the shaft even and tighten the set-screws (since this shaft is not to move). Set the $\frac{3}{8}$ " shaft in position likewise, though it isn't necessary to interpose the other $\frac{3}{8}$ " pillow block yet—since these split by means of their two screws.

Cut another 1"-wide strip from the 1 1/4" angle iron and (if you want to make it look nice) trim the sides to



An angle from pillow block means for holding the tilting screw. . . This made from a MEC-CANO set . . . with hole in hub tapped to receive the support screw. A hole is drilled in the angle piece, extra length of hub compensated for by washers. . . By turning this gear screw is fed in or out and bed made to tilt.





This shows construction of bed's runway. Bed proper is 1" square wood strips and the guides 1/2" strips. . . Wire brads were used for assembling.

taper in a sort of "V." Drill a hole in one end of one side somewhere near (about 1/4" from) the end with a No. 19 drill (for a 10-32 screw). Now, taking the third 3/8" pillow block, hold it in your hand so that the camera side of the bed at your right, the block hole parallel with the shaft, the base of the block is pointing toward the end away from the camera. With the block in this position remove the **top** screw (holding the two pieces together) and cut this screw off at such a length that it just enters and holds firmly in the bottom, tapped portion of the block. Replace. Mount the angle you have just cut and drilled, to the base of this block with a short 10-32 machine screw that will fit in the tapped portion of the block not used by the screw you have just cut. The angle is in such position that the top edge points **away from** the bed. Tighten this screw so that the top flat part of the angle is **parallel to the shaft**. Now, by means of the regular mounting hole in the pillow block, start a hole the size of the one in the block—drill into the angle just enough to mark it, and finish with a drill of the proper size for tapping the angle. (If a 10-32 screw fits the pillow block base hole tap with a No. 19 drill—if 8-32 is the size, use a No. 28 drill.) A second screw is thus mounted to hold the angle rigid.

My tilting-screw arrangement was made with a gear from a Meccano set. This gear has a hub about 1/4" in diameter and a hole that could be tapped for an 8-32 screw. So, in the top part of the angle iron thus mounted to the small pillow block, I drilled a 1/4" hole as near the far edge as possible, inserted the hub of the gear (using the necessary washers to almost make the hub flush with the bottom of the angle), then hammered the sides of the hub over the hole (use a washer between the end of the hub and the angle) so the gear could turn, but not become loose. The hole in the hub was tapped properly and the block mounted on the 3/8" shaft with the base toward the opposite end of the bed. A **thumb screw** was put in the previously tapped oil hole (top part of block between two screws) and by tightening this, the block could be held rigid.

Cut the head from a long 8-32 screw, hammer one end flat and with sides as parallel as you can get them, mount this to the under-rear side of the saddle block by means of some small (scrap) metal angles and drilling a hole through the flat portion and the angles themselves, a pivot is riveted in place and allows this screw to swing in a slight arc parallel to the bed. This screw is placed in the threaded hole of the gear and the gear turned to bring the saddle down level.

Install a thumb screw in the tapped portion of the 2" shaft hanger and the camera mount is complete. To adjust, simply loosen the thumb screw on the shaft hanger and the pillow block—slide the assembly until the camera lens is centered where desired—turn the gear-tilting screw until the lens axis is parallel to the holding board on the carriage (to be described) and tighten the thumb screws.

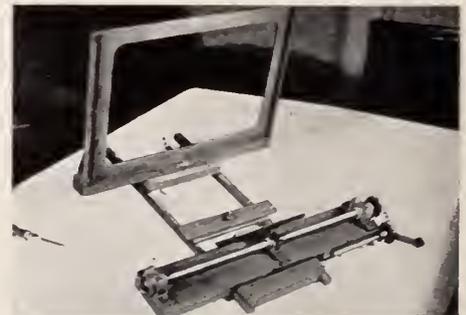
TITLE-HOLDING BOARD

Next comes the construction of the first important unit of the titler, namely the **holding board** (so named, because it holds the titles and masks).

Cut two pieces of the 1/2" square wooden strips 16" long. Place these in position in the groove of the bed. Cut a piece of the 1" square stock slightly under 6" long and, with the jig saw, cut the ends 1/4" in and to a depth of 1/2". This acts as a spacer for the "carriage" of the holder. Fasten (with brads cut to about 3/4" length) to one end of the two strips, taking care that the strips are not pressed so tightly in their grooves that they will not slide, yet not so loose as to cause them to wobble.

Cut another spacer from the 1" stock to the same length, but do not cut out the ends. This is nailed to the strips about 3" in from the opposite end (with 1" brads). The unit thus formed should slide from one end of the bed to the other. On the spacer last mentioned (the one which will project above the level of the bed) mount a 1" square wooden strip 14 1/2" long, and absolutely parallel to the bed. This is for mounting the holder.

Title holder proper is made of thin veneer cut-out dimensions are 12x9. . . . Small base made of 1/2" wood strips . . . and separated by blocks of wood which secure holder and the block which supports "wipe-off" mechanism.



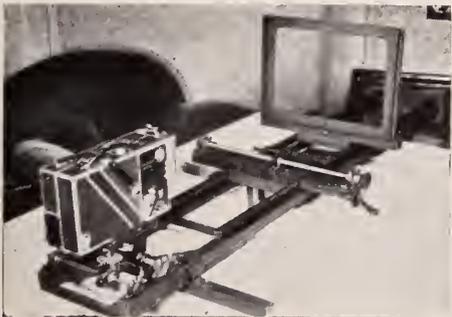
Between the spacers just installed comes the "locking" device. This consists of a strip of 1/4" veneer about 1 1/4" wide nailed to the carriage strips. Another piece of the same material, but 6 3/4" long is cut. Drill a hole in the exact center of these two strips and insert a 6-32 or 8-32 machine screw from the bottom. Next, holding the two strips parallel, drill a hole to each side of this center hole and near the carriage strips. Remove the long top piece. Drill the two outside holes of the bottom piece and the center hole of the long top piece with a drill several sizes larger than necessary for the screws to be used. In the short piece, insert a 1" machine screw and fasten it in place with a nut on top. In the long piece, fasten **two** machine screws in the two outside holes with the heads on top and the nuts on the bottom. Tighten these screws so they are rigid. Cut two short pieces of fairly weak spring—slip them over the two outside screws and put the long top piece in place over the piece fastened to the carriage runners. The outside screws moving in the enlarged holes in the bottom piece and the center screw projecting above the enlarged hole in the top piece. A thumb screw is placed on the central up-projecting machine screw and, when tightened, serves to compress the springs and "pinch" the upper runners of the groove, thus "locking" the carriage. When slightly loosened, the springs lift the top piece, and the carriage runs free.

The title-holding board is next in line. Take the piece of 14 1/2"x11"x1/4" seasoned veneer and lay it out square

on the edges—that is, check and square its outside lines. Run a line through the middle of the 14½" length. Run another line parallel to its greatest length and 1" down from one edge (to be the top edge). Five and one-half inches from the edge near the 1" parallel line and down the middle of the board is the exact center. With the points thus laid out as reference, mark out a piece the shape of the film and having a height of 9" and a width of 12". Using the jig saw, start cutting this inside piece out. Be sure to use as small a hole as possible in starting the saw, since the inside piece is to be used. When the inside is removed, trim the edges with sandpaper (or a file). Do the same to the outside edges of the piece thus removed.

Mount this piece of veneer to the 1" square strip that is 14½" long by fastening it to the front face with brads. Caution must be taken not to tilt the board in mounting. Now cut some brass channel strips 10" long. Four of these are for the two sides of the board (front and back). I happened to have some scrap ¼" angle brass on hand and by cutting small pieces of this I soldered them to the brass channels in such fashion that they held the channels in position by drilling holes and mounting the angles as feet. These channels should be as far apart as possible to mount them in order to allow strength to the masks that they are to hold. One other channel strip is cut to fit between the front side channels and to be mounted 1¼" below the inside bottom mark of the cut-out portion. This channel holds the **front masks** (the rear simply resting on the 1" square mounting piece). The reason for mounting this strip so low is to avoid errors in fitting masks. Once a mask is correctly cut, it should always be inserted in the channels the same way, and this provides a greater width at the bottom than at the top, which is only 1" wide.

The board is braced by running a small piece of rod, angle brass, or similar metal from the back side of the 1" square wooden mount, where it may be screwed in place, to



Shows outfit in position without a title. . . . Camera is stationary, holder moves to or from camera, yet may be locked in position of any point depending upon size of title or subject to be photographed.

the back side of the holding board, where it may be soldered to the rear brass channel. Caution is advised in mounting channels to get them straight and the same width and position in front and back, for sometimes it is desirable to mount a certain mask **behind** the holding board, instead of in front, and this caution will prevent misalignment.

TWIST DEVICE

With the apparatus as it stands, the first tricks may be made. Zooms, bombs, retreats and stop-motion as well as dissolves, etc. But we are not through by any means. Next, we'll use that piece that we cut out of the center of the holding board. Mark off the exact center of its length, and draw a line from edge to edge. Mount a piece of small

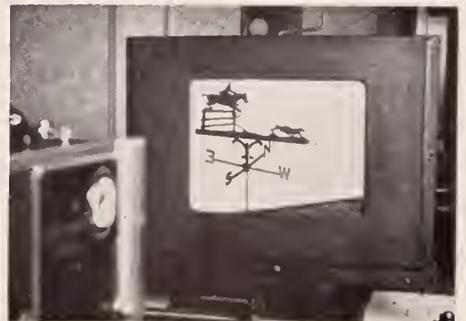
angle brass so that the top edge, where the line centers, will have a metal plate. Do this to both edges of the board and fasten the brass angles firmly with small machine screws. Then drill a hole in the exact middle of the thickness of the board, and coinciding with the center of its length, with a No. 27 drill. The hole may be drilled to a depth of from ½" to 1". **Do this to the top edge only!** The bottom edge has its brass angle drilled and **topped** for a 6-32 machine screw which is inserted, tightened, and the screw cut off so that only ¼" projects. Trim the cut end smooth. Getting back to the treatment of the top hole: After the hole is drilled in this plate and board, drill a smaller hole and tap for a 4-36 machine screw, in the side of the brass angle, and so that a rod inserted in the hole in the top may be fastened with the 4-36 screw in the side. (This screw should be just long enough to catch and hold the rod—no more.)

Drill a hole in the top of the holding board to coincide with the hole in the top of the insert. This will run through the 1" width of the top. Drill a similar hole to a depth of about ⅜" in the bottom to coincide with the projecting screw there. (Another metal plate was mounted in this bottom hole of the holding board for strength.) To mount, place the projecting screw of the "insert" in the hole in the inside bottom of the cut-out portion of the holding board, hold insert in flat position and run a No. 6 unthreaded rod thru the hole in the top and into the hole in the insert. The board will now hold itself, but will "spin" or "twist." Mark a point about ¼" above the assembly and, removing the rod, bend it into the form of a handle, trim and finish it off. Replace it, remove the 4-36 screw in the insert and **start** a hole in the rod at that point, taking care that the handle of the rod is parallel to the board. Now replace the screw, tighten and the handle is rigid.

Toward the outer edge (right side) of the holding board, drill another hole through the 1" wide portion of the top. Be sure that the hole will come at least ½" in from the side of the cut-out. Into this, drop a machine screw that has had a dry-cell battery nut screwed up to the head (for a knob) and which will project for about ¼". Lay the "insert" against this screw so that it is nearly flat with the board—mark where the screw comes, and with a knife cut a depression for the screw so the insert will lay flat and parallel to the holding board. Lift the screw, twist the insert half way around and repeat the operation. The insert should be in front of the screw when making and cutting.

In use, a title, photo, or other subject is mounted to the board with thumb tacks, Scotch tape, etc., and the succeeding title mounted on the back of the insert. The first title is exposed, and while the camera is running, the loose screw is lifted, the insert swung slowly past it, the screw dropped in place, the insert continuing around until the back is now in front and the other side comes in contact with the screw, at which time the insert is parallel with the board again. Further use of this device will be described in a succeeding chapter.

Continued on Page 328



This shows background in place for shooting on reversal film. . . . Block edge is piece of veneer cut to fit in brass channel with center cut to film proportions.



Filming the Family Physician

by
Arthur J. Campbell, A. S. C.

YOU will not need any special props or make-up for this little backyard movie. It will take about 200 feet of film.

The few things needed can be found in any house where there are children. Tell your requirements to them; they will dig up all the props you need. This continuity has the advantage that practically everyone in the family can take part, so that in addition to having an interesting screen play you also have a record of the entire family.

It isn't necessary to follow this script shot-for-shot if conditions or surroundings will not permit. You'll find it fun to adapt it to your locations and conditions. It is the intention of these continuities to guide you; but here's the story.

Scene 1. Long shot of Maryjane contentedly playing with her Doll outside the family garage in the backyard.

Scene 2. Medium shot or same; Maryjane props her big doll against the open door of the garage and then

Scene 3. Close up of Maryjane speaking:

Title: "Now you wait here like the good doll you are. I am going to get some candy for us."

Scene 4. Same as 3. Maryjane waves goodbye to her doll and walks out of frame.

Scene 5. Long shot of front of house with driveway to garage. A car comes up, the hand of the driver waves to Ma and Maryjane standing in front of the house. It is father coming home. The car enters the driveway.

Scene 6. Long shot of car entering garage, running over the Doll.

Scene 7. Close shot of car wheels running over Doll.

Scene 8. Long shot of Dad leaving the garage, not noticing the doll on the ground; he walks out of frame.

Scene 9. Medium shot of Dad greeting Mother and Maryjane; he speaks—

Title: "I have put the car in the garage."

Scene 10. Same as 9. Maryjane gets up excitedly and runs out of frame.

Scene 11. Long shot of Maryjane running towards the garage door and then seeing her doll on the ground. She picks it up.

Scene 12. Close shot of Maryjane with her Doll; she is crying. Her Doll's leg comes off.

Scene 13. Same as 11. Ma and Pa, attracted by the cries of Maryjane, come to console her.

Scene 14. Close shot of Junior peeping over a fence; he too was attracted by Maryjane's crying.

Scene 15. Medium shot of Junior backing away from the fence, a pal is with him. They conspire, and then (panning with them) they enter a tool shed.

We fade into

Scene 16. Same as 13. Ma and Pa are still consoling Maryjane, who hugs her broken doll, when all of a sudden they all look towards the right.

Title: "Look what's coming here!"

Scene 17. Same as 16. The boys with their kiddy car drive up. They have a flag with a red cross on it. They carry bags and in belts around their waists they carry all sorts of hammers and clippers, saws, etc. (This shot can be made very funny.)

Junior has an old bowler hat and glasses; he is the doctor, while his buddy is supposed to be the ambulance driver. Ma and Pa cannot help laughing at their get-up. Even Maryjane smiles under her tears as Junior approaches them.

Scene 18. Medium shot of group. Junior comes close to Maryjane and points to the Doll.

Title: "Somebody called the ambulance, saying that your Baby had an accident; we have come to cure her."

Scenes 19, 20, 21. Short successive close ups of Pa laughing, Ma smiling, and Maryjane cheerful again.

Scene 22. Same as 17. The boys get busy; they grab a bench. Junior takes a towel from a clothes line and prepares the operation table. He lays the Doll on the bench and covers it with another towel, just leaving the Doll's face free. Everybody watches amusedly. Drawing a chair next to the bench the boys unpack their tools. And what an assortment! With more towels they dress up as surgeons and get to work. Junior takes something out of the bag and holds it to the Doll's nose.

Scene 23. Close up of Junior's hands holding a package that has LIMBURGER CHEESE printed on it, to the Doll's nose.

Scene 24. Close up of Buddy tying his handkerchief over his mouth like a surgeon.

Continued on Page 332

An Amateur Makes Undersea Movies

by
William Stull, A. S. C.

MAKING movies fifty feet beneath the surface of the Pacific!

This was the way Norman Foster recently spent a three months' vacation in the South Seas. Not only did he spend his time filming the scenic and other beauties of the islands of Tahiti, Moorea, Bora-Bora, and the rest of the group, but he made a diving-suit for his camera, and filmed the Polynesian pearl-divers at their work below the surface of the sea.

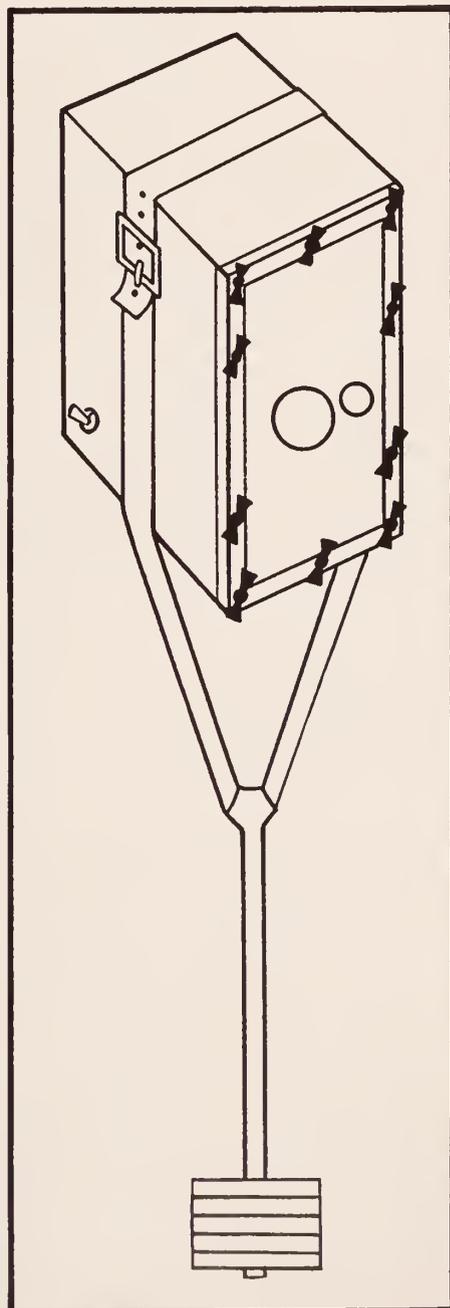
"It was a great experience," he says, "but a mighty strenuous way to spend a vacation. My equipment consisted of the old Eyemo that had filmed my 'round-the-world pictures five years ago, a brand-new Eyemo, with turret-head, 200-ft. magazines and an electric motor, and the diving-box I had built to fit the older camera. Before I left Hollywood, George Barnes, A.S.C., had helped me to get a good assortment of filters, and while I was in Papeete, Max DuPont, A.S.C., and Victor Milnor, A.S.C., gave invaluable advice and assistance.

"My underwater camera-box was as simple as possible; anything used under water has got to be reduced to its simplest terms, for pressure, currents, and a dozen other factors complicate things tremendously. The underwater box was just that—a sturdy wooden box, just big enough to hold the camera. It was made so that it was unnecessary to screw the camera in place: padded wooden blocks, shaped to fit the contours of the camera, held it accurately in place. It was a very tight fit, for sometimes when, after a long dive, some moisture had leaked into the box, it was difficult to get the camera out. The front of the box carried two Optical Glass windows, one for the lens of the camera, the other for the finder, while a single window behind enabled me to look through the finder. A simple lever and shaft extended the trigger through a water-tight joint, to the outside. The front-plate was also the door through which we removed the camera: it was held in place by brass bolts and wing-nuts, and we did our best to make the joint water-tight with rubber gaskets. Unfortunately, no matter how tightly we bolted the cover down (even using pliers and all possible 'elbow-grease') some water would usually manage to leak in if we went down very deep. However, the supports for the camera raised it three or four inches from the bottom, so that with care we managed to keep the camera reasonably dry.

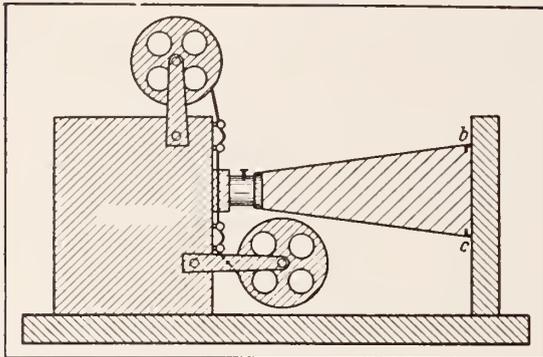
"Around the outside of the box I put a band of stout webbing—the same sort you use on a trunk, but stronger. This band I used as a handle, both for supporting the camera under water, and for panning and tilting when necessary. (Actually, it was more useful as a grip to prevent the currents from panning for me!) Underneath the box, and attached to the web, were heavy lead weights which extended several feet below the box. On the surface, the outfit weighed about 350 lbs., but when I got it down twenty feet or so, the box was actually buoyant. The weights, hanging underneath, counterbalanced the box and proved even more satisfactory than a tripod, while the resistance of the water kept me from panning or tilting too fast.

"Here's how I worked: of course I had planned out the action of my scene well beforehand, and explained it to

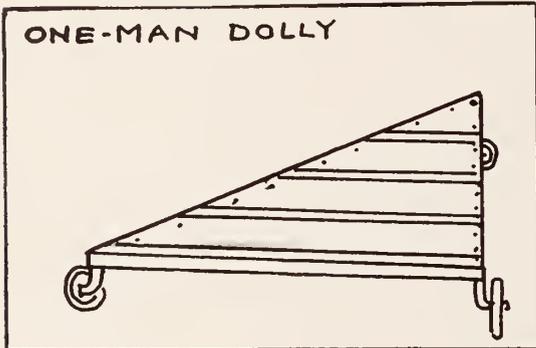
Continued on Page 331



This sketch is described during the course of the accompanying article. It is the contrivance used by Mr. Foster to make water pictures.



Above; projecting your 16 mm or 8 mm on your titler to make still pictures.



Practical Suggestions for Cinephotographers

by
Karl Hale

THE home-made projector-enlarger may be the answer to a problem that has troubled many a progressive Cinephotographer.

The desire to have a photographic enlargement of a particularly well-composed and photographically correct shot is common with all of us. There are several commercially manufactured appliances on the market that will do this for you, however, many like to build their own devices and brag to their friends "I built that myself."

In case you use negative film it is very simple: all you have to do is run your negative through your projector, and mark with a piece of tape the particular frame you would like enlarged.

Then use your titler, with the only difference that the projector takes the place of the camera. Find out how close

you can focus an image on a piece of plain paper in the titler. With some of the current model projectors you will find it impossible to focus an image say, 4x5 inches. However, we have a practical solution to overcome this obstacle. We all are familiar with the Eastman Portrait lens attachment that slips over the lens; this attachment will do the trick for us.

If you run a negative all you have to do is put a piece of bromide enlargement paper in place of the title on the titler. Then make your print the same way you would an ordinary enlargement. Develop and finish in the usual manner. Of course, this process has to take place in a darkroom with a regulation orange or ruby light.

The process does not differ much for reversible film. Instead of the enlargement paper a photographic plate or film is inserted.

Owing to the fact that there are so many makes on the market no special plate or film is mentioned. They all will do the trick. A test or two may be necessary, but the ultimate result will amply recompense for your extra efforts.

You will have to do all this in the darkroom, especially when making the new negative. Do your focusing as suggested on paper and then when completely dark insert your plate, make your exposure by switching the light on and off in your projector.

A special fine-grain developer used for miniature camera negatives is recommended for this process. Once you have your negative finished it is easy to have as many prints as you wish.

In this manner you will obtain a complete photographic record of the most interesting angles and highlights of your pictures. For those that can afford to buy a ready-made attachment so much the better; however, they will miss the joy the real amateur experiences when he can produce lovely photographs from his film with an entirely home-made contraption.

One-Man Dolly

The average Cinephotographer has a very limited choice of camera assistants. A truck- or dolly-shot usually requires a trained crew to push it. This may be one of the main reasons why the average cinephotographer hesitates to make dolly-shots. The accompanying sketch offers a solution to those that wish to make a clean dolly-shot.

This little home-made dolly will do the trick for you. It has one great outstanding advantage. The man who operates the camera can operate the dolly as well. It is a sort of three-wheeled kiddy-car affair. It must be solid enough to support the camera and half of the weight of the operator. Mount your camera on it and then with one foot on the dolly and the other on the ground you will find it very easy to guide the dolly and still have your hands free to work the camera.

I would not guarantee success at the first try but a few tests with an empty camera will soon convince you of the value of this little dolly.

The dolly is easy and cheap to build and a child can operate it. Ordinary furniture rollers will do nicely, although standard kiddy-car wheels will do as well but you have to construct the dolly according to the type of wheels you are going to use.

Needless to mention all wheels must be free to turn in all directions.

Dolly-shots made with this dolly and a universal-focus lens are easy to make and very effective on the screen. A little measuring will help. First find out how close you

Continued on Page 333

Hints on Indoor Cinephotography

by
Arthur J. Campbell, A. S. C.

IN PART I of the "Hints on Indoor Shooting" I tried to outline some of the fundamental rules that govern indoor photography. A recent survey among amateur cinephotographers revealed that even the most advanced amateur shrinks from shooting with artificial light. It is my purpose in these articles to try to dispel this light bugaboo, and give you a working basis upon which you can, with confidence, make indoor movies with artificial lights.

Of course, the making of indoor movies requires an additional outlay for lighting equipment. However, you will be more than repaid by the advantages this equipment will give you. From now on you will be able to obtain a regularity of exposure.

Evidently there must be some minimum requirement in the amount of light needed in indoor shots. The easiest and cheapest way in the long run to find this minimum for your particular camera and lenses is to make a short test film.

Here is a test that should be adequate for any camera on the market. Presuming you are using film of a speed comparable to Eastman or Agfa Panchromatic, set your lens opening at $f\ 3.5$. Now place the subject, a patient person, against a neutral color background. Always use a neutral color like cream because dark draperies or walls drink in or absorb light to a great extent.

The first part of the test will be a close-up. Set the camera up about 6 feet away from the subject with the lens about eye-level, in order to make a straight-on shot. Next, following closely Sketch No. 1, found in last month's article, space your lights. Lamp 1 is usually placed on the subject's right, about 5 feet away, and lamp 2 on the left about 3 feet. The object of placing the lights as shown in the diagram is to assure modeling in the face; that is, that it may on the film not be flat, showing only length and breadth, but will give the realism of the third dimension, depth. After focusing and checking to see that there are no reflections or kickbacks, as the professionals call them, in your lens you are ready to shoot the scene. At normal speed, 16 frames a second, take about 5 feet of the subject.

Remember that this set No. 1 will always give you sufficient exposure for a normal close-up; from it you can build to obtain artistic and dramatic effect when needed.

After making notes on paper of our procedure in Test

1, we move on to Test 2, which is a medium-shot. A medium-shot is usually one that takes in the subject from slightly above the knees to the top of the head.

Using the ordinary 1-inch lens, your camera is now set up about 10 feet from the subject. This necessitates a movement of your lights in order that they may not be seen in the scene. The closest is now about 5 feet from the subject; this automatically calls for re-enforcements of more lights. Place another photoflood next to lamp 1 on the right, and do the same on the left. Of course, if this were anything other than an exposure test, these set-ups would require back-lighting and set-lighting. In this article we are working only on the exposure for the subject, in a later article a full discussion will be devoted to background and back-lighting.

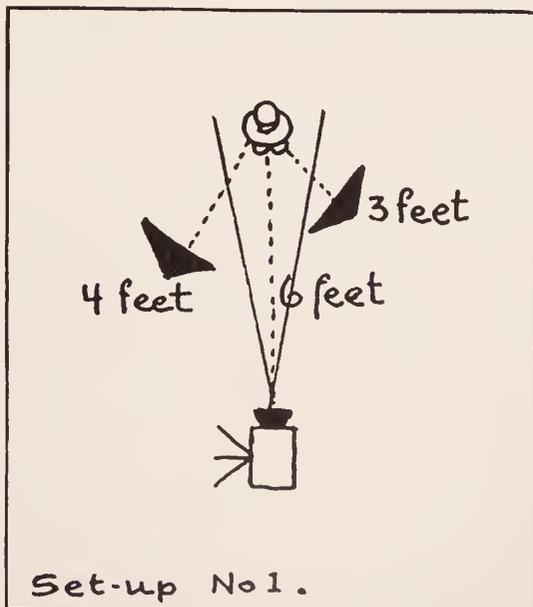
Now let us make ready for Test 2; in this test the subject may move around a bit, but not too close to the lights on either side, as the increase of light on one side will upset the photographic balance of the scene. After finishing this test, make your notes on paper of procedure with diagram and distances of light set-ups.

Test No. 3 is a long-shot of as many people as easily fit in the available space. This means that first you go back as far as possible with the camera, checking, of course, your sidelines, that enough room remain to place the lights.

In indoor shooting, when the subject is more than 6 feet from the camera, an increase of light is essential. A safe and practical formula has been found through experience. The formula is: that for each unit of 3 feet that the distance of the subject from the camera exceeds 6 feet, add 2 lights, one on each side of the subject.

Following this formula after having made the necessary measurements and placing of lights, make your third test.

After receiving your processed film and noting the results—if over-exposed or under-exposed—you will, upon checking with your notes, know whether to use more lights or to move them further from subject. From this knowledge, with little trouble, you can make a chart of indoor scenes with lights necessary and distances for placing lights as suitable to your particular camera. These tests should prove to you clearly that, properly placed, a few lights will give excellent results.





WHEELS OF INDUSTRY

Splicer for 8mm and Sound Films

● Bell & Howell announces a new splicer that handles all sub-standard motion picture film—16mm silent, 16mm sound, and 8mm.

This splicer, which is called the B & H Triple-Purpose Splicer, is easy to operate.

A major feature is the arrangement for convenient application of the cement without the bother of lifting the non-scraped film end. Cement is applied merely to the upper film surface. Then a touch of the new automatic film shifter quickly flips the films to correct splicing position as the clamp is closed.

The pilot pins are retractile, allowing instant and easy removal of the film without possibility of injury to the perforations.

New Theatre Projector

● A new theatre sound projector, adapted to the large school auditoriums, is announced by Herman A. DeVry, Inc.

This projector incorporates the silent chain drive and has the rear barrel shutter as regular equipment. It is claimed this shutter gives more light on each picture frame and cools the film aperture at the same time.

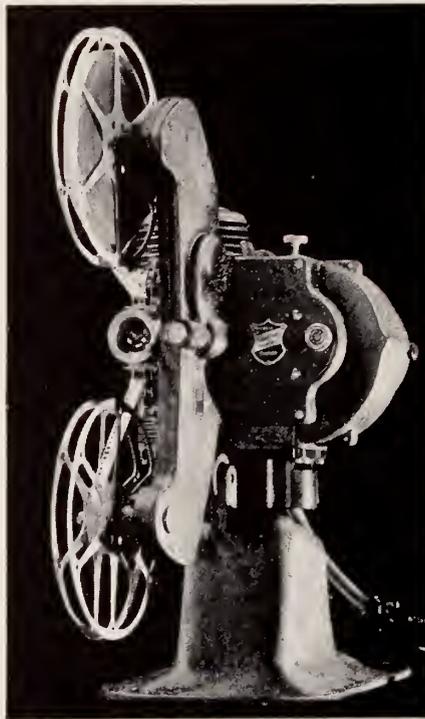
A new framing principle is claimed. The intermittent is placed vertically below the aperture and so connected that in framing, it is always synchronized with the timing of the shutter. The Robertson Centripetal wheel for absorbing vibration is used.

This projector uses arc or m a z d a lamps, A.C. or D.C. The larger model projectors have solid bases, and the semi-portable adjustable legs for easy transportation.

1000-Watt 16mm Projector

● According to an announcement from Bell & Howell company that corporation will shortly market a 1000-watt projector especially designed for use in larger auditoriums. It is claimed that this projector gives an 80% greater screen brilliance than the 750-watt projector and does it with only 33 1/3% lamp wattage increase.

This projector which will be known as Filmo Model 130 will have a capacity of 1600 feet of film.



New Eastman Projector

● Eastman's latest presentation to the amateur movie field is the new Kodascope L. Outwardly Kodascope L appears to be merely the Adonis of the projector family but it has much more than appearance, for Kodascope L actually embodies a new idea in 16mm movie projection.

This projector is designed for use with any of four lenses and three lamps. These lenses are of one, two, three and four inches in focal-length, affording high optical efficiency for every reasonable variation in projection conditions. With any of these lenses a 400-watt, 500-watt or a 750-watt lamp may be used.

Thus, with Kodascope L, twelve high-efficiency combinations of lenses and lamps are possible. The various lenses and lamps permit projection as close as nine feet or as far as forty feet with the screen image ranging from 30x41 inches up to 43x60 inches.

Lens-Lamp Combinations for Kodascope L

This tabulation provides a definite basis for choosing lens-lamp combina-

tions for Kodascope L. The figures given are for technically perfect quality, with properly balanced screen brilliance (12-foot candles). However, very much longer throws and larger screen pictures are possible. Kodocolor can be used with the one- and two-inch lenses without additional optical equipment.

THE 1-INCH, f.2 LENS:

Wattage	Throw	Screen Image
400	9 ft.	30"x41"
500	10 ft.	33"x46"
750	11.5 ft.	38"x53"

THE 2-INCH, f.1.6 LENS:

400	20 ft.	32"x45"
500	22 ft.	36"x50"
750	26 ft.	43"x60"

THE 3-INCH, f.2 LENS:

400	29 ft.	31"x43"
500	31 ft.	34"x47"
750	36 ft.	40"x55"

THE 4-INCH, f.2.5 LENS:

400	32 ft.	26"x36"
500	35 ft.	29"x40"
750	40 ft.	33"x46"

Miniature Enlarger

● The Kodak Miniature Enlarger, designed for the purpose its name indicates, is currently announced by the Eastman Kodak Company.

The new enlarger gives enlargements up to 11 by 14 inches from negatives of the half Vest Pocket size (1-3/16 by 1-9/16 inches). It enlarges from 2 1/2 to 10 diameters, and takes negative areas up to 2 1/4 by 2 1/2 inches.

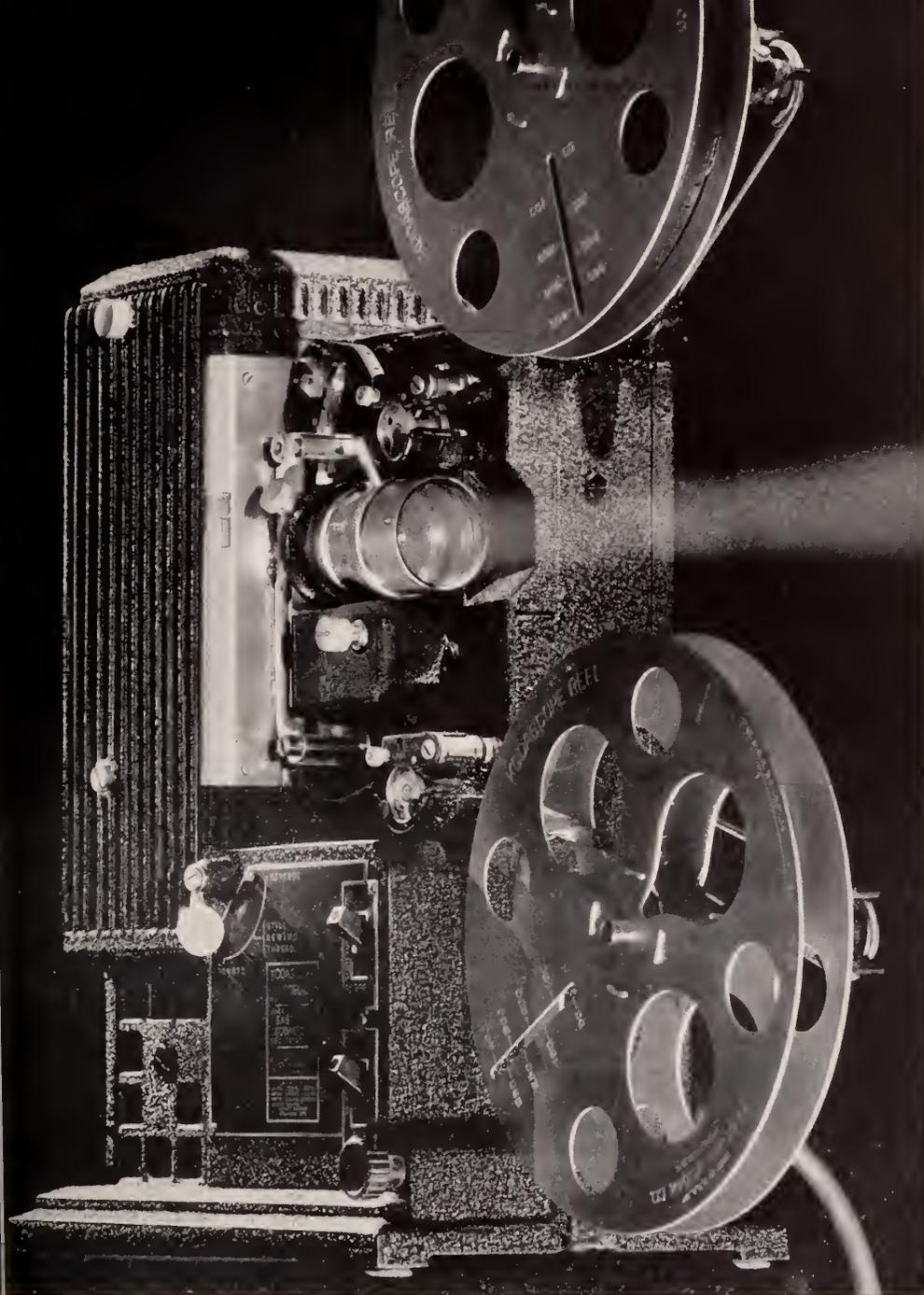
The Kodak Miniature Enlarger is one of few enlargers that permit a wide range of small-sized negatives to be used, even including the popular snapshot size of 2 1/4 by 3 1/4, provided the length is masked down to 2 1/2 inches.

Critical focus is obtained by turning the lens mount in which a Kodak Anastigmat f4.5 lens, especially designed for enlarging, is set. The lens is permanently installed.

Rheostat control gives two degrees of illumination from an inexpensive Mazda Photoflood Lamp. Dimmed, the light is about one-fifth the full power. This two-degree illumination provides a sufficient variation in light strength, making

Continued on Page 332

Introducing
TAILOR-MADE
Projection
with the NEW
Kodascope
“L”



WITH *f*.1.6 lens and 750-watt lamp, the “L” supplies unequaled screen illumination.

But maximum brilliancy is of no great advantage unless you need it. Hence, projection tailor-made to operating conditions—a new idea that assures ideal screen results whether you show movies in a small library, large living room, a classroom, hall, or auditorium. Four lenses, three lamps—from which you can arrive at a lens-lamp combination that will produce better movies for your individual needs than you’ve ever before enjoyed.

With the 2-inch lens and 500- or 750-watt lamp, Kodascope L shows Koda-

color at its best and brightest. Supplementing the Model K, and retaining all of its many advantages, the “L” is priced at but \$165—with lens and lamp, from \$184. Ask your Ciné-Kodak dealer to show you this outstanding 16 mm. projector.

*The lenses: 1-inch *f*.2 — for use in close quarters, 2-inch *f*.1.6—for average showings, 3-inch *f*.2 and 4-inch *f*.2.5—for longer “throws”; the lamps: 400-, 500-, and 750-watt—from which you choose the combination that’s exactly right for the conditions under which you show your movies.*

Eastman Kodak Company, Rochester, N. Y.



A HOME MADE TRICK TITLER

Continued from Page 321

THE WIPE-OFF

This mechanism is a bit more tricky and complicated than it seems, yet it is not so complex as to prevent the amateur builder from attempting its addition to the titler. In principle, it is a simple lead screw with a traveling device that holds cards and travels across the face of the holder between the latter and the camera lens.

The base of the wipe-off is a piece of pine 1" thick, 3" wide and 15½" long. The center is lined with the center of the bed and the upper groove strips indicated, or marked off, on the base. Saw a slot for each strip a little wider and deeper than ½" so that the base will rest upon the halder-carriage runners. Nail carefully to these runners **from the bottom**. (The 1" brads will not reach through from the top and if larger nails are used the strips may split.) I should mention that the position of the base is in front of the halder, next to and touching, the end spacer. This brings the distance from halder to near side of base approximately 7¼".

In the middle of the base at the extreme ends, mount the two remaining ½" pillow blocks, taking care to tighten them only with a ½" rad in their shaft holes. These will support the lead screw. Any machine shop can furnish such a screw cut from ½" shafting and to any thread desired (which allows the wipe to move 1" in as many revolutions of the shaft as there are threads per inch). In my own case a pipe die was convenient so it was used. This has a bite of 13½ threads per inch. The remaining ¾" pillow block is now tapped to match the threads on the lead screw and mounted on the screw by taking the ½" pillow blocks apart (be sure to keep these pieces on their respective bases and facing the same way). Drill and tap a hole (any size convenient) in the end of the lead screw that is tapped. The smooth end is mounted on the right hand side of the base looking at the holder from the camera end. Into this hole just tapped (on the left side in above position) is fastened a machine screw which holds a large washer, which in turn, holds a felt washer. The felt provides a cushion between the metal washer and the pillow block face, and prevents the lead screw from becoming too tight.

Mount a sprocket wheel on the other end (right side) of the lead screw, where the screw has no thread. Put several washers between the gear and the pillow block face and fasten firmly, but not too tightly to the lead screw by means of the set screw in the hub, or, if it hasn't

one, drill a hole through hub and shaft and fasten with a rivet.

The remaining 5" piece of ½" shafting is drilled with two holes parallel to each other and ½" from one end and 2" from the other. Hold this shaft, by hand, in position in the middle of the base and extending out the same distance as the lead screw. Slip the other sprocket in place—cut the ladder chain to the nearest correct fit and fasten it together in a loop. Run this chain over both gears, then tighten by draping the idler shaft (with its corresponding gear). If the shaft drops too far to be fastened, take out one link of chain and try again. When the correct fit of chain is ascertained, fasten the idler shaft with two wood screws. There is no need to describe methods of installing a crank handle on the idler gear, beyond mentioning that this gear is necessary to get the handle out of the way of the wipe cards, and therefore take care to keep the handle small enough to miss the wipes when they are on the right hand side of the unit. The idler gear was fastened in place by tapping the end of the idler shaft for an 8-32 machine screw and using washers to align the gear. The handle is raised away from this screw by means of washers acting as spacers to hold it away from the chain, etc.

You will find, if you have gone this far, that the traveling block on the lead screw wobbles. This is overcome by any one of several methods. The one I used consisted of cutting a piece of metal (of a thickness to **almost** keep it from wobbling when inserted between the traveling block and the base) and bending it in a slight arc and soldering it to the bottom of the traveling block with the arc turned **down** against the base. Cut two small pieces of angle brass (1½" long will do) and solder these to the metal arc so that they slide along the top and sides of the base. All wobble is removed by treating this way.

Now cut a piece of metal about ½" wide by ⅛" thick and about 2" long. Drill two holes in it the same size and distance apart as the screws holding the traveling block together—starting from one end. The strip is to fit under these screws and extend toward the holder for a short distance, then it is bent downward. This bend should just be far enough from the block to admit a screw head between the back of the down part of the angle and the block itself.

Take the 12" piece of ¾" angle brass and cut it off seven inches from the end. The seven-inch part is to mount on the angle strip just finished, and the five-inch part to fit **inside** the seven-inch

piece. Mark off the center of the seven-inch piece. Drill a hole in one side of this in the center. (The proper side will be to hold the angle as though it were a seat and you were going to sit down and look at the halder. Now drill the back side in the center and you'll be right.) Holding the angle in the above described position, with its back against the small angle strip on the traveling block, get the top of the angle level with the top of the strip on the block and mark the hole already drilled in the brass angle so that a similar hole may be drilled in the traveling block angle. In the latter, drill and tap a hole for a 6-32 machine screw. Mount the screw (one about an inch long) from the back of the T.B. angle and tighten it. Replace the T.B. angle and tighten. Slip the brass angle in position and carefully level it off so that it is parallel with the base and the halder and **solder** it to the T.B. angle. (Note: use solder on the back side—where the two come in contact, only. The front must be smooth.)

Next, find the center of the 5" piece of brass angle in the same manner and drill a hole slightly lower, or closer to the "point" of the angle, to compensate for the offset of fitting this inside the longer piece. This hole may be of a greater diameter than the screw it is to take. Slip the short piece on top and in front of the longer piece, letting the 1" 6-32 machine screw project through the hole and find some kind of a spacer with a hole the size of the screw and an outside diameter of not more than ¼", altogether, about ½" long. (An old spacer out of a radio set was just the thing.) A 6-32 battery cap makes the thumb screw that finishes this mechanism.

In use, the thumb screw is loosened, a piece of cardboard (to be described later) inserted between the angles and up against one side of the central screw (with a small piece of the same material on the other side to act as a spacer so that the angles may be tightened.) The thumb screw is tightened and the wipe is firmly held in place on one side of the screw. To reverse (or complete) the wipe, reverse the cardboard to the other side of same screw. So much for the **mechanism** of the wipe-off device.

THE SCROLL

The scroll is simple. You already have the bed dimensions and since paper can be procured in rolls 8½" wide, all we need to do is build our scroll to these dimensions.

Cut two pieces of the 1" square wooden strips 8" long. Cut another piece 12" long. Lay the 8" pieces on top of the **ONE INCH BED STRIP** and **OUTSIDE OF THE ONE-HALF INCH STRIPS**. These will be the scroll runners and it may be seen that they fit, not **IN** the groove, but

on TOP of it, and straddling, the bed. Center and nail the 12" piece on top of these 8" pieces, and flush with one end of them. Nail a miscellaneous piece of stripping across the back of the 8" pieces to act as a rear spacer. So far this unit should slide easily back and forth on the bed in the position described, i.e., straddled and atop.

Next, mount the two $\frac{3}{8}$ "x3"x1 $\frac{1}{2}$ " pieces of veneer—one on each side—on the outside of the 8" runners and in back of and touching the 12" piece. The bottoms of these pieces are flush with the bottoms of the runners. Nail them in place securely upright after aligning with a square. Across the back side of the top of these veneer pieces mount a small spacing strip to keep them the same separation at the top as at the bottom.

Cut four pieces of the $\frac{1}{2}$ "x $\frac{1}{8}$ " metal $5\frac{1}{4}$ " long. Hold these along the 3" sides and drill two holes in each metal strip so that all four strips may be mounted flush with the back of the scroll side supports. In the end which extends in front, drill and tap a hole for the $\frac{1}{4}$ " rod which is to be tapped, and set aside.

Thread two $\frac{1}{4}$ " rods which are ten inches long, to a depth of $\frac{3}{8}$ " from each end. Run the iron strips, which have been tapped, onto these rods, one at each end, and get them spaced exactly by bringing the rods close to the base of the scroll sides (outside) and then loosening or tightening as need be until the spacing is the same between the outside of the sides and the inside of the rod supports.

Now, mount one rod support on the outside of the sides and so that the rod comes 1-3/16" from the top of the front spacer bar to the center of the rod support. Get **back** of support flush with **back** of side and fasten securely. Align the other side so that rod is exactly parallel to right angle of bed and at same height as other support—then fasten firmly. Do the same with the top support, i.e., fastening first one side, then the other. The centers of the two rods are 7 $\frac{1}{4}$ " apart.

Get an old broom handle. Cut off a piece to fit loosely between the uprights. Drill a hole in each end in the center and mount tightly, a short length of $\frac{1}{4}$ " rod, which extends beyond the side supports. Six inches from the bottom of the supports and in the middle of each, drill a hole to receive these studs on the broom handle. With the jig saw, cut a slot in the back of the supports extending downward to these holes. This allows the paper roll to be mounted on the broom handle and the whole dropped into the holes in the side supports.

One-quarter inch from the top, and in the middle of the side supports, drill another pair of $\frac{1}{4}$ " holes. Cut another

piece of broom handle and drill two more holes in it. Put the broom handle in place, drive home the $\frac{1}{4}$ " rods BUT—LET THE ROD ON THE RIGHT SIDE (looking at the face) EXTEND FOR ONE INCH. Fasten the rods in the wood by drilling a hole through wood and metal and riveting. Next, or before, if you prefer, cut a slot in the broom handle extending as far toward the ends as possible. (THIS SLOT IS THE MEANS OF FASTENING THE SCROLL PAPER TO THE TAKEUP REEL—in the same manner as a film is threaded to a takeup spool in a Brownie camera.)

On the right-hand side of the upper spool, and on the rod which extends an inch, mount the 3" "V" pulley. In the set-screw hole, the handle is mounted. Do this by removing the set-screw—thread a piece of rod about 4" long and of a size that will tap for whatever thread the set-screw hole calls for. Tighten this rod in the hub while the pulley is on the shaft and, marking where it should be bent to form a handle, remove it and bend it in this direction—then replace.

A little below this pulley and on the rear of the sides, mount an eye-screw. To this, fasten a piece of $\frac{1}{8}$ " round belting which should go over the pulley and extend for several inches down the front edge of the side. To the belt at this point, add a light spring and run this to a second eye-screw near the front edge. This apparatus acts as a "brake," allowing the roll to revolve freely in one direction, while practically preventing it from backing up.

In the middle of the sides, and about $\frac{1}{2}$ " from the tops of the "runners" drill two holes to receive the No. 10 Bessemer rod. Bend a piece of this rod so that it has a length just under the inside dimensions of the sides, (extending from the holes to the middle of the roll of paper) for a distance of 4" and then bend at right angles to go through the holes just drilled in the sides. This wire affair is to keep the bottom roll from loosening of its own accord. The wire (rod) must be held against the roll by springs fastened to two holes drilled almost half way up and eye-bolts on the front spacer. If you have followed directions you have your scroll built.

A means of mounting the scroll to the holder is the finishing touch to this mechanism. This is done simply and quickly, by drilling a $\frac{1}{4}$ " hole through the center of the holder base and the scroll front spacer. Insert one of the $\frac{1}{4}$ " carriage bolts from the front of the holder and drive it home so that the square shoulders seat themselves. The scroll is slid in the direction of the holder, the screw going through the hole in the scroll paper, and is fastened in place by means of a wing-nut behind the latter.

THE TWIST, OR WHIRL

The twist, or "whirl," is the simplest mechanical piece of the entire titler. It consists of a round wooden disc, held by a firm support and with a means of revolving it and bringing it back to the exact plane it left.

First, cut a round disc out of $\frac{3}{8}$ " veneer and mark the center definitely. Mount the 4" shaft hanger on a piece

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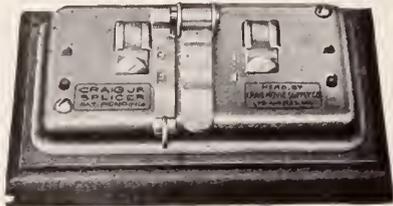
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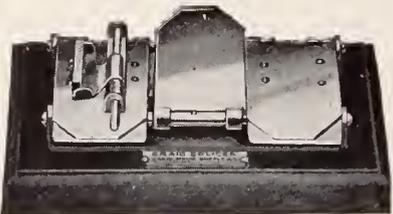
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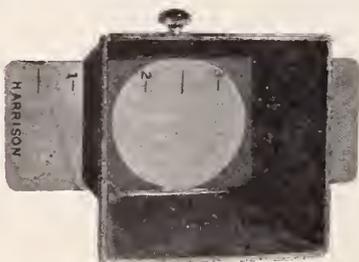
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of wood 1" wide, 7" long and as high as necessary to bring the center of the hole to the optical axis. This last dimension I leave to my readers since they must definitely know, before getting this far, how high above the bed the center of the lens (the lens axis) is. The hanger is mounted in the middle of the width of this base by means of the two remaining 1/4" carriage bolts. The base is attached to the "holder" by means of the same carriage bolt that holds the scroll in place, i.e., a hole is drilled through the base of the twist, to coincide with the carriage bolt projecting through the holder's back. It is fastened in place by the same wing-nut.

After the center of the shaft hanger hole is centered with the lens axis, mount the 1/2" flat-faced pulley in the exact center of the wooden disc and fasten it by means of holes drilled around the pulley, and wood screws. Drop the 3" piece of 1/2" shaft in the hub, tighten, and insert in the front side of the shaft hanger. Put the 1/2" shaft collar over the other end of the shaft and make a handle for this in the same manner as the one on the scroll. The length of this handle, however, is greater, extending to about 3 3/4" from the center of the shaft. At the base of the shaft, hold the hinge so that the PIVOT is resting on the hanger's feet and one side of the hinge is then fastened (by means of drilling and tapping the proper holes) to each leg of the hanger.

A slot, slightly smaller than the diameter of the handle, is made (with the metal-cutting jig saw again) in the center of the outside leaf of the hinge. This leaf is also bent in the form of an arc, with the slot at the high part. At the very bottom of the slot (which is cut nearly, but not quite, through the hinge) a screw is mounted which serves the purpose of keeping the hinge from opening up too far. A small spring is inserted and fastened between the leaves of the spring to keep them apart. Bend the handle so that it is held firmly when in the slot of the hinge.

A full description of the uses of this twist will be given in the next installment, but for clarity's sake, a brief mention of its action will be given here. The handle is in its position in the slot of the hinge. A title is lined up on the face of the disc. The title is "shut" and after the proper length of time for reading, grasp the handle with the right hand, press in slightly with the thumb—and revolve the disc—fading out at the same time.

Backwind the camera to the predetermined point and fade-in on the "new" title—which is revolving in the same direction. As long as the disc is revolving it goes past the slot easily, but when it is slowed down to nearly a stop, it seats itself and holds securely. Should

the handle "grab" in the slot, tighten the center screw so that it cannot "spread" so much.

Nothing about the entire titler is difficult, but everything requires reasonable care in alignment and construction. Obviously this is an instrument that should be considered as "delicate" as the camera itself—yet anyone can duplicate it with only a little patience and ingenuity, and adapt the machine to their own needs.

In the next installment, I shall describe the USES to which the titler may be put, and some of the variations of the trick effects. In the meantime, when the titler is built, paint everything (except the lead screw, ladder chain, etc.) a matte black. Even though black photographs white, when using the direct positive method of filming titles, it is necessary that all reflected light be avoided. The deader black, the better. A very excellent and quick-drying black is manufactured by Eastman and sold under the name of "Kadalak." By all means, avoid black enamel. Until the next time, good luck to you builders!

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An Amateur Makes Undersea Movies

Continued from Page 323

the diver. Then I would get into my diving-suit and go down to rehearse the divers. At a signal, the camera would be lowered to me: I would take it, and aim as well as I could (it isn't very easy to sight through a small finder when you are in a diving-helmet and the camera is in a bulky box!). Then I would press my shutter-release, and the diver would do his stuff; sound carries well under water, you know, and both the diver and I could hear when the camera started and stopped. Usually, I could run off the entire 35 feet of a single winding before the diver was ready to come up; in fact, I could have shot a whole 200-ft. magazine of some of them—and still be through shooting before the swimmer was out of breath! Of course, after each 35 feet of film, the camera would have to go up for winding; and as this necessitated removing it from the box, and then sealing it up again, you can imagine what slow work it was.

"The refraction of the water was a real problem: it narrowed down the lens-angle tremendously. Using the regular two-inch lens, I found that the refraction narrowed the angle so much that the result on the screen looked as though I'd been using a three- or four-inch lens. Even with a 24mm lens—normally a wide-angle lens—I'd get about the same result as one would with a two-inch in the air. With my subject 16 feet from the camera, I'd be hard-pressed to get a full-figure shot.

"The matter of exposure fooled me badly. There wasn't room in either my diving-suit or the camera-box for an exposure meter, and while at first I was sure that, at a 50-ft. depth, I'd get about the right exposure with the lens wide open at f:2.5, I soon learned that even stopped down to f:6.3 or f:5.6 my exposure would be a bit high on the Super-pan film I was using.

"Another troublesome problem was the effect of the hot, moist atmosphere and the cold water. Naturally, the air in the camera-box would be hot and moist and when the box was lowered into the cold water of the depths, this moisture would condense, usually on the window-glass in front of the lens, giving the same foggy effect as steam condensing on a cold window-pane. A small container inside the case, filled with calcium chloride, will take care of this—but unfortunately, I had none available, so I had to trust to luck, and hope that the moisture wouldn't ruin my shot. Sometimes I was lucky!

"The currents were often very troublesome: often, working in a strong current, I'd be straining to keep the camera steady against the stream, when suddenly the current would cease—and I'd have



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an unintentional and thoroughly unwanted pan.

"Aside from helping me hold the weight of the heavy camera-box, the underwater buoyancy produced some surprising effects: I found that I could jump around like an acrobat—20 feet or more at a bound was easy. But it wasn't so easy to keep my balance after landing—and I didn't dare fall forward or sideways, for fear of breaking the windows in my helmet. Also, the coral gave me many bad moments: much of the coral there is poisonous, and sharp-pointed. If I had scratched my bare hand, or ripped my suit, it would have been just too bad!

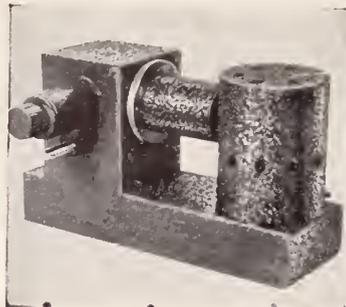
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Really, the coral was the greatest danger; I suppose it would make a better story if I gave credit for that to the sharks—but to tell the truth, after the first few dives, I didn't worry about them a bit, for I learned that the Tahitian



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sharks have never been known to molest humans.

"Sometime, I'd like to have a chance to make some natural-color pictures underwater, especially around Tahiti, for the water there is wonderfully clear, the light is good, and, over the magically-tinted coral is diffused an indescribable blue-green light. You can't, of course, reproduce this effect in black-and-white—but in color it would be a picture of marvelous beauty."

Let's Talk About Lenses

Continued from Page 317

Without new kinds of glass, lens design would very probably have halted, for it is impossible to correct every fault simultaneously by the shape of the lens or its elements alone. The growth of optical efficiency, then, can be dated from the experimental work at Jena in finding new glasses with which to make lenses. The growth of any art depends largely upon the improvements which are made in the tools and materials available to designers and craftsmen.

I see that we are running short of space for this installment, and because the construction of anastigmats is so interesting and so varied, suppose we take

up the modern anastigmat lens next month. This lens is the most important we use today, and it would scarcely be possible to do it justice in the time remaining this month. So, until next month, it might be a good plan to review this month's and last month's discussion of lens faults and their corrections, so we may be able to understand fully just why the anastigmat is so fine an objective.

The Family Physician

Continued from Page 322

Scene 25. Medium shot of Junior seeing what Buddy is doing; immediately he does the same. Then Buddy tries to get at the doll with his great rip saw. Junior holds him off.

Scene 26. "Can't you see that the leg is off already; no more cutting here; we must sew the leg on."

Scene 27. Medium shot of group. Buddy, disappointed, throws his tools down and Junior sets to work with a needle to sew the Doll's leg. (No need to show Junior sewing on the Doll's leg, because this can be done between shots; make him do the motion while his hands are hidden under the towel over the Doll.)

Buddy holds the Doll down while Junior is working and from time to time he feels the Doll's pulse (you can make this operation as short or as long as you want to). Finally Junior has finished; with a grand gesture he invites Maryjane to pick up the Doll.

Scene 28. Medium shot of Maryjane picking up her Doll; but look! the boys had sewn on the towel as well.

Scene 29. Pa laughingly takes his pocketknife and cuts off the threads; he pats the boys on their backs; he sure enjoyed the performance.

Scene 30. Close shot of Junior taking out a long roll of paper from his pocket and presenting it to Pa.

Title: "Here is your bill; cash only."

Scene 31. Same as 30. Laughingly Pa pulls out his change and gives the boys some pennies. Satisfied, they pack up their things and with Maryjane waving a goodbye they scoot out of the picture.

Wheels of Industry

Continued from Page 326

a lens diaphragm unnecessary and thus simplifying correct timing of exposures.

The lamp house is ventilated, and a special heat-absorbent glass disc affords further protection to the negative. A detachable safelight disc permits inserting and adjusting bromide paper while the printing light is on. The safelight disc is also useful in doing such combination work as printing in skies.

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is an essential part of the outfit. The masking arms are attached to a metal frame, which by means of an ingenious catch is held up out of the way while both hands are adjusting the paper.

A paper-cabinet base, sold separately, is another important accessory. This compact cabinet affords a portable but firm base to which to clamp the enlarger standard, allowing the user to put the enlarger in any convenient working position.

For the benefit of owners of Kodak Auto-Focus Enlargers, Model B, or the earlier models adapted for the use of a Photoflood Lamp, the enlarging assembly of the Kodak Miniature Enlarger is available alone to convert the previous equipment into a miniature-type enlarger. This includes the lens and mount, the negative carrier, and the reflector. This converter, enlarging to 8 diameters, slides on the face plate in place of the regular enlarging unit.

Practical Suggestions for Cinephotographers

Continued from Page 324

can get to your subject without going out of focus. Make a mark on the ground. Then retreat as far as you want and the composition of your shot allows.

The rest is easy. Advance as your action demands (a clean continual advance will be the most natural) and a nice clean shot should be the result.

CRENNAN MAKES SUPER-CRITICAL FOCUSER

• Ollie V. Crennan, of New Rochelle, New York, shows how he combined the well-known Bell & Howell "Focusing Microscope" with his Cine-Kodak Special. "The microscope," he writes, "contains a ground glass covered by a 16mm aperture-mask. Behind the ground glass is a powerful magnifying eyepiece (10x), while any standard 16mm lens may be screwed into the front end of the magnifier.

"I have mounted the device on my Cine-Kodak Special, using an L-shaped, removable bracket. The focusing microscope is pivot-mounted in this arm, with a set-screw and scale adjustment to take care of adjustments for parallax. The whole assembly is set so close to the camera door that the parallax adjustment is very slight, except for extremely close work at distances of from two to four feet. The register of picture from top to bottom is very accurate.

"When sighting through the finder, the picture is brought into sharp focus by working the regular focusing adjustment on the lens mounted in the focus-finder. The reading given on this lens'

focusing scale can then be read, and the taking-lens on the camera set at the same figure. In this manner, one is assured of having his pictures always in focus, as the ground glass of the finder and the camera's film-aperture are in virtually the same plane.

"The photo shows the Cine Special with the 2-inch Eastman lens in place, and the finder fitted with an f:2, 50mm Leitz ("Leica") "Summar," which has a sun-shade on.

"This whole outfit may be used on top of the camera by merely turning the aperture mask around in the finder."

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TINTS WITHOUT TROUBLE

• All of us have admired the tinted (colored) silent movies of a few years ago. Last year in the *AMERICAN CINEMATOGRAPHER* several articles were published, telling how to tint and tone your own 16mm or 8mm films. These effects are easy to get but the process is more or less messy, involving as it does immersing the film in one or more chemical baths. Here is a method of getting similar effects **in projection**.

Everyone probably has seen the "color-wheel" and similar commercial attachments for 16mm projectors; they give the tinted effect by placing a colored glass or gelatin in front of the projector-lens. Any amateur, however, can build himself a very acceptable color-wheel for about 35 cents—and get the same effects. Exactly how you build it will depend upon the type of projector you use, and on your projection methods. Essentially, the device consists of a cardboard disc or wheel, mounted in front of the projector-lens, so it can be rotated. In the disc are several circular openings, slightly larger than the diameter of the lens. One of these is clear, and the others are covered with a sheet of colored cellophane (which you can get at any five-and-ten-cent store). For general use, I would suggest, in addition to the clear opening, four colors: blue, green, red, and light amber. Green for landscapes—blue for seascapes and predominant cloud-effects—red for fires, sunsets, etc.—and light amber for interiors and general warm effects.

You can support this color wheel in several ways: either from a clamp on the projector itself, or from a wooden block attached to the table on which the projector stands. And—here's a tip about using the color-wheel: you don't want to change colors in the middle of a scene, as a rule; and it's hard to change accurately between scenes—so put in a short title between such scenes, and you can easily make the change during the time the title is on the screen.

A friend of mine once built a similar outfit which gave him some very unusual effects. It was a simple frame-like affair something like a lantern-slide projector, or perhaps a filter-holder. It held a clean lantern-slide, one-half of which was tinted a faint blue, the other green; the slide was, of course, divided horizontally. It took quite a bit of testing to get the thing adjusted right, but once it was right it gave a very pleasing effect, softening the picture marvellously, giving a faint blue tinge to the sky, and green to the foreground. And, surprisingly, he found this color-divider could be used practically all the time, regardless of the subject or shot. Try it!

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By Gadgets we mean little pieces of equipment you have built, designed or devised. Equipment that works. Little gadgets you have added to your camera, projector or otherwise. For instance, we heard of one fellow who built a splicer out of a mousetrap . . . that's a gadget.

What kind of gadgets have you made . . . what sort of tricks do you do with your camera or equipment? If necessary send us a rough sketch or a snap shot of your equipment if it will help describe it better and quicker.

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Frequently we have published what might be termed tricks. Such as making distorted effects by pouring sweet-oil over a glass in front of the film. Others have been published from time to time.

In the way of gadgets we have reported many things from the building of a complete 16mm camera by amateurs down to making their own reels.

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PAGE INDEX—PROFESSIONAL

- 8. .A. S. C. Golf Tournament.
- 9. .John Arnold Heads A. S. C. for Fourth Term.
- 10. .Utility Features New Light Crane.
- 11. .Color Control for Color Film.
- 12. .Television—Its Progress and Possibilities.
- 14. .Using Infra-Red in the Air.
- 15. .Riddle Me This.
- 16. .Trend of the Times.
- 60. .How Miniatures are Photographed.
- 61. .Infra-D As Used on the Ground.
- 62. .Industrial Movies Forge Ahead.
- 63. .Standard Metal Construction for Set-Platforming.
- 64. .Upsetting Traditions with "Viva Villa."
- 65. .Getting Good Sound Is An Art.
- 70. .Combination Filter-Diffuser Increases Optical Efficiency.
- 106. .Development of Silent Camera Progressing.
- 108. .The Language of Color.
- 109. .The Part of the Painter.
- 110. .Production Economies with Process Photography.
- 112. .Riddle Me This.
- 114. .Sound-On-Film Technique Recording for 16mm.
- 115. .Trend of the Times.
- 152. .Studio Camera with 270-Degree Shutter.
- 153. .Can We Have Lighter Lights?
- 154. .Use of Miniatures in Process Backgrounds.
- 155. .Photography of the Month.
- 156. .Home-Made Photo Album.
- 157. .Riddle Me This.
- 158. .Test-Laboratory in Loading-Room Saves Time.
- 159. .Ideal Lab for Miniature Photography.
- 200. .How We Made the Invisible Man.
- 202. .China Photographically Ideal.
- 203. .Riddle Me This.
- 204. .Just What Is "Montage"?
- 205. .Special Laboratory for Transparencies.
- 206. .Photography of the Month.
- 248. .Chemical Focus in Cinematography.
- 250. .Mounting Cameras for Aerial Cinematography.
- 252. .Riddle Me This.
- 253. .A New Deal for the Newsreel Cinematographer.
- 254. .Photography of the Month.
- 295. .Photographic Modernism and the Cinematographer.
- 298. .Using Supplementary Lenses.
- 299. .New Agfa Negative.
- 300. .Ingenious Cinematographic Short-Cuts.
- 301. .Riddle Me This.
- 302. .Photography of the Month.
- 303. .Gimbal-Mounted "Eyemo" Films Bicycle Races.
- 303. .New Set-Platforming System.
- 304. .Trend of the Times.
- 308. .Patent Department.
- 345. .Cinematic Rhythm in Film-Editing.
- 346. .Improvising Camera Tricks.
- 347. .Making Matte-Shots.
- 350. .Special-Effects and Montage for "Cleopatra."
- 351. .Photography of the Month.
- 358. .Patent Department.

TOPIC INDEX—PROFESSIONAL

- Aerial cinematography, mounting cameras for: 250.
- Aerial photography, Infra-D for: 14.
- Agfa negative, new: 299.
- Backgrounds, miniatures in process: 154.
- Blimp, new Warner: 303.
- Cameras, mounting: 251.
- Camera, silent: 106.
- Camera tricks, 346.
- Camera with 270-degree shutter: 152.
- Chemical focus: 248.
- China photographically ideal: 202.
- Color film, color control for: 11.
- Color, language of: 108.
- Colored sets: 157.
- Crane, new light: 10.
- Developing tests on location: 310, article.

- Dimmers, advantage of portable and compact: 203.
- Dubbing system, new: 304, item.
- Economies with process photography: 110.
- Editing: 345.
- Editorial: 9.
- Etching glass: 304, item.
- "Eyemo" gimbal-mounted: 303.
- Filter, combination: 214, item.
- Filter-diffuser increases optical efficiency: 70.
- Focus, chemical: 248.
- Gimbal-mounted "Eyemo": 303.
- Golf Tournament, A. S. C.: 8.
- Ground, Infra-D on the: 61.
- Home-made photo album: 156.
- Industrial movies: 62.
- Infra-D, chemical focus with: 249.
- Infra-D in the air: 14.
- Infra-D on the ground: 61.
- "Invisible Man," making the: 200.
- Lab for miniature photography: 159.
- Lab for transparencies: 205.
- Lens, telephoto reflex: 304, item.
- Lenses, supplementary: 298.
- Lights, lighter: 153.
- Loading-room, test lab in: 158.
- Matte shots, 347.
- Metal construction for set-platforming: 63.
- Miniatures, photographing: 60.
- Miniatures, ideal lab for: 159.
- Miniatures in process backgrounds: 154.
- Modernism, photographic: 296.
- "Montage": 204, 350.
- Motor-driven take-up magazines, advantage of: 301.
- Mount for process projector: 70, article.
- Negative, new Agfa: 299.
- Newsreel cinematographer, new deal for: 253.
- Optical efficiency with filter-diffuser: 70.
- Painter, part of the: 109.
- Panning shots, improving: 15.
- Photo album, home-made: 156.
- Process backgrounds, miniatures in: 154.
- Process photography, production economies with: 110.
- Process projector mount: 70, article.
- Progress of silent camera: 106.
- Progress in television: 11.
- Projecting and taking speed reduced to 20 or 18: 112.
- Reducing projecting and taking speed to 20 or 18: 112.
- Retouching, simple: 304.
- Sets, colored: 157.
- Set-platforming, metal: 63.
- Set-platforming, new system of: 303.
- Short-cuts, cinematographic: 300.
- Shutter, 270-degree: 152.
- Silent camera progressing: 106.
- Sound-on-film recording for 16mm: 114.
- Sound, getting good: 65.
- Sound single-film system: 252.
- Special effects: 350.
- Special process: 200.
- Supplementary lenses: 298.
- Take-up magazines, advantage of motor-driven: 30.
- Telephoto reflex lens: 304, item.
- Television, progress and possibilities: 13.
- Test laboratory in loading room: 158.
- Transparencies, special lab for: 205.
- Traveling shots, improving: 15.
- Utility in light crane: 10.
- "Viva Villa," upsetting tradition with: 64.

PAGE INDEX—AMATEUR

- 30. .Flying the "Rolleiflex."
- 31. .A New Outdoor 16mm Film.
- 32. .Continuity for Birthday Party.
- 33. .A Professional Looks at 8mm.
- 34. .Cinetricks Motion Control.
- 36. .Shooting Desert Patrol.
- 37. .Backyard Movies.
- 38. .Optical Printer "Whirls" Made with Any Camera.
- 40. .Wheels of Industry.
- 48. .Here's How.
- 50. .Classified Advertising.
- 80. .Poor Exposure Lost a Prize.
- 81. .The Professional Learns from the Eight.

- 82. .Miniature Photography at Night.
- 83. .A Continuity for Filming Father.
- 84. .Cinetricks—Reverse Film Travel.
- 86. .Kodacolor Gives Life to Travel Films.
- 87. .Wheels of Industry.
- 88. .Backyard Movies.
- 90. .Digging In" for Trick Angle-Shots.
- 99. .Classified Advertising.
- 126. .Here's How.
- 127. .Let's Play Getting Married.
- 128. .Cinetricks Explaining Double Exposures.
- 130. .Action of Supplementary Lenses.
- 132. .Filter Your Close-Ups.
- 133. .Shooting Sixty Thousand Caribou.
- 134. .At Home with Your Candid Camera.
- 135. .Backyard Movies.
- 142. .Classified Advertising.
- 172. .What's New in 16mm Negative-Positive.
- 173. .Continuity for Fishing Families.
- 174. .Cinetricks—Lens Manipulation and Filter Tricks.
- 176. .Using a Process Background in 16mm Pictures.
- 178. .Using Camera Speeds Efficiently.
- 179. .Backyard Movies.
- 180. .Wheels of Industry.
- 182. .Here's How.
- 190. .Classified Advertising.
- 220. .Cinetricks—Principles Underlying Film Tricks.
- 223. .Digging for Buried Treasure.
- 225. .Let's Try Animation.
- 224. .The Miniature Camera Goes to School.
- 226. .Survey of Foreign Cinephotography.
- 227. .Cameraing Through Yellowstone.
- 228. .Wheels of Industry.
- 230. .Backyard Movies.
- 238. .Classified Advertising.
- 268. .Let's Talk About Lenses.
- 270. .Continuity with Simple Camera-Tricks.
- 271. .Hints on Indoor Cinematography.
- 272. .Making Silent Movies Talk.
- 273. .Here's How.
- 274. .Control for Photofloods.
- 275. .Tricks and Gadgets.
- 276. .Trend of the Times.
- 278. .Wheels of Industry.
- 286. .Classified Advertising.
- 316. .Let's Talk About Lenses—Spherical Aberration, Reflections, Astigmatism.
- 318. .A Home-Made Trick Titrer.
- 322. .Filming the Family Physician.
- 323. .An Amateur Makes Undersea Movies.
- 324. .Practical Suggestions for Cinephotographers.
- 325. .Hints on Indoor Cinephotography.
- 325. .Wheels of Industry.
- 334. .Classified Advertising.
- 364. .Wipe-Off Splicer for 16mm Films.
- 364. .Fades and Dissolves.
- 365. .8mm Pictures Take Honors in 1934 Competition.
- 366. .Let's Talk About Lenses—The Anastigmat Lens.
- 368. .Special-Effect Lighting for the Amateur.
- 369. .Wheels of Industry.
- 370. .Home-Made Trick Titrer, Simple Editing.
- 375. .Trend of the Times.
- 382. .Classified Advertising.

TOPIC INDEX—AMATEUR

- Aberration, lenses: 316.
- Aerial photography: 30.
- Agfa Plenachrome 16mm film: 31.
- Agfa 16mm negative: 87, item.
- Aluminum film: 40, item.
- Amateur talkie camera: 50, item.
- "Amateur Talking Pictures and Recording," book review: 47, item.
- Animated cartoon books: 48, item.
- Animation: 223.

- Camera speeds: 178.
- Candid camera, at home: 134.
- Caribou, shooting 60,000: 133.
- "Cinematographer's Book of Tables," book review: 40, item.
- Cinetricks: 34, 84, 129, 174, 220.
- Close-ups, filtering: 132.
- Color-corrected lenses: 268.
- Color process, new 16mm: 228, item.
- Contest, 1934: 365.
- Continuities: 32, 37, 83, 88, 127, 135, 173, 179, 222, 230, 270, 322.
- Continuity: 36.
- "Dealer's Value Book," book review: 40, item.
- Diaphragm opening: 141, article.
- Dissolves and fades: 364.
- Distortion: 85.
- Double exposure: 129.
- Drum and tray system in reversal work: 273, article.
- Eight-mm camera: 33, 81.
- Enlargements from 16mm: 324.
- Enlarger: 87, item.
- Enlarger, miniature: 326, article.
- Exposure meter: 80, 180.
- Fades and dissolves: 364.
- Fading glass: 219.
- Film, color: 276, item.
- Filters: 40, item; 126, article; 132, 182, items; 273, article.
- Filtering close-ups: 133.
- Filter holder, Kodacolor: 87, item.
- Filter tricks: 174.
- Finder, making your own: 275.
- Focuser, super-critical: 333, article.
- Foreign cinephotography: 226.
- Hand test, explained: 273, article.
- Home-made dolly: 324.
- Home-made finder: 275.
- Home-made titler: 318.
- "How to Make Lantern Slides": 228, item.
- Indoor photography: 126, article.
- Indoor lighting: 271, 325.
- Kodacolor: 86.
- "Leica" darkroom manual, book review: 278, item.
- Leica, new model: 220, item.
- Leica, single exposure: 278, article.
- Lenses: 49, item; 131, 268, 273, article: 274, 316, 366.
- Lenses, color-corrected: 268.
- Lenses, fast: 276, article.
- Lens manipulation: 174.
- Libraries, sound: 40, 87, 185, items.
- Lights: 40, item.
- Lighting, indoor: 27, 268.
- Miniature camera, new: 228, item.
- Miniature camera, Rolleiflex: 30.
- Miniature enlarger: 326, article.
- Miniature photography at night: 82.
- Miniature camera goes to school: 224.
- Negative-positive, what's new in 16mm: 172.
- Night effects in daytime: 126, item.
- "Night Photography," book review: 40, item.
- Outdoor film: 31.
- Photo-electric meters: 48, item.
- Photoflood control: 274.
- "Photography for Fun," book review: 190, item.
- Principles of film tricks: 220.
- Process background in 16mm: 176.
- Projector, new Eastman: 326, item.
- Projector, 8mm: 180, item.
- Projector, new 16mm: 180, item.
- Projector, miniature: 278, article.
- Projector, 1000-watt 16mm: 326, article.
- Projector, Victor: 228, item.
- "Projection Control," book review: 190, item.
- Reflectors: 48, item.
- Reversing film: 48, item.
- Screens: 38, item.
- Sound camera, 16mm: 180, item.
- Speed control of 16mm cameras: 34.
- Speeds, camera: 178.
- Splicer, 8mm and 16mm sound film: 326, item; 364.
- Supplementary lenses: 131.
- "Ten Contax Lenses," book review: 40, item.
- Third dimension: 276, article.
- Tinting and toning: 273, article.
- Titrer, home-made: 319, 370.
- Tricks: 38, 90.
- Travel films: 86; 142, article; 227.
- Undersea movies: 323.
- Underwater shots on land: 97, article.
- Wind-machine, silent: 180, item.
- Wipe-off splicer, 364.



Harry Perry,
A. S. C.

Cinematic Rhythm in Film-Editing

by
Harry Perry A. S. C.

MONTAGE, as Karl Freund, A.S.C., recently wrote, is simply the familiar technique of film craftsmanship refined to the utmost. Its development is due to two paramount factors: first, the economic limitations under which the earlier Russian film-makers worked; and secondly, the fact that the Russians, with true Slavic introspectiveness, analyzed every phase of film technique with the aim of reducing it to its simplest and most expressive form.

Essentially, Montage means "cutting" or "editing." Here in America, we are thoroughly aware of the importance of this phase of production, even though few of us have had the time to subject it to such detailed analysis. All of us have seen films made and unmade by good or bad cutting, and some of us have at least speculated on the basic principles involved in the process. We know, for example, that a succession of long scenes joined together will give us a slow-paced sequence, while a succession of shorter shots—even of the same action—will result in a noticeably faster tempo. We know that sequences,

and entire productions, for that matter, can be joined together in a fashion which produces a definite, filmic rhythm and makes the picture more enjoyable.

This filmic rhythm should not be confused with the often exaggeratedly rhythmic action and direction used in fantasy, musical and dance sequences; it is, instead, the natural flow from scene to scene, from idea to idea, produced by intelligent editing. It is essentially the relationship between the **content** of the individual scenes joined together to form a sequence.

Reducing the matter to terms of common practice, filmic rhythm is most clearly noticeable in cross-cutting, that is, the alternate insertion of different (though dramatically related) scenes one after another. Let us, for example, consider how this rhythm may be brought out in assembling a short sequence based on the following simple scenes:

1. A running shot of a racing car, made from a camera-car running ahead of it.
2. A running shot of an ordinary family sedan, made the same way.
3. A running shot of a man, riding a bicycle.
4. A similar shot of a man, walking.
5. A similar dolly-shot of a baby crawling toward the lens.
6. An insert of a snail moving toward the camera.

As a preliminary experiment, try cutting 15 feet of the snail, 15 feet of the racing-car, 15 feet of the snail, 15 feet of the racer, and so on. Although the footage of these scenes is identical, on the screen the racing-car shots will appear much the shorter. Because the content is much more dynamic, these shots will appear about half the length of the more static snail-shots.

Now take your original six scenes and assemble them as follows:

- 15 feet snail.
- 15 feet baby.
- 15 feet man walking.
- 15 feet bicyclist.
- 15 feet family sedan.
- 15 feet racing-car.

Each of these scenes is the same length, 15 feet; each is on the screen for the same amount of time, 10 seconds. But the filmic time-relation of the increasingly dynamic subjects will make the shots seem to get shorter and shorter, building up to a definite cinematic climax.

Now, suppose you want to build to an even more marked climax; arrange the scenes like this:

- 15 feet snail.
- 12 feet baby.
- 9 feet man walking.
- 6 feet bicyclist.
- 3 feet family sedan.
- 1½ feet racing-car.

The result will be a bewildering crescendo of speed. This is because you are applying filmic rhythm to the editorial treatment: deliberately shortening the screen-time of the shots in proportion as the content grows more dynamic. For the same reason, if you reverse the order of these scenes, you will get a quick but effective deceleration of tempo.

Improvising Camera Tricks

THERE is no such word as "can't" in the vocabulary of the cinematographer. It is his business to do the impossible—and he does, regardless of circumstances. Whether it is evolving a piece of equipment suddenly needed on a location, or improvising a difficult and unexpected trick shot, he always manages to deliver. Especially is this true of the men who photograph "quickies" and comedies, for in order to overcome the handicaps of short schedules and shorter budgets, they must improvise constantly.

One of Brown's less spectacular improvisations is the manner in which he mounts his filters. The reconstruction of his camera (which is, incidentally, said to be the only sound-camera in Hollywood which has never worked inside a "blimp") precluded the normal use of gelatin filters in the aperture; and Brown does not care for glass-mounted filters. Therefore, he secured a number of small brass tubes, about an inch and a half long, and exactly the right size to fit snugly in the front of his lens-mounts. Into these he fits his gelatin filters, holding them in place with a small retaining-spring; the tube slips directly into the lens-mount, where it is held tightly by spring-sections cut in the brass sides—and, at very little cost, he has one of the simplest and most accessible filter-mounts in Hollywood!

To secure the proper flare from street lamps in night-effect shots, Dwight W. Warren, A.S.C., puts a thin coating of ordinary vaseline on an optical flat in his matte-box; carefully-made finger-marks in the vaseline give each lamp its appropriate halo.

Comedy action often requires the use of "wire gogs," in which people or objects are moved about by invisible wires. Sometimes these wires are actually invisible—but at other times, despite every precaution, they may show in the picture. When this happens, Cinematographer Warren simply takes the negative and retouches the wire out of each frame with retouching pencil and varnish, exactly as a portraitist retouches wrinkles away from an aging dowager!

In much the same fashion, Cinematographer William C. Thompson, A.S.C., has produced lightning flashes without the difficulty of using any of the customary lightning-producers on the set. To begin with, he films the scene in a low key; then he paints his lightning on the developed negative, blacking out several frames at a time with transparent, orange water-color. The effect on the screen, of course, is a bright flash in which the set is much lighter—exactly the effect we see when a room is suddenly illuminated by a flash of lightning somewhere outside.

Thompson's improvisation recently helped out an independent producer who was short of actors. The script called for a jury in an important court-room scene: but the budget wouldn't permit hiring a full dozen extras. So Thompson improvised: one actor was called, and photographed twelve different times upon the same film, in twelve different costumes and characters—and thanks to this difficult multiple-exposure, the producer had twelve jurors for the price of one!

In these days of projected-background "trick" shots, dual roles are relatively easy; but before SuperSensitive film and fast lenses made this process possible, dual roles were exceedingly difficult, as they had to be made directly in the camera, by successive exposures through complementary

masks, and timed by counts. In the many films that Jerome Ash, A.S.C., made with Frank Ford as director and star, the cinematographer was forced to do many shots that would be considered difficult even now. One of them, which he remembers particularly, was a triple-exposure, in which Ford played three roles: first indulging in a fight between two of his characters, and later, in his third part, picking up his vanquished self and carrying him out of the picture! When the shot was first outlined, the producer, Louis Berson, was positive that even Ash wasn't enough of a magician to film it—and wagered a suit of clothes on his belief. But Ash again did the impossible: not only did the triple exposure work out to perfection, but when Ford came in and picked himself up, his face was recognizable simultaneously on both characters! The secret—only now disclosed—was that in this scene, as in several others in which one character "crossed" the other, a double was used, wearing a thin gelatin "death-mask" of Ford's face, made up to the proper character.

In an early "Tarzan" picture, Ash's camera-magic provided a thrilling battle between the hero and two lions—despite the fact that the hero, who was rather timid, did not even see the lions, nor, for that matter, were there actually two of the beasts! According to the script, the film "Tarzan" was in a gully, between two cliffs, and standing on a rock by a pool. A lion appeared on each cliff: one leaped down on the man, bearing him to earth, and then the other joined the melee. Actually, there was but one lion, and one cliff! The foreground, including the "rock," was painted white, and the scene was filmed thrice. First the man went through his action, falling at the proper moment. Then one cliff was put in place, and the lion leaped down from it to the rock. The cliff and the lion were then put at the opposite side of the set, and the action repeated. Finally, the three negatives were matched together and printed onto a single strip of positive: so well had Cinematographer Ash calculated his shot that the lion appeared to land directly on the actor's shoulders and bear him to the ground, while the second lion leaped into the fray with equal accuracy!

Cinematographer Thompson tells of making trick fades and wipes—ordinarily delegated to the Optical Printer experts—directly in the camera by using a "comb" of black card-board or tin moved in front of the lens, and timed, of course, by counts. In fact, to this day he carries a razor-blade, several pieces of black title-card, and some black paint as part of his regular equipment, so that he can improvise such optical-printer effects at any time. Another thing which he carries against the need of improvisations is a magazine "reverse-loaded," with the emulsion-side away from the lens: this enables him to film difficult scenes in reverse, with the camera upside-down or run backward, as the case may be. Many of the chariot-race shots for "Roman Scandals" were made with

(Continued on Page 354)

by
William Stull, A. S. C.

Making Matte-Shots

by
Arthur J. Campbell, A. S. C.



IT WOULD be a gross overstatement to say that modern motion pictures could not be made without "matte-shots"—but it is a fact that without this type of special-effects cinematography, production would be seriously hampered. Pictures would cost more, would have more physical limitations, and be much less convincing to the eye.

For the following information, the writer is greatly indebted to M. L. Larrinaga, of the special-effects staff of the RKO Studios, and one of Hollywood's foremost matte artists.

Probably the most common form of matte-shot is the addition of ceilings on interior sets, or the transformation of backgrounds in exterior scenes. However, these shots are sometimes used to add or remove minor details in almost any part of the scenes, to change or to complete the foreground of a set, to add distance or perspective to miniature-shots, or even to serve as a complete background for use as a plate for projection-composite shots.

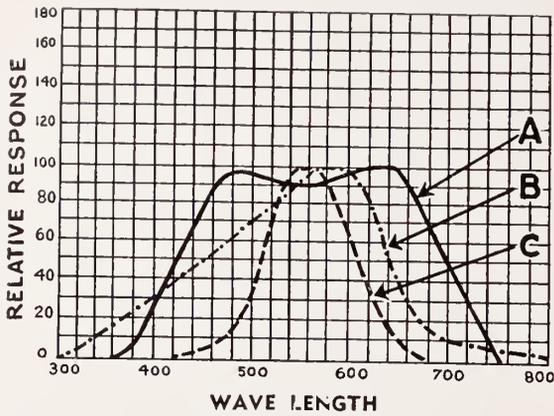
Generally speaking, the matte-shot of today is an outgrowth of the "glass-shot" of a few years ago. Such shots, it will be remembered, were made by placing a large glass, upon which had been painted the desired scene, in front of the camera. Through the clear, unpainted portions of the glass, the camera took in the normal action on the set or location, while the painted image upon the glass was carefully blended into the actual portions of the scene.

This method, while effective, had definite limitations: it frequently slowed up the work of the company on the set, and required great care in the positioning of the camera and glass, and was naturally a considerable restriction upon the director and the cinematographer.

The making of a matte-shot, on the other hand, does not interfere with production to any such degree, and allows director and cinematographer much greater freedom in their choice of set-ups. As a general rule, the Head of the Special-Effects Department has studied the script of the production thoroughly, and made careful note of the scenes likely to require or benefit by the use of matte-shots. Then preliminary sketches are made in collaboration with the production's art-director, so that the settings and the matte-shots may be properly coordinated.

When the film is in production, the scene itself is made on the appropriate set or location: in most respects, the director and cinematographer work in the normal manner in making such scenes. The camera carries a glass matte in its matte-box, and upon this glass the desired area is carefully blocked out with a quick-drying opaque paint, and the scene is made in the normal manner. The only restriction is of course that the actors must move only within the un-matted or visible space.

(Continued on Page 355)



A—Average supersensitive film. B—Photocell Response. C—Visibility curve.

Using the Photoelectric Exposure-Meter

by
William H. Daniels, A.S.C.
and A. L. Lane, A.S.C.

THE SAME rule applies to exposure-meters as to any other of the cinematographer's tools: it is valuable to him only to the extent of his ability to use that tool intelligently. Its uses must be understood, and its possible abuses known, as thoroughly as those of lenses, emulsions, or anything else with which he may work. Especially should the limitations of such an adjunct be thoroughly realized, that the fullest practical advantage may be taken of its proper use.

This discussion of the professional use of the photoelectric exposure-meter is by no means intended as an exhaustive scientific treatise on the subject, but purely as an informal record of some of the experiences of the authors in using the device on actual production, and preliminary tests of the meter's application to certain photographic problems in connection with a production now preparing. While the data herein contained is accurate, it is not as complete as we could wish; and the authors hope in the future to present a more comprehensive discussion of the matter.

The type of photo-cell exposure-meter most commonly used in professional cinematography is the "Weston" Photo-cell meter, which consists of a small case housing a direct-action, dry-disk type photocell in which the light energy is transformed directly into electrical energy, connected directly to an electrical measuring instrument calibrated to read in foot-candles (brightness). On the reverse of the case, immediately below the dial, is a simple calculator for translating the measured brightness into terms of the proper diaphragm openings and shutter-speeds for the proper exposure, and adjustable to compensate for any emulsion-speed.

Through a close study of the possible errors and their avoidance while taking exposure readings, and using the findings in conjunction with the preconceived photographic treatment of the sequence in work, we have proven to our satisfaction the unique artistic and technical value of the exposure-meter to the cinematographer.

An important factor, which must always be considered, is the area covered in taking the meter's reading. The device has been designed to cover approximately the area included by normal cine lenses: but care must be taken to insure that, for example, the meter is not inadvertently tilted slightly upward, thus including more of the sky-area than will be actually photographed, or tilted downward to include more of the darker foreground than the camera will see; in the first instance, this error would make the meter give a reading considerably less than the correct exposure for the actual scene, resulting in more or less underexposure; the latter error would naturally be equally on the side of overexposure. In practice, we have found it advisable to hold the meter slightly in front of the camera, and on the optical axis of the camera's lens, meanwhile shading the meter with one hand. In this connection, it may be mentioned that a small, demountable sunshade would in many instances be of much practical benefit.

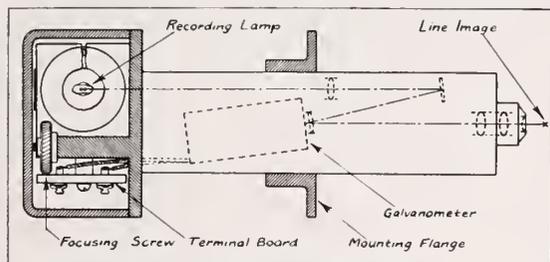
Inevitably, the meter can give only an overall or average reading indicating the approximately correct exposure for the scene as a whole: it cannot ordinarily indicate that there exists any excess or lack of illumination in any part of the field. Such errors of reading exposure may be eliminated by a careful check with the meter of the greatest extremes of exposure within the camera's field of view for that particular shot. Then, by narrowing down the scope and direction of the meter to the most important area in the shot, a true exposure reading for this key area will be obtained. In this connection, the supplementary guides provided on the calculator-dial of the meter can be helpful. On this dial appear, to the extreme right and left of the indicator, pointers indicating the extremes of over and under exposure possible within the average limits of film latitude, as derived from typical H. & H. curves. If the supplementary readings of the greatest extremes of exposure just referred to fall within these indicated limits, the extremes of exposure upon the film should likewise be within permissible limits. For professional use, of course, these secondary areas of extremes of light and shade are then balanced to the key area, filling in the deeper shadows with booster lights or reflectors, and toning down the objectionable hot spots with diffusers, shadows, paint, etc., as the occasion dictates. (In normal practice, it is often quite safe, and decidedly quicker, to arrange this lighting balance first, and thereafter take the meter-reading.) Through such a procedure an artistically and technically correct exposure is assured consistently for the sequence, and the entire picture, with a high average of quality in the release-prints resulting from the normal, even-density negative.

It is possible to use the meter in the same way in filming interior scenes, but in most instances it seems hardly advisable, since professional interior cinematography works from a fairly fixed standard of illumination, and the most vital factor is the balance of the lighting, which is a purely individual proposition, and none too well suited to mechanical determination.

As regards the use of a photocell meter with filter work, it is possible within certain limits to secure a direct reading by placing the desired filter directly over the meter's



Side view of unit with lamphouse cover removed.



Schematic top view of Berndt-Maurer high-fidelity variable area (galvanometer) recording unit.

for variable area recording without in any way disturbing or rebuilding any of the present equipment now used for this type of recording.

Maurer is recognized for his special interest in the variable area type of sound track and for his statements relative to the exposure and processing of this type of recording. It is also claimed he is responsible for the introduction of accurate methods for focusing the slit image and adjusting it so as to eliminate distortion due to azimuth.

We quote Berndt's statement relative to this new galvanometer:

"The matter of frequency characteristic has been given careful consideration. For use with positive film in studio double-system work the resonance peak of the galvanometer is located on 10,000 cycles. The height of the peak is well suited for furnishing the correction needed to offset the slit and film losses at this frequency. For use in single-system cameras with negative stock the peak is located at 8,000 cycles, which is believed to be the most favorable point for this class of work. In either case the response curve below the peak is flat, there being no minor irregularities and no low frequency cut off.

"The unit is regularly supplied with a galvanometer of 15 ohms impedance, but can be equipped to work on any standard line impedance up to 500 ohms. The change of impedance is not accomplished by the insertion of a transformer, but by change of the windings of the galvanometer itself. For this reason the frequency characteristic is the same for all impedances. The power required is approximately 0.25 watt for full scale deflection.

"The optical system is a high light-transmitting efficiency. The elements are supplied by Bausch & Lomb. They are mounted in permanent adjustment in a sealed tube which excludes dust, so that the only lens surface which it is necessary to clean at any time is the front surface of the objective which focuses the image on the film. The clearance between this lens and the film is approximately 5/16 inch, which makes it readily accessible. The line of light on the film is 1/2 thousandth by 70 thousandths of an inch. A micrometer screw actuated by a knurled head conveniently located at the back of the lamp house provides for bringing the line image to an exact focus on the film. This is a matter of the greatest importance where frequencies of the order of 10,000 cycles are to be recorded. The adjustment of focus can be locked rigidly without shift when it has been accomplished satisfactorily.

"The lamp used to furnish the recording light is designed for use with a 6-volt storage battery. Because of the high efficiency of the optical system it is burned for below the rated current, which gives it an exceptionally long life. Replacement is a very simple matter, the lamp house being provided with a sight by which the filament may be readily located in the correct position when inserting the lamp in its socket. Once the lamp is locked in position it cannot be jarred out of place. One spare recording lamp is furnished with the unit, but in case of emergency a standard automobile headlight type of bulb can be used."

It is claimed by the makers of this unit that this accessory will prove of exceptional interest because the area type of track is now said to be open to general use, since the basic Fritts patent on this type of recording expired in 1933.

Recording Unit Replaces Glow Lamp

by
Karl Hale

WHILE the use of a galvanometer is not new in recording sound, still the replacement of a glow-tube with a galvanometer without rebuilding the housing or in any way altering the receptacle that takes the glow-tube, but replacing it with a galvanometer is interesting to the sound industry.

Seemingly galvanometers built up to this time have been of such size that it was found necessary to enlarge the housing to take this accessory, especially if the glow-tube system was used.

Eric M. Berndt, who has specialized in 16mm equipment built to order and who recently launched into sound on 16mm accessories, recently announced a galvanometer for recording sound on 16mm. This galvanometer found a market, according to Berndt, with the 35mm users. Because of this request he and J. A. Maurer set to work to perfect a galvanometer that would replace the glow-tube



A Special-Effects battle. There are actually but two boats in this shot, which was produced by split-screen and reflection.

Special-Effects and Montage for "Cleopatra"

by
Gordon Jennings

Head of Special-Effects Dept., Paramount Productions

C ECIL B. de Mille's latest production, "Cleopatra," furnishes a vivid example of the unusual scope and versatility demanded of the modern special-effects worker. In the production of this picture, the Paramount Special-Effects staff, in addition to providing all of the necessary fades, dissolves, wipes and other transitions, and executing a number of important miniature-shots, designed, constructed and supervised a great number of "set-miniatures" and "hanging miniatures" completing several of the impressive settings, collaborated with the studio's Transparency staff in making many of the projected-background scenes, and conceived, photographed and assembled the entire Montage-sequence depicting the Battle of Actium, which is one of the dramatic high-lights of the film. When it is remembered that this diversified work was accomplished simultaneously with the production of similar special-effects scenes for several other films in production at the same time, it can clearly be seen that this could not be a one-man achievement, but was necessarily the result of perfect team-work on the part of a large and efficient staff.

The transitions, naturally, were assigned to Paul Lerpee, who is in charge of all Optical Printing. They were purely routine, and constituted only a small part of his contribution to the production.

The most important of the miniature-shots were two which showed "Cleopatra's" barge entering and leaving port. Actually, this might be considered as a miniature only in relativity: the studio's largest tank—an area the size of a large stage—was required for the scene, while the barge itself was actually larger than an ordinary row-boat! This barge was painstakingly constructed from historical records of the ancient queen's actual barge: built to the scale of 100 feet to the foot, it was over twelve

feet long, and weighed several tons. The actual barge was propelled by 300 oars arranged in five banks, 150 to the side; this was not practical for our purposes, so the miniature was propelled by ropes attached below the water-line, and pulled by stagehands outside of the picture area. None the less, the oars must function, and this was achieved by an intricate mechanical linkage powered by an electric motor: the oars rose, fell, made their stroke and "feathered" in a perfectly realistic fashion, and could be operated at varying speeds, in order to accommodate varying camera-speeds in filming the shot. For the night-effect scenes, the interior of the barge was illuminated by electric lamps, and the bow-wave, the wake of the ship and the spray from the oars was created by carefully-directed jets of compressed air fed from tubes under the water. Two of these tubes, fitted with many fine upward-pointing nozzles, extended along the sides of the barge, just below the lowest position of the oars, while others were placed at bow and stern. The necessary compressed air for this, together with electricity to supply the motor and the lights, were supplied by submerged cables and hose trailed from the stern. During the making of the shot, two men rode within the barge, to manipulate the motor, light and air controls; yet in spite of this it was necessary to ballast the ship with over a ton of lead in order to sink it to the proper level!

At the far end of the tank, a painted backing was built, to represent the farther side of the harbor; this was painted in monochrome, and high-lighted to give a forced perspective and modelling. In the immediate foreground of the shot, a small "front-miniature" set was built, representing docks. This, too, was in monochrome, and with painted high-lights and modelling. The barge was towed diagonally across the picture, about twenty feet from the camera. The scene was lit by artificial light entirely, lighting the background relatively flat, while the barge was lit with much greater contrast. The scene was filmed at almost eight times normal speed, with the result that the movement of the barge was slowed down to exactly the correct speed for so massive a ship, and a perfect illusion of actuality was conveyed.

The Montage sequence of the battle was virtually a production on a reduced scale. A representation of the battle was of vital dramatic necessity to the story, yet in spite of the fact that the production was a "special," it

(Continued on Page 354)



PHOTOGRAPHY

of the MONTH

"BROADWAY BILL" (Columbia)

Joseph Walker, A.S.C.: Directing Cinematographer
Hollywood Reporter (October 25, 1934): "Photography of Joseph Walker is excellent, particularly in the action sequences."
Daily Variety (October 25, 1934): "Photography is up to the picture's general excellence."
Film Daily (November 9, 1934): Photography "A-1."

"EVELYN PRENTICE" (M-G-M)

Charles G. Clarke, A.S.C.: Directing Cinematographer
Daily Variety (October 27, 1934): "Photography and production were both in keeping with the general excellence of the picture."
Hollywood Reporter (October 27, 1934): "Clarke's photography is mostly to the good."
Motion Picture Daily (October 29, 1934): "The photography is okay."
Film Daily (November 10, 1934): Photography "Good."

"LIMEHOUSE BLUES" (Paramount)

Harry Fischbeck, A.S.C.: Directing Cinematographer
Hollywood Reporter (October 30, 1934): "Fischbeck Camera Work Highlight." "—and exquisitely photographed." "—but it is the photography of Harry Fischbeck that is the real star of the picture."
Daily Variety (October 30, 1934): "Photography is okay."
Motion Picture Daily (October 31, 1934): "Harry Fischbeck's photography is fine."

"COLLEGE RHYTHM" (Paramount)

Lea Taver, A.S.C., Ted Tetzlaff, A.S.C.: Directing Cinematographers
Hollywood Reporter (October 31, 1934): "Taver and Tetzlaff give the picture all the best of good photography."
Daily Variety (October 31, 1934): "Photography very good."
Film Daily (November 1, 1934): Photography "Fine."

"FLIRTATION WALK" (Warner Bros.)

Sal Palito, A.S.C., George Barnes, A.S.C.: Directing Cinematographers
Hollywood Reporter (November 1, 1934): "—and the photography, by Sal Palito and George Barnes, is way above average."
Daily Variety (November 1, 1934): "Photography excellent."
Film Daily (November 2, 1934): Photography "A-1."
Motion Picture Daily (November 3, 1934): "The photography by Sal Palito and George Barnes is topnotch."

"CHEATING CHEATERS" (Universal)

Narbert Bradine, A.S.C.: Directing Cinematographer
Hollywood Reporter (November 2, 1934): "However, Narbert Bradine gives the production lovely photography—

if that could only tell a story well, Universal wouldn't have a 'cheater' on its hands."

"THE PAINTED VEIL" (M-G-M)

William Daniels, A.S.C.: Directing Cinematographer
Hollywood Reporter (November 3, 1934): "Photography again can claim a major share of applause. William Daniels has done a beautiful job."
Motion Picture Daily (November 5, 1934): "It is all photographed with such artistry by William Daniels—"
"—exquisite photography—" "—and excellent camera work."

"REPEAL" (M-G-M)

Ray June, A.S.C.: Directing Cinematographer
Hollywood Reporter (November 3, 1934): "Photography is consistently good."
Daily Variety (November 3, 1934): "Photography is excellent—"

"IMITATION OF LIFE" (Universal)

Merritt Gerstad, A.S.C.: Directing Cinematographer
Daily Variety (November 3, 1934): "Photography by Merritt Gerstad is all four aces."

"FUGITIVE LADY" (Columbia)

Al Seigler, A.S.C.: Directing Cinematographer
Daily Variety (November 3, 1934): "Photography satisfactory."

"HELL IN THE HEAVENS" (Fox)

Bert Glennan, A.S.C.: Directing Cinematographer
Motion Picture Daily (October 27, 1934): "The photography by Bert Glennan is extraordinary."

"ROMANCE IN MANHATTAN" (RKO)

Nick Musuraca, A.S.C.: Directing Cinematographer
Hollywood Reporter (November 5, 1934): "Photography, by Nick Musuraca, way above the usual."

"I AM A THIEF" (Warner Bros.)

Sid Hickox, A.S.C.: Directing Cinematographer
Daily Variety (November 6, 1934): "—and good camera work by Sid Hickox."
Hollywood Reporter (November 6, 1934): "Again, as a particularly laudable feature of a picture, we recommend the expert photography by Sid Hickox. Photographers these days, by virtue of their really excellent work, are fast proving who the consistent experts are that contribute so much to the success of pictures."

"BABBITT" (Warner Bros.)

Arthur Tadd, A.S.C.: Directing Cinematographer
Hollywood Reporter (November 7, 1934): "—and Arthur Tadd's photography is interesting."
Daily Variety (November 7, 1934): "Piece is beautifully photographed—"

(Continued on Page 352)

PHOTOGRAPHY OF THE MONTH

(Continued from Page 351)

"THE SILVER STREAK" (Radio)

J. R. Hunt, A.S.C.: Directing Cinematographer**Vernon Walker, A.S.C.:** Photographic Effects

Hollywood Reporter (November 8, 1934): "Roy Hunt's camera work deserves praise."

Daily Variety (November 8, 1934): "Camera work by J. Roy Hunt and Vernon Walker is strikingly outstanding and spectacular."

Motion Picture Daily (November 12, 1934): "Photography by J. Roy Hunt and photographic effects by Vernon Walker rate high."

"IT'S A GIFT" (Paramount)

Henry Sharp, A.S.C.: Directing Cinematographer

Hollywood Reporter (November 8, 1934): "—and Henry Sharp photographed in first-class fashion."

Daily Variety (November 8, 1934): "Photography okay."

"MARIE GALANTE" (Fox)

John Seitz, A.S.C.: Directing Cinematographer

Daily Variety (November 9, 1934): "John Seitz's photography okay."

Motion Picture Daily (November 10, 1934): "The photography of John Seitz is A-1."

"HOME ON THE RANGE" (Paramount)

William Mellor, A.S.C.: Directing Cinematographer

Daily Variety (November 9, 1934): "William Mellor has photographed very well."

Hollywood Reporter (November 9, 1934): "Probably the single redeeming feature of the piece is some poetical photography—"

Motion Picture Daily (November 10, 1934): "William Mellor did a good job on the photography."

"BABES IN TOYLAND" (Hal Roach)

Francis Corby, A.S.C., Art Lloyd, A.S.C.: Directing Cinematographers

Hollywood Reporter (November 10, 1934): "Corby and Lloyd in their photography do both swell and poor work."

Daily Variety (November 10, 1934): "Photography is very good."

Motion Picture Daily (November 12, 1934): "The photography of Francis Corby and Art Lloyd is fair."

Film Daily (November 12, 1934): Photography "A-1."

"THE PRESIDENT VANISHES" (Wanger-Paramount)

Borney McGill, A.S.C.: Directing Cinematographer

Hollywood Reporter (November 12, 1934): "Deserving, too, is the excellent camera work of Barney McGill, with the most intelligent use of stock shots this reviewer has ever seen."

Daily Variety (November 12, 1934): "Camera work is top-notch."

"SEQUOIA" (M-G-M)

Chet Lyons, A.S.C.: Directing Cinematographer

Motion Picture Daily (November 10, 1934): "Chester Lyons' photography is also a feature the patrons will talk about."

"MAYBE IT'S LOVE" (Warners)

Arthur Edeson, A.S.C.: Directing Cinematographer

CINEMATIC RHYTHM IN FILM-EDITING

(Continued from Page 345)

Increasing the diversity of angles on each of these actions will further increase the tempo of your sequence; but this will require greater care in the assembly, because each angle—each type of camera treatment—will naturally have its inherent, individual rhythm, which must be carefully coordinated with those of the other scenes, and of the sequence itself. Going back to our hypothetical subjects—the snail, the baby, the pedestrian, the bicyclist, the family car and the racer—let's see how diversified angles combined with rhythmic cutting can build a sequence. We would still begin with 15 feet of the insert of the snail; following this with 15 feet of the baby crawling. Next, 12 feet of the man walking toward a stationary camera, followed by 12 feet of the bicyclist pedalling diagonally toward a fixed camera. Now add 10 feet of the family sedan jolting along a rough road, coming toward a stationary camera from the same angle, followed by 8 feet of an extreme long-shot of the racer dashing across a broad expanse of open country, still approaching diagonally. Follow this with a big-figure "follow-shot" of the man—7 feet—and a similar shot of the cyclist; then 5 feet of a follow-shot of the family car crossing the screen, followed by 4 feet of an Akeley-shot of the racer. Next, about 2 feet of the original "dolly-shot" of the walking man; 1 foot of the running-shot of the cyclist; a dozen frames of the running-shot of the family car, and finish with eight frames of the racer. The idea could even be extended by climaxing with quick "flashes," a few frames long, showing the man's feet (or face, if he is dramatically important), the cyclist's pedalling feet, the spinning

Hollywood Reporter (November 15, 1934): "Edeson's photography is just fair."

Daily Variety (November 15, 1934): "Photography is first class . . ."

"FLIRTING WITH DANGER" (Monogram)

Archie Stout, A.S.C.: Directing Cinematographer

Daily Variety (November 15, 1934): "Archie Stout gets in some nice shots."

"ONE HOUR LATE" (Paramount)

Benjamin Reynolds, A.S.C.: Directing Cinematographer

Hollywood Reporter (November 20, 1934): "—and the photography is all to the good."

Daily Variety (November 20, 1934): "Camera has been well handled by Benjamin Reynolds."

wheels of the racer, and so on, progressively shortening the flashes until the final shot might comprise but three or four frames of film. For the best effect, this cycle of "flashes" should probably be repeated several times, and the angles carefully diversified.

In this last treatment, the rhythm builds more slowly, as more footage is used: but it builds even more steadily, and to a greater climax. This is due to two principal reasons: first of all, the angles used are in themselves progressively more and more dynamic, and convey an increasing sense of speed; and secondly, the rhythmic editorial treatment progressively reduces the screen time of each scene as the action and camera-treatment grow more dynamic and arresting.

Rhythmic cutting is applicable to any type of production, and to all types of scenes. It can be used to maintain an even tempo in a sequence whose component scenes may be of differing individual rhythms; or to retard or accelerate the tempo of a sequence. But one thing need be kept in mind: namely, that there should be a definite relationship between the footage allotted to any scene, the "time relation" of the action portrayed in the scene, and the rhythm desired in the completed sequence. Just as we are accustomed to use long scenes and few cuts to maintain a placid rhythm, and short scenes with a number of cuts to build to or maintain a quick tempo, so, too, we should remember that by proportioning the footage to the visual forcefulness of the action and camera-angles, we can build sequences and productions with dramatically useful cinematic rhythm.

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SPECIAL-EFFECTS AND MONTAGE FOR "CLEOPATRA"

(Continued from Page 350)

was immediately seen that the sequence absolutely could not be made by normal methods. To adequately film this battle, which included both land and sea fighting, by the methods in vogue up to a few years ago, could not have cost less than \$1,000,000, a figure obviously out of the question. Accordingly, as is so often the case, the final script of "Cleopatra" came through with this important sequence covered by the simple notation, "Montage, for Special-Effects Dept."

Our first step was to prepare a rough continuity of our treatment of the sequence. This was partly written, and partly drawn: it consisted essentially of a description of the results we planned, accompanied by a number of sketches, prepared by the Department's art-director, illustrating the principal scenes. We then conferred with Mr. de Mille upon this, and secured his approval, and that of the production authorities upon it, and upon our tentative budget for the job.

The next step, of course, was to prepare and photograph the various component shots required. The miniatures of the sea-fight, like those of the royal barge, were built by Art Smith, and photographed by J. D. Jennings, A.S.C. It is interesting to note that although on the screen a fleet of 35 or more galleys appears to be engaged, in reality but two miniature galleys were used. One of these was the royal barge, rebuilt as a war-galley; the other one was a completely new ship, though lacking many of the refinements of the other. They were multiplied into a fleet by the old, familiar trick of parallel mirrors, and these were again multiplied into the two opposing fleets by split-screen double-exposures. The closer shots of the battle were made using these two miniatures, with often a number of less finished miniatures and cut-outs in the background, and in some instances several of these shots were combined by Optical Printing. As the warfare of the period made extensive use of fire-balls thrown by catapults, the ships were entirely fireproofed by application of special chemicals and the use of asbestos fabrics. In consequence, we were able to burn the ships daily for several weeks! The catapults, etc., were likewise in miniature; and several of these shots were used as backgrounds for composite shots—both Optically Printed and Transparency—*in which living actors were placed in the foreground with the miniature battle raging in the rear.*

The land battle was filmed by more or less conventional methods, using small groups of actors. Some of these scenes were intercut with, or superim-

posed upon stock-shots of chariots and horsemen made fourteen years ago for Mr. de Mille's "Ten Commandments"! The spectacular shot of the wounded soldier apparently being impaled by the spiked wheel of the car of Juggernaut, was of course made (like a magician's trick) "with mirrors." The scenes of "Antony" fighting around the tree were made separately by Mr. de Mille, and incorporated into our sequence.

The important task of assembling these many scenes into a coherent whole was in charge of Paul Lerpee, to whom great credit is manifestly due. He began the sequence, you may recall, by shots of Egyptian and Roman trumpeters, on high walls, summoning the troops. The former, incidentally, was taken from an earlier production, "The Wanderer," which, oddly enough, was the work of Victor Milner, A.S.C., who photographed "Cleopatra"; the latter shot was from "The Sign of the Cross."

There then followed scenes of the two armies marching forth to battle: and instead of separating these shots by the usual type of transition, Lerpee very wisely selected scenes in which the camera had been panned, and blended the pans in an Optical Printer. This naturally kept the tempo much faster than could be done with ordinary transitional methods. Several of the scenes immediately preceding the actual battle—including those showing the principals leading their armies in chariots, and the chariot-charge against the Roman legions—utilized the fourteen-year-old "stock-shots" with the current action superimposed, sometimes by Transparency process-shots, and sometimes by simple Optical Printing. It is interesting to note that the film had been so well preserved, and so carefully restored, that there was not the slightest trouble in registration with these shots.

Some few of the shots showing the marching armies were Optically Printed at distorted angles, to heighten the effect. The sequence made by Mr. de Mille, showing Antony's fight by the tree, was greatly shortened by Lerpee, and incorporated bodily in the sequence.

The transition to the sea-fight was effected by an Optical transition superimposing the wake of a ship upon the scene of the shore melee, and quickly blending with the introductory shots of the sea-battle. But aside from these few simple Optical Transitions, no superimpositions, or conventional transitions were employed except at the very end of the sequence, when a close-up of "Cleopatra" was superimposed upon the final shots of the rout of the Egyptians. At several points, the fire-balls thrown by the catapults, photographed coming

directly into the camera, provided excellent natural means of effecting quick transitions, as did shots of the fires, battering-rams, etc., of the night-effect scenes of the land-fight.

In all, many thousand feet of film were exposed upon this sequence, entirely by the special-effects staff. In the completed sequence, Lerpee used approximately three hundred separate scenes or cuts, and with them he told the entire story of the battle in 350 feet of film! Short, direct cuts, in great variety, kept the tempo throughout very fast: the majority of the cuts used were under two feet in length, and some were as short as eight frames. The problem of editing this sequence was heightened by the fact that the film was wanted for early release, so that instead of having the time to work from a normal black-and-white working print we had to cut the duping lavender. None the less, six weeks after we had secured Mr. de Mille's approval on our tentative continuity, we were able to deliver the finished sequence, ready to be placed in the completed film. And the cost of our entire battle was less than the cost of building a single galley for filming the sequence full-scale, as would have been inevitable only a few years ago!

Improvising Camera Tricks

(Continued from Page 346)

the camera suspended over the road, upside-down; comedy scenes showing, for example, a dog retiring to a corner to stand on its head, are made the same way. Yet another unusual item in Thompson's location equipment is a magazine loaded with fast "sound-track" positive film, which he presses into service when filming desert and other scenes when the light is abnormally flat.

On the other extreme, Cinematographer Ash has frequently had to film exteriors where he could not use color-filters in the normal way, yet some improvisation was needed to secure the proper correction in the sky. For this, he has used large pieces of colored gelatin, which he mounts before the camera exactly as a glass for a "glass-shot" is mounted: the lower edge of the gelatin is carefully cut away to conform to the horizon-line on the ground-glass—and it serves as a very acceptable filter. Cinematographer William Mellor, A.S.C., filming "Wings in the Dark," undoubtedly used the largest filters so far known. Many of the scenes for this film were made at an airport, with the action taking place in practical interior sets, with the flying field showing through the windows. Mellor had filmed the normal exteriors through a "G" filter; and it was necessary that the landscape as seen through the windows should

carry through the same correction—but equally undesirable that the interior scene itself should be filtered. Accordingly, Mellar used the windows themselves as filters! He had colored glass

window-panes used instead of clear glass; and as the colored glass used was very closely matched to the "G" filter, the result of this improvisation was perfect.

sketches. This system naturally assures a true photographic perspective.

The actual painting is made in monotone, and completed in considerable detail.

Then the first photographic test is made. This test is made by photographing the painted matte upon some of the undeveloped test-footage. Thereafter, any detail corrections that may be needed in the painting are made, and final tests for alignment, etc., are made, to be doubly certain that the matte will prove a perfect match for the already completed portions of the scene.

Thereafter, the exposed film of the scene itself is threaded into the camera, and re-exposed upon the matte painting. The painting fits precisely into the portions matted out of the original exposure, while the complementary areas,

MAKING MATTE-SHOTS

(Continued from Page 347)

The film is held, undeveloped, and turned over to the special-effects department to be completed. In addition, a quantity of extra footage is photographed for use in the tests necessary for matching the matte-shot painting and the actual shot.

At this time, if it has not been done earlier, the matte-shot artist makes a rough sketch of the parts to be added by the matte-shot, and its relation to the already photographed scene. This sketch is submitted for the approval of the supervising art-director and the director of the production. Thereafter, the preparation of the actual matte-shot painting commences.

The first step is to develop a few frames of the extra test footage taken, and then to make a photographic enlargement of one of these frames, usually to approximately 4½x6 inches in size. This enlargement is to serve the matte-painter as a guide in matching

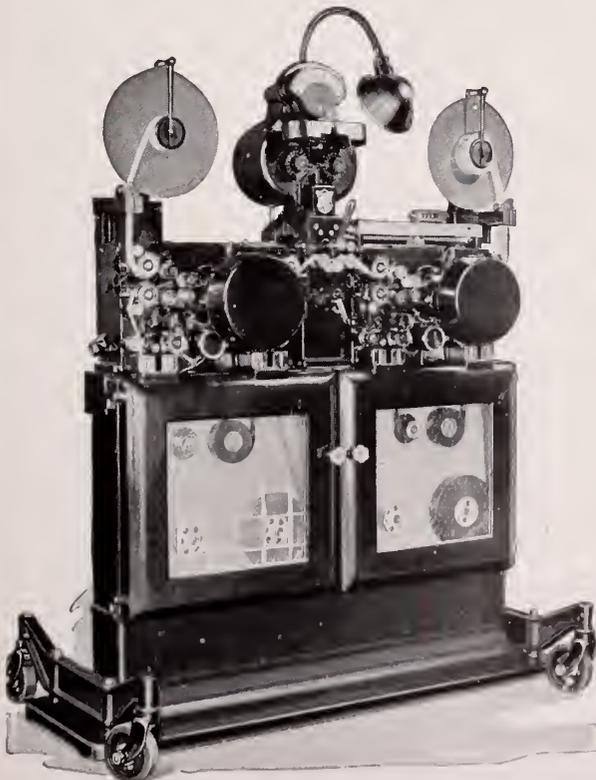
the light-values, gradation, etc., of the scene in his painted matte.

The second step is to prepare the actual matte-painting. A frame of the negative test is put in an enlarging-camera or projector and projected on to the matte-painting support, which is usually about 30x40 inches in size. Then with the aid of the projector, the artist draws in the parts to be added, following the enlargement and his preliminary



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having been painted a flat, non-reflective black, do not "register" upon the film. As a result, the completed matte-shot shows the painted matte as an indistinguishable part of the actual scene.

Figures 1 and 2 are excellent examples of successful matte-shots. They are from a picture in which the earlier action occurs in a typical small town of a number of years ago, while the later action shows the same town entirely modernized. Older production methods would have required not only the building of a large and costly set for the earlier action, but the complete rebuilding of the entire set for the modern sequences. The use of the matte-shot technique eliminated this expensive procedure, and the result is if possible even more satisfactory.

Figures 3 and 4 show the radical transformation made by this process in a long-shot needed for a certain sequence. Again, the upper picture shows

the scene as actually photographed, with the foreground—in which, needless to say, there was actually **no** canyon—blocked out by the matte in the camera. The lower picture shows how convincingly the painted gully blends into the actual landscape.

Although matte-shots are generally made in monotone, the process need by no means be considered as limited to the monochrome field. With the greater popularity of natural-color processes, such as Technicolor's new three-color process, it is inevitable that the matte-shot process be extended to serve natural-color, as well as black-and-white productions. Matte-shots in natural color, however, are a far more dif-

ficult problem: not only must the perspective and detail of the original shot be matched perfectly, but also color-values and exposures. The matching of color is naturally complicated by the fact that the first exposure may frequently be made by natural light, while the matte-painting exposure is usually made by artificial illumination, which frequently gives different values to colors, while visually identical pigments and colors may often have vastly different photographic results. However, a careful study of the photographic reactions of colors, pigments, textures and lightings is being made, and perfect blends can now be obtained in technicolor matte-shots.

USING THE PHOTOELECTRIC EXPOSURE-METER

(Continued from Page 348)

light-sensitive cell; but generally speaking, this practice is not desirable. The

reason for this is undoubtedly the delicate balance between the overall spectrum sensitivity of the photocell and of the film. It may be regarded as almost axiomatic that for normal purposes the color-sensitivity of modern super-panchromatic emulsions is very similar to that of the human eye: but this similarity is only approximate, and by no means exact in detail. The human-eye "Visibility Curve" begins very flatly in the violet region, begins to rise sharply in the blue-green (approximately 480 mu), thereafter rising to a high peak in the yellow-green region (575 mu), and dropping rather rapidly through the yellows, orange, and red, cutting off sharply at 700 mu. The photocell color-sensitivity curve, on the other hand, begins well in the invisible ultra-violet region and ascends evenly to a peak in the yellow (580 mu), thereafter almost paralleling the decline of the visibility curve, though appreciably farther into the red end, and retaining a low color-sensitivity for red and even into the infra-red. The spectral response of the average present-day super-panchromatic emulsion, on the other hand, rises sharply from the border of the ultra-violet, and maintains a uniformly high sensitivity to the blue, blue-green, green, and yellow-green, rising to a peak in the orange and red regions, and maintaining considerable sensitivity through the reds and into the border of the infra-red.

For practical purposes, all three of these curves coincide sufficiently so that the exposure-meter furnishes a good, practical guide for unfiltered exposures. Similarly, the lighter yellow and yellow-orange filters—up to, that is, the "G"—do not cut out enough of the wavelengths to which the meter is most strongly sensitive to seriously affect the accuracy of readings made in connection with these filters. In other words, for these lighter yellow filters, up to and including the "G," direct filtered read-



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ings of the meter may be taken as accurate.

Readings taken through the deeper red and night filters are definitely misleading. As has been shown, the peak of the photocell's spectral-response curve is in the yellow region, around 580 mu, after which the cell's response to color falls off rapidly, being approximately 45% at 650 mu (the verge of the red area), and dropping rapidly to less than 10% at 700 mu (the farther end of the red). At the same time, the film reaches its greatest sensitivity in the neighborhood of 650 mu (which is a strong red), and maintains considerable sensitivity throughout much of the visible red area. The more common red filters absorb all wave-lengths below 575 or 600 mu, and accordingly block out the majority of the light to which the photocell is most sensitive.

Therefore, exposure - meter readings made through such red filters cannot but be inaccurate. In tests made by the authors, these inaccuracies were found to be at least a stop and a half, and sometimes even greater. Therefore, when using the red filters the normal, unfiltered exposure-meter reading should be used in conjunction with the filter-factor and filter-exposure tables published by the film manufacturers. For this, naturally the most convenient type of chart to use is one which reads di-

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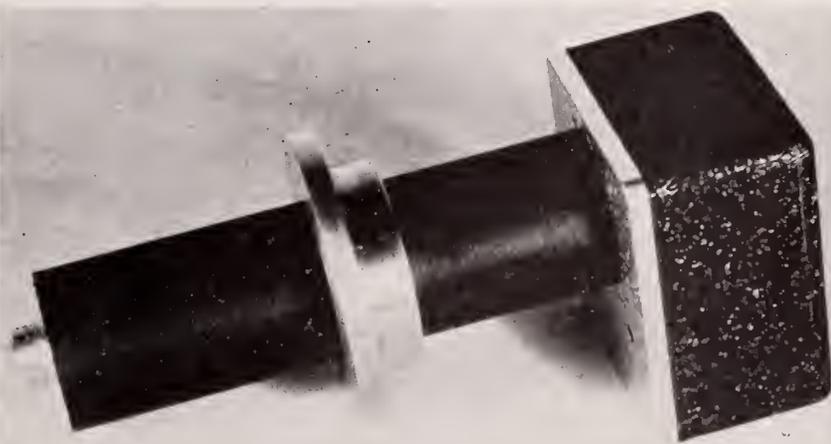
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rectly in terms of exposures, based on definite normal, unfiltered exposures.

When making filtered night-effect scenes, by far the most effective method is to follow such a table, basing your procedure upon a normal, unfiltered meter-reading, and modifying your exposure according to the result desired.

For all normal work, including filtered and unfiltered scenes made through haze, light fog, and the like (using the lighter filters), we have found the readings of photocell exposure-meters extremely accurate, and a very definite benefit to the production cinematographer.

PATENT DEPARTMENT

● We have arranged with JAMES ATKINS, registered patent attorney, Munsey Building, Washington, D. C., to furnish us with a memorandum of the recently issued patents relating to improvements in our industry.

Inquiries with reference to this subject should be addressed to the Editor of the Patent Department, where they will receive prompt attention.

CAMERA SUPPORT. No. 1,977,154. Issued Oct. 16, to John L. Spence, Jr., Brooklyn, N. Y., assignor to The Remac Patents Corporation, New York City.

APPARATUS FOR PREPARING FILMS. No. 1,977,166. Issued Oct. 16, to Anthony G. Wise, Beverly Hills, Calif., assignor to Metro-Goldwyn-Mayer Corporation, Culver City, Calif.

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HENRY GERRARD DIES

As a result of an operation for appendicitis, Henry Gerrard, A.S.C., died last month. Gerrard was one of the ace cameramen at the Radio studios. He was responsible for the photography on "Little Women" and before entering the hospital had finished the picture "Little Minister."

Only a few months ago Mrs. Gerrard passed away and within the past year he lost several other close relatives.

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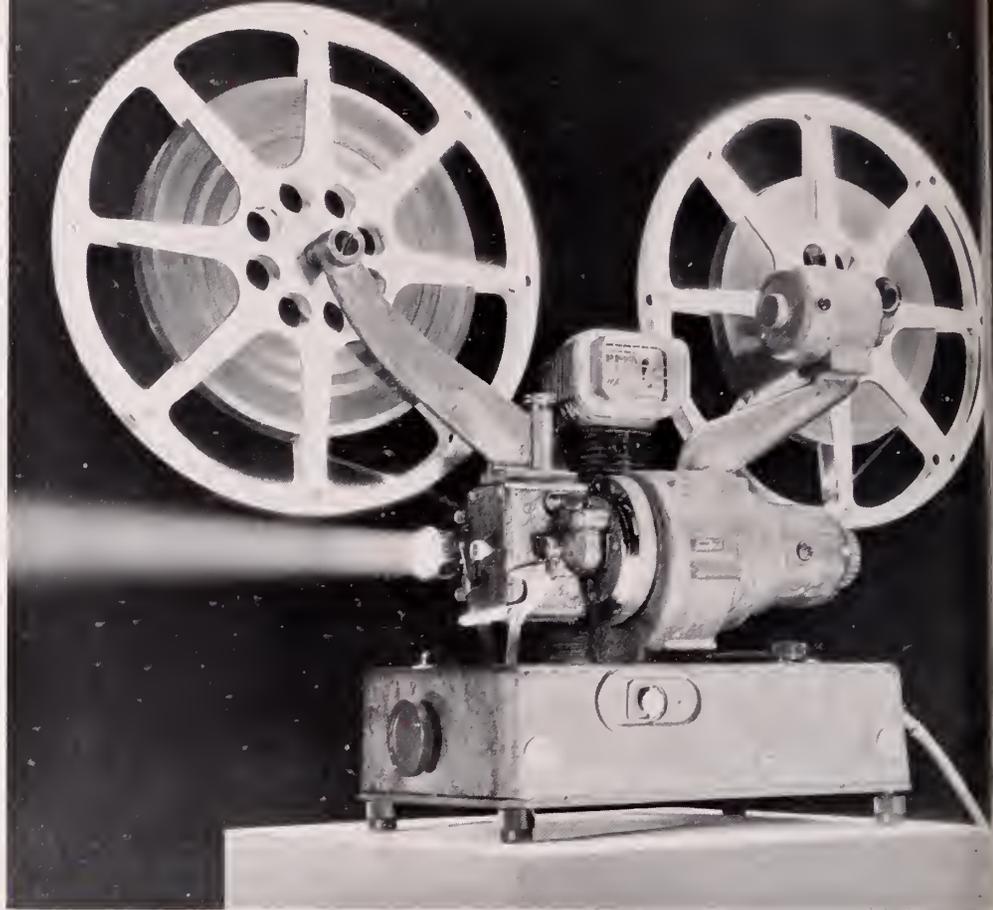
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Hollywood

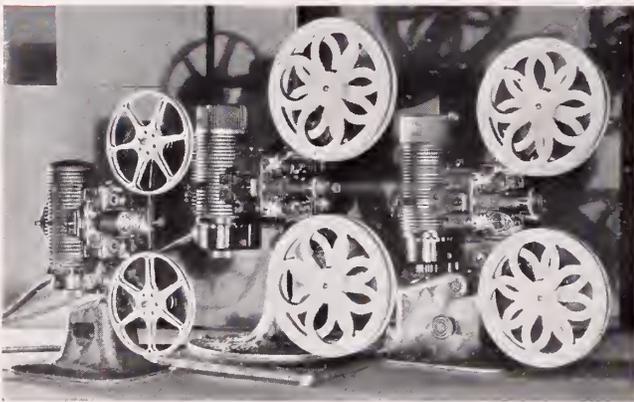
E A S T M A N F I L M S

2
NEW

FILMO PROJECTORS



1. 1000-WATT—MODEL 130 *(illustrated above)*



FILMO 8 MM. PROJECTOR

(Left, above). Shows brilliant, steady, flickerless 8 mm. movies up to 6 feet wide. 300-watt lamp. Gear-driven—no chains or belts. Power rewind. Pilot light. Stops for still pictures. Fast Cooke F 1.6 lens. Manual framer. Full film protection. B&H precision mechanism in rigid, non-warping, die-cast aluminum housing.

FILMO R PROJECTORS

(Center). Three moderately priced models—500-watt, 750-watt, and 750-watt with variable resistance and voltmeter. Have power rewind, manual framer. May be run backward and stopped for still projection. Superior Filmo design and construction throughout.

FILMO JS PROJECTOR

(Right). 750-watt lamp, variable resistance, and illuminated voltmeter. Fully gear-driven—no chains or belts. Power rewind, manual framer. fast Cooke F 1.65 lens, and pilot light.

THE new Filmo 1000-watt 16 mm. Projector marks a major advance in 16 mm. equipment, extending the use of safe, economical 16 mm. film into large auditoriums where heretofore only 35 mm. film would serve. So efficient is its new optical system that our tests show it gives 80% greater screen brilliance than 750-watt projectors, although the lamp wattage increase is but 33 $\frac{1}{3}$ %. A new cooling system keeps the 1000-watt lamp within its maximum safe temperature. 1600-foot film reels are accommodated—a one-hour show without interruption! Features include new streamline base giving low center of gravity, and completely new arrangement of controls. Complete details upon request. Price \$385.

2. 750-WATT—MODEL 129

Similar in general appearance to the 1000-watt model pictured above, the new Filmo 750-watt Model 129 Projector also has a new, low, streamline base and a 16 mm. film capacity of 1600 feet. It is a moderately priced projector for use in home, school, and wherever full 1000-watt illumination is not required. Details soon to be available.

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AMATEUR MOVIE SECTION

Contents . . .

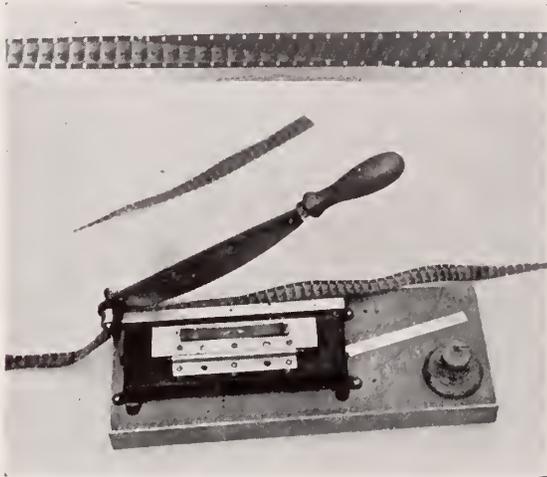
WIPE-OFF Splicer for 16mm Films by Chas. G. Clarke, A.S.C.....	364
FADES and Dissolves by Harry Walden.....	364
1934 Amateur Prize Winners.....	365
LET'S Talk About Lenses by Wm. J. Grace	366
SPECIAL Effect Lighting for the Amateur by Arthur J. Campbell, A.S.C.....	368
WHEELS of Industry.....	369
TITLING with Home-Made Titler by Ed Ludes.....	370
TREND of the Times.....	375

Next Month . . .

● Among other interesting items we will give you the winners of the equipment prizes . . . we will also let you know who are included among the list to receive honorable mention. Unfortunately it was impossible to complete the judging to give all of this information for this month because of the great number of entries the judges had to go through.

● Another interesting indoor lighting will be given by a member of the A.S.C. He will touch a little on the practice of the studios.

PROFESSIONAL Criticism of the Amateur picture is a part of the service offered by the AMERICAN CINEMATOGRAPHER. Many are not aware of this. Hundreds of pictures have been reviewed this past year by members of the American Society of Cinematographers for the Amateur.



At top the wipe off made by the gadget shown below.

Wipe-off Splicer for 16mm Films

by
Chas. G. Clarke, A. S. C.

DURING the editing of my 16mm films many instances arose where some form of dissolve would smooth the continuity of action and thought. Striving for a simple device, I discarded ideas that called for elaborate optical printing apparatus and started to build a splicer to make a long diagonal splice, which on the screen would produce a "wipe dissolve" effect.

The splicer is herewith illustrated. As can be seen, it was built up from an inexpensive metal print trimmer. Near the cutting edge, four pilot pins were located to hold the film at a uniform angle to the knife, and prevent slippage as the cut was made. The ends of both films to be spliced are cut on this angle. A metal guide strip has been provided that drops down over the film to flatten and hold it during the cutting process. This strip also forms the scraping guide to determine the correct amount to be neatly scraped off for the splice. An ordinary scraping edge is used, but the device can readily be adapted to use a dry scraper attachment. After the films are cut and scraped they are ready to be put on the "patcher," which is a long bar with eight pins to correctly register the perforations. The scraped edge is put on the pins, cement applied, and the other end quickly located and the pressure device applied. Carefully made, these splices are

as strong as any, can be wound and rewound, cleaned and projected the same as ordinary film.

The splice as I have made it requires 14 frames to pass from one side of the picture to the other, and the effect on the screen is one of a quick wipe, i.e., one scene travels off the screen as another takes its place. As can be realized, any combination of scenes can be joined; titles to scenes, scenes to inserts, etc. Interesting effects can be obtained such as utilizing an exit from a scene; the splice being made just behind the person leaving the scene. Thus made the next scene will follow across right behind the one leaving the previous scene. If the splice is not timed just right the first time, it can be remade a few frames, and tried over.

I am sure that this device will prove a valuable aid in giving the amateur film the professional touch, smooth over sudden jumps to new scenes, and otherwise lend variety to the finished picture. Films made long ago can be dressed up with new "wipe-offs."

Patent has been applied for the idea and device and should sufficient demand arise it will be put on the market to sell at a reasonable price.

Fades and Dissolves

by Harry Walden

HUMAN nature abhors shocks. Hence the fade and the mix, sometimes termed the lap dissolve. If it is desired to induce a sense of quiet into a film the gradual fade out followed by a gradual fade in will achieve the desired effect much better than the abrupt cut from one scene to another. In the same way pictures which dissolve into one another preserve the even tenor of the film.

Professionals have a number of ways in which such effects may be achieved but, in the main, the amateur is restricted to the use of the diaphragm of the camera lens. In order to fade out the diaphragm is slowly closed at a prearranged point in the picture, while the fade in is similarly effected by slowly opening up the lens. For a dissolve the first picture is faded out and after the film has been rewound in the camera to the beginning of the fade the second scene is faded in on the same piece of film, thus producing the gradual transition from one picture to the next.

Simple as the method may be it has its difficulties. First there is the difficulty of closing or opening the diaphragm at the requisite speed. Failure in this respect will mean that the fade is unnaturally fast either at the beginning or the end of the change. There is also the other difficulty that amateur reversal film is automatically controlled in the processing to overcome errors in exposure. So that as the fade commences the machine does its level best to overcome what it conceives to be an error in exposure on the part of the photographer; and the result is literally a "wash-out."

The amateur has, however, other means at his disposal for obtaining smooth transitions from scene to scene. These involve a certain amount of planning in the making of the picture. A station name-board, announcing the location of the film, can disappear in a cloud of steam and, as the steam clears, there is revealed the scene either inside or outside the station. There are several ways of achieving such a result. The first, of waiting for the steam, will

(Continued on Page 379)

8mm Pictures Take Honors in 1934 Competition

AGAIN the lowly 8mm picture receives the plaudits and prizes most coveted in the 1934 AMERICAN CINEMATOGRAPHER Amateur Movie Contest. Last year one 8mm picture was among the winners; this year there are two, both of them definitely standing out above all other entries.

Many of the pictures entered were evidently produced as a definite subject for this contest. This meant that there were a great number of worthy productions to be considered by the judges.

Again, practically every civilized country on the globe was represented, and again some of the prizes will go abroad and into Canada.

In the final summing up all possible classes are not represented among the listed winners. This was for one of two reasons: either there were no entries in that class or the quality of the entries in that class did not warrant the honor a prize given by the American Cinematographer represents under its method of judging.

It will be remembered that last year it was established that a picture must average at least 85% in order to be considered a prize winner. Based on this rating the final summing up brought forth prizes for eight classifications and an additional prize for photography. Those classifications represented are Home Movie, Scenic, Documentary, Kodacolor, Educational, Scientific, Travel, and Scenario.

The \$250.00 prize for the best all around picture went to R. B. Clardy of Los Angeles for his 8mm picture "New Horizon," made in 200 feet. Clardy was the winner last year of the gold medal for scenario and photography. Last year Clardy's picture was based on a western theme, while this year his scenario, although set in its greater part in the outdoors had several indoor shots. However, most to be admired was the way in which he handled his production both from composition and directorial standpoint. There were only three people in his cast with the girl assuming the major role. His sense of dramatic values, and especially his fine feeling for the proper tempo brought forth unstinted praise from the judges. His photography rated high for 8mm film, but was not quite up to the very fine photography of Tatsuichi Okamoto of Japan.

Okamoto two years ago won the prize for photography with his 16mm picture "Early Summer." Since then he has turned to the 8mm camera. His picture "Tender Friendship," in 150 feet of 8mm film, was sensational from the photographic standpoint. Its sheer beauty, its poetic rhythm both in story and photography, made it one of the outstanding pictures of the contest.

WINNERS

GRAND PRIZE, \$250.00 . . . R. B. Clardy, Los Angeles, Calif., for "New Horizon," 8mm, 1 reel.

PHOTOGRAPHY, \$100.00 . . . Tatuschi Okamoto, Matsuyama, Japon, for "Tender Friendship," 8mm, 1 reel.

HOME MOVIE, \$50.00 . . . Van Dee Sickler, Los Angeles, for "Mischief," 16mm, 1 reel.

SCENIC, \$50.00 . . . J. Sherlock, Sydney, Australia, for "The Brook," 16mm, 1 reel.

DOCUMENTARY, \$50.00 . . . Leslie P. Thatcher, Toronto, Canada, for "Another Day," 16mm, 1 reel.

KODACOLOR, \$50.00 . . . Miss Raanno W. Hill, Pittsburgh, Pa., for "October," 16mm, 1 reel.

EDUCATIONAL, \$50.00 . . . H. Demarest, Hackensack, N. J., for "The Story of Water," 16mm, 1 reel.

SCIENTIFIC, \$50.00 . . . M. Abraham Shur, Bronx, N. Y., for "Reconstruction of Nose," 16mm, 1 reel.

TRAVEL, \$50.00 . . . John E. Earle, Los Angeles, Calif., for "The Traveler," 16mm, 1 reel.

SCENARIO, \$50.00 . . . R. B. Clardy, Los Angeles, Calif., for "New Horizon," 8mm, 1 reel.

While Okamoto would qualify for the photographic prize only, still the judges felt that his picture was deserving of more consideration and raised that prize from \$50.00 to \$100.00 in recognition of his unusually fine photography.

"New Horizon" by Clardy and "Tender Friendship" by Okamoto, both made on 8mm film, were unanimously voted the two outstanding pictures in the contest by the judges. As is known, the judges in this contest are members of the American Society of Cinematographers, the ace cameramen of Hollywood's studios. Many of them are users of 16mm and 8mm cameras. They are familiar with the problems that confront the amateur with the equipment available to them, and are appreciative of the results attained by the amateur because they have had experience in the professional field as well and know what is possible at both extremes.

This does not mean that there was not some very fine work and commendable work done on 16mm. There was photography and technique on this larger sized film that drew much admiration. Many of the pictures this year showed a high degree of smoothness and efficiency in special effects, such as fade-outs, lap dissolves, wipe-offs, etc.

So as to understand the thoroughness with which each picture is considered the judges on viewing the picture give it a rating for the following points: photography, composition, direction, production technique, story, titles, editing, acting and entertainment value. Immediately after each picture is viewed, while all of the details of the production

(Continued on Page 376)

Fig. 4. The Zeiss Protar type of anastigmat shows the first attempt at correcting both chromatic and spherical aberrations by using glass having different indices of refraction.

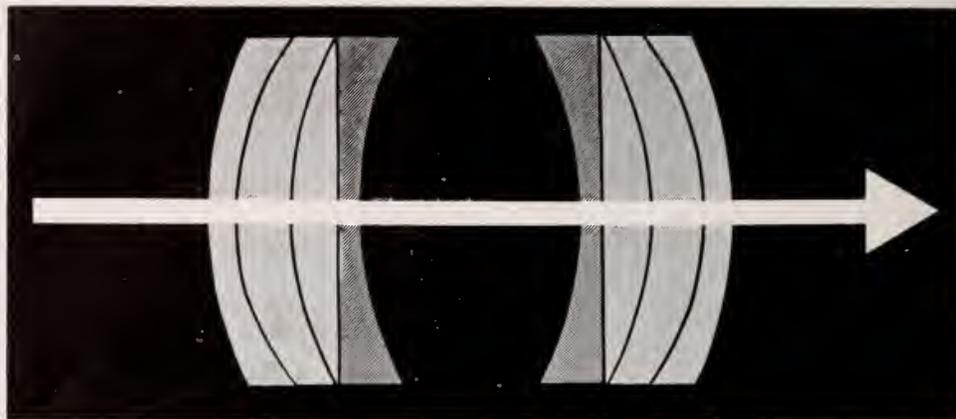
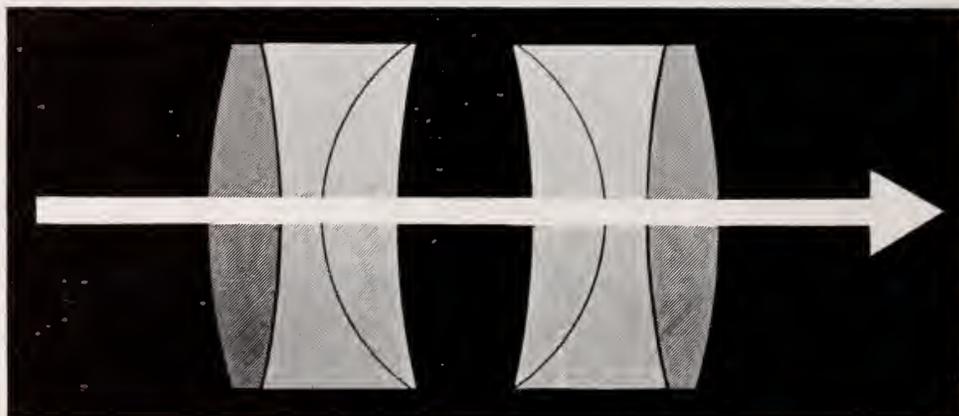


Fig. 5. The Goerz Dagor type of anastigmat consists of fewer elements than the older protar, and is therefore a faster lens.



WE COME now in our discussion of lenses to the type of photographic objective which is responsible for modern photography — the anastigmat. No matter if our film progress had advanced to its present status, we should still be in the dark ages of photography if we did not have the anastigmat.

In our study of lenses in the two preceding articles we learned, at least in a cursory way, of the many faults of lenses. And, so many of these various faults are difficult to correct without running into still worse troubles. If we correct for color aberration, spherical aberration is made worse. If we correct spherical aberration and its many phases, such as coma, astigmatism, and distortion, the color aberration is made worse.

As soon as lens designers had exhausted every scheme to correct both major faults at once by surface shapes alone, they turned to the idea of using different kinds of glass which had different indices of refraction. There were possibilities in juggling a combination of lens shapes and lens materials, and with advancement even up to this writing still proceeding in the manufacture of glass for optical purposes, the problem of making a lens corrected for all faults at once neared the solution.

Probably the first lens to appear which was corrected for both chromatic and spherical aberrations was that brought out by Zeiss in 1895. Figure 4 is a sketch of this type of lens. In reality, this was a combination lens so made that the front set of glasses or elements could be used by itself, or the rear set by itself, or both sets at one time. By making each set of different focal length, it was really a three-focal-length lens. However, the relative aperture was fairly small, $f/6.8$, even with both lenses used together, and the speed still less if just one or the other lens was used.

Since the more surfaces light must pass thru in a lens

Let's Talk

the more will be the loss from reflections from these surfaces, it is wise to cut down the number of elements to the bare minimum. The Goerz Dagor type of lens, sketched in Figure 5, is a good example of how fewer elements are combined in such a way as to allow of proper correction.

In the Dagor, the two sets of elements are similar and the diaphragm is placed midway between the two sets. Chromatic and spherical aberrations are corrected by virtue of the fact that the outer elements of each set are made of the newer glass and the others of the old glass.

A still further step in refinement of the anastigmat is the result of the fine designing of H. Dennis Taylor of a lens now famous—we know his lenses by the trade name of Taylor, Hobson, Cooke. The reputation of these lenses is due, in part of course, to the excellence of workmanship, but more largely to the principles of design.

If it were possible to build a perfectly corrected lens of but one element, and if that shape might be possible to manufacture economically, the lens designer would consider it the millennium. Since that is impossible, the goal of perfection must be approached as closely as possible in other ways.

We know that it isn't so much the thickness of the

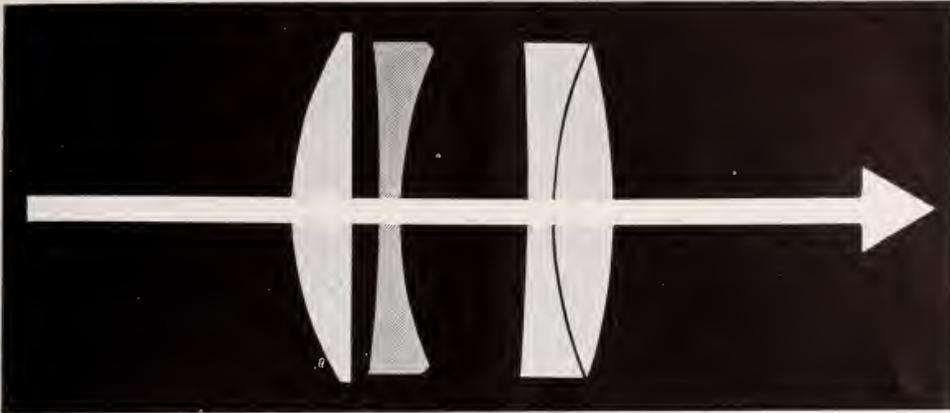


Fig. 6. The simplest form of the anastigmat is shown by the Cooke Triplet. Note the lack of cemented lenses and the clean-cut appearances of the combination.

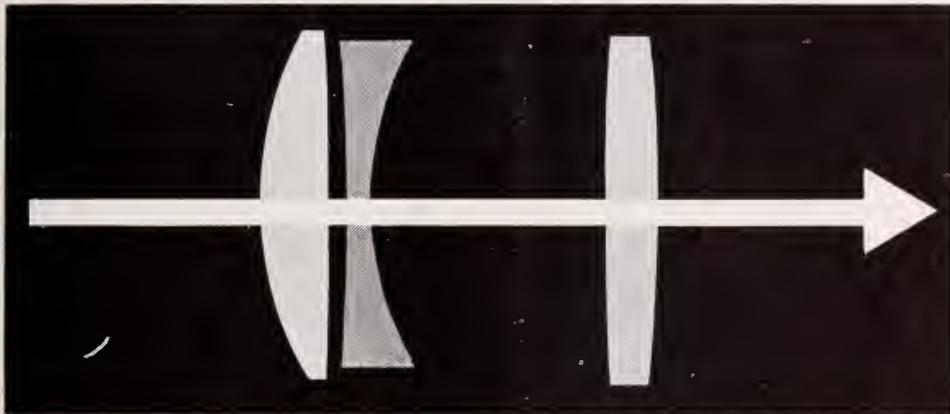


Fig. 7. The most popular form of the anastigmat is the Zeiss Tessar, which is similar to the Cooke Triplet except for the rear element which is a doublet in the Tessar.

About Lenses The Anastigmat Lens

by
Wm. J. Grace

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glass in the elements of a lens that "holds back" light as it is the loss caused by reflections from each air-glass or glass-air surface thru which the light passes. Therefore, one of the first principles in the design of a lens is that as few surfaces as possible be presented to the transmitted light. A second consideration is to so choose a design that does not require cementing lens elements. In ordinary climates the cement is quite satisfactory, but in damp, tropical climates, a lot of trouble may be experienced from lens elements becoming uncemented.

Now suppose we look at Figure 6, which is a sketch of the Cooke Triplet form or type of anastigmat. In this lens

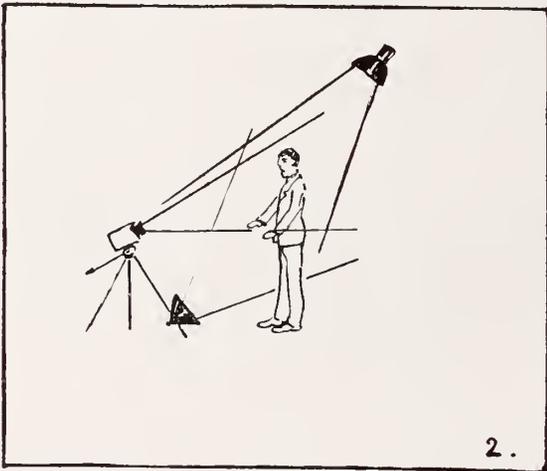
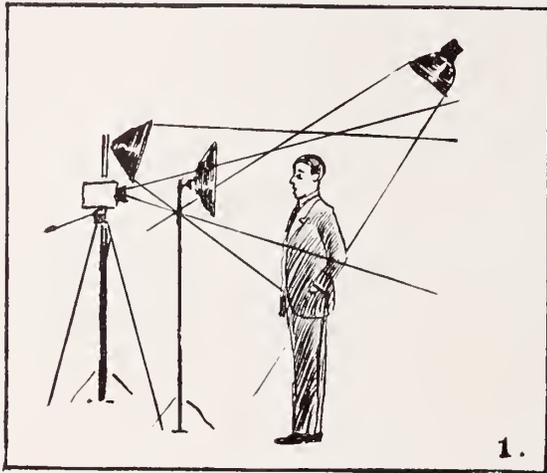
astigmatism is eliminated by power or magnification of the negative element (the middle element in the sketch) equal to the sum of the powers of the two outer or positive elements. Chromatic aberration is corrected by making the negative element of a glass which has the proper index of refraction. The shape of the surfaces of this element is also made so that spherical aberration and coma are corrected.

If we but consider for a moment the design features of the Cooke Triplet, it will be apparent that it is really a remarkably fine piece of work. In the first place, the lens has but three elements, thus making it possible to actually get more light thru the combination than thru some other combinations of the same diameter which use more elements. And because the physical size or diameter of the lens is kept to a minimum with respect to the "speed" of the lens, there is inherently less astigmatism, spherical aberration, and coma. In the second place, because there is no cement to deteriorate, it can be used in any climate.

Nor is the Cooke Triplet confined entirely to ordinary photographic fields. Because of its high correction, particularly in the matter of yielding a flat image field, it is quite extensively used in photo-engraving processes because of its freedom from distortion and because it "cuts sharp to the edges of the plate or film."

Sometimes a fault is deliberately introduced into the design of a lens. This is perhaps best illustrated by the series of Cooke Triplets designed for portraiture. Portraits are never absolutely faithful reproductions of the physiognomy of the subject, and this goes for photographic portraits as well as those done in oils. To be pleasing, a portrait should surround the subject with a subtle aura of illusory

(Continued on Page 377)



Special Effect Lighting for the Amateur

by
Arthur J. Campbell, A. S. C.

YOU'RE going to get a big kick out of indoor photography when the desire creeps into your photographic heart to attempt some special effect lighting on your subjects.

When that time comes you are on the high-road to becoming a true photographer; then you are going to burn the midnight oil and the kilowatts to create and reproduce artistic effects.

You'll learn how to make an ordinary looking subject beautiful, how to distort, how to dramatize and how to interpret moods by means of lights.

But let's start with some of the simpler and basic special effects procured with lights and their manipulation. There

is the fireside effect, silhouette effect, the dramatic low lighting and the night effect.

The fireside effect is possibly among the simplest you can do and at the same time one of the most pleasing. It will be found particularly useful for your Christmas story. The basic lighting for this effect will also give you a silhouette which is of course an essential part of the picture in order to make the fireplace predominate in the scene. With a couple of photoflood lamps in the fireplace and your subject in front of these lamps to prevent them reflecting into the lens you have made the first step in this particular bit of special lighting. It is necessary, however, to have a certain amount of front lighting; this must be very faint. This light is used to keep your subject from becoming inky black. This front light is secured from a lamp alongside of the camera.

In a scenario the value of a dramatized low lighting can be clearly felt. The main source of light in this effect should come from a point near the floor somewhere underneath the lens of your camera. In a close-up when this type of lighting is used the reflection of some small subsidiary light in the eyes of the subject adds much to the scene. Sketch 2 gives you a basic lay-out for the low-lighting effect. In the long shots using this effect shadows are of utmost importance; very often the most dramatic scene can be most convincingly portrayed by shadows alone. To properly perform the shadow effect the main source of light must come from the side. In order that the shadows fall in the right lengths in your scene it is necessary that you first experiment with your lights. In placing the lights for shadows, try also for sharpness in the shadow.

About the most common indoor night effect is that of having one of the actors switch off the light which in the set is supposedly the source of all light. To make this effect convincing perfect co-ordination is necessary. However, when an extensive switch system isn't possible there is another method of producing the effect. It, perhaps, can be made more convincing with the use of a K 3 filter. Using the filter like a fading glass, slide it in front of the lens as the light on the set is turned out. This method is more natural, for the scene doesn't become completely black.

In portraying night scenes of indoor shots you of course want your light fixtures to photograph as being lit. To make the fixture lights give the effect of lighting up the set place in them 250-watt lamps.

The effect of lightning flashes as seen through a window of your set can be easily made with flash-light powder. However, it is important that only a small amount of the powder be used, for any reflection into the lens of your camera will light-streak the film.

Of most importance in all indoor lighting is the use of backlighting. It is backlighting that takes that terrible flatness out of photography. With good backlighting photography obtains some semblance of the third dimension (depth). Backlighting separates your subject from its immediate background and adds much to the realism of the set. Sketch No. 1 gives the fundamental diagram on which all backlighting is based. Try a little backlighting in the next indoor scenes you make; the actual test will prove to you its great value.

Another important matter is the diffusion of your lights. In using a minimum number of lights to obtain the minimum exposure you will often find that the features of your subjects photograph rather harsh. This can be corrected by using a diffuser. By placing a diffuser such

(Continued on Page 380)



WHEELS OF INDUSTRY

Reeve Spot Light

● Arthur Reeve, former cameraman and now operating the Hollywaad Motion Picture Equipment Company, has announced a new reflector and stand to take the popular photoflood lamps.

This Artreeve lamp is made of spun aluminum, but the unusual feature of it, according to his announcement, is the fact that when it is fitted with one of the small 25c photoflood bulbs it acts as a spot light, but when the larger photoflood bulb is used it becomes a regular flood light.

When this lamp was set alongside of a regular studio lamp which used a 1000-watt light the spot light penetrated through the studio lamp and definitely illuminated a section within the radius of the larger lamp.

New 8mm Projectors

● The great advances being made by the 8mm film among amateurs throughout the world has undoubtedly prompted the Eastman Kodak Company to improve their 8mm projectors.

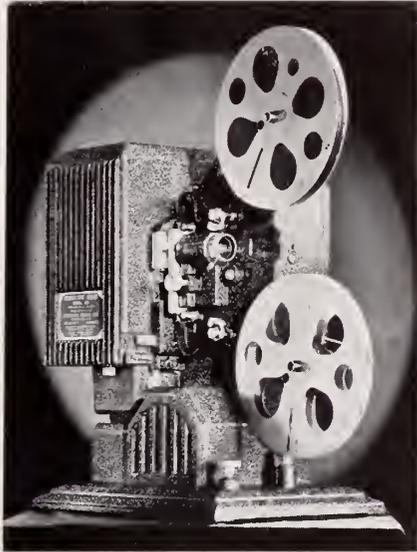
Announcement made by them this week tells of their Model 90 projectors, termed a de luxe projector for 8mm film equipped with a 300-watt lamp. This model will supersede their present model 60 which is equipped with the 100-watt lamp.

In addition to this they announce a new Model 40 replacing former Model 25. Model 40's main point of difference as compared to its predecessor is, that it has been redesigned to use a 200-watt lamp instead of a 100-watt. The price, however, will remain the same as Model 25.

Model 20, the simplest and least expensive member of the 8mm family, will remain the same.

The interesting item of these three is the new model 80 with its 300-watt lamp. According to the announcement this will sell for less than one hundred dollars.

From 8mm pictures seen with 300-watt lamp projectors it is evident that the 8mm film will now prove a bit faster to the user than formerly. Evidently the



New Eastman 8mm Projector with 300-watt lamp.

lack of proper light has compelled the user to shoot at a lower normal in order not to secure a heavy negative.

16mm Continuous Printer

● The announcement of a 16mm printer by the Phillips Laboratory will be acceptable news to many amateurs using negative and positive.

This printer, according to announcement of L. E. Phillips, is of the continuous type. It is built for 60 cycle 110-volt A.C. only. It has a capacity of 400 feet and prints 25 feet per minute. Its light source is a 60-watt 110-volt lamp and the motor is the induction type.

Possibly one of the most ingenious features is the addition of a Veeder counter which registers film used in tenths of a foot. This counter can be used to cue the changes in the printing aperture. Before actual printing is done, the negative can be run through and the footage at the various changes noted and marked for use during actual printing. The printing pressure plate can be released for running film when measuring for cues to change the printing aperture.

The printing aperture is provided with a ruby light for inspection of film during

printing and the printing aperture is variable, giving control of printing time by a calibrated lever.

The printer has a metal plate 10x15 inches mounted upright on a transite board 8x15 inches.

On the metal plate are mounted the two sprockets, one for each film, thus insuring registration and freedom from movement between the films during printing.

Oil Color Set

● To bring the price of transparent oil color outfits within reach of most any amateur interested in coloring his snapshot enlargements, Eastman Kodak Company announces a new 8-tube Kodak Transparent Color Set.

The eight standard colors, providing for a wide range of picture subjects, are. Chinese blue, warm brown, flesh, medium green, scarlet, violet, yellow and neutral gray. Transparent medium, stump cotton, skewers, and an instruction book are included in the attractive gift box, which is covered with a dark blue pig-grained material.

Photo Flood-Spot

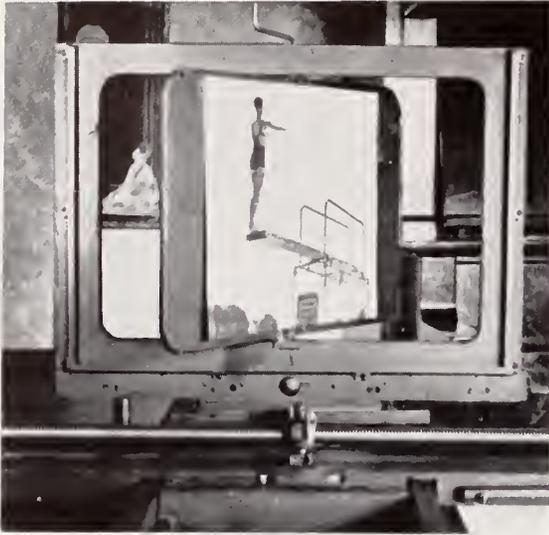
● Photolites Inc. of New York City have combined in their latest piece of lighting equipment a very efficient and needed piece of lighting apparatus.

The name, Photo Flood-Spot, is very descriptive of its purpose. It acts both as a spot light and as a flood light with but little change in its attachments.

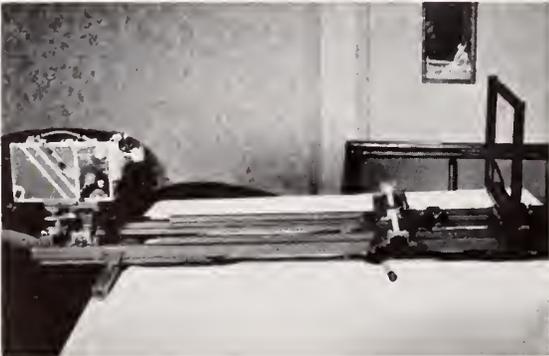
The Spot light, however, will be found mighty useful to the serious amateur. This piece of equipment had not been available to him at a moderate price. This light uses the regular Photoflood lamps which of course is another convenience to the amateur.

To change the size of the post one merely moves the focusing rod forward or backward. The light has an operating range of 2½ to 7½ feet in height.

This lamp will be found very useful by photographers who wish to secure concentrated lighting, backlighting and highlighting of hair and the other ways in which a concentrated light is demanded for good photography.



Showing the "Insert" or "twist" in use. The "idler" screw, which steps the Insert in the proper position, is not shown but the slot for this screw may be seen in the upper left corner of the insert. The wipe-off mechanism is shown "straddling" the top runners. Also note position of head of carriage bolt which holds the "Scroll" and "whirl" in position.



Showing distance from wipe-off device to "Holding" Board.

NOW THAT we have our titler finished and in working order (I hope you have tested it for correct adjustment), we can proceed to the actual business of titling.

In the first place, you will have to choose the kind of titles you wish to photograph. Perhaps you prefer the cut-out letters seen on business directories—the little gummed affairs. If these are used the titler will have to be suspended in a vertical position by means of hooks and eyes on the wall and one end of the machine. In this position, the letters may be laid out without sticking them on anything, and thus, may be used again and again. The machine must be used in this vertical position for anything that has to be "laid out" and depends upon gravity to hold it in position.

Perhaps you are handy with a brush or pen and prefer to make your own title cards, or maybe you will have them printed and do a really professional job. Typewriters, too, can be used easily, for, with the aid of auxiliary lenses the subject can be as close to the lens, with the correspondingly small field, as desired. But for our purpose here, we will assume that you have hand-lettered cards and that we will use the "reversal" method of filming. Obviously, the lettering is done in white on a dull black card.

Home Made

First, cut a piece of the black cardboard to fit in the channels in front of the title holder board and the correct shape (3:4 ratio). Put the title on this card and shoot it at a distance of 30". (All "shooting" distances hereinafter referred to are measured from the center of the lens barrel to the title card.)

In order not to have to use such large pieces of cardboard for the titles, I made several masks with apertures of various sizes, always keeping the 3:4 ratio and always keeping the center of the apertures in the center of the lens axis so the shots could be "zoomed." Handy sizes will be found to include 6"x8", 4"x5-1/3" and 3"x4". The titles are held in place on back of these masks with Scotch tape or other adhesive, the masks slipped in the brass channels and the whole ready to shoot. Too, this method provides an outline for making the title. Fancy borders, etc., may be drawn on these masks and part of the mask itself included in the picture.

A table of field sizes for various distances is reproduced here for your information and guidance. Referring to the table, we see that an area 6"x8" will be covered with the title card 21" from the lens center, while at 31" the size has increased to 9"x12". If your lens will not focus at distances closer than two feet, you must resort to an auxiliary lens. These accessory lenses may be purchased from any reliable lens manufacturer, or, if you have a means of opening the camera and seeing the image on the film (there is a glass prism made and marketed for this purpose), you can try your own auxiliary lens. (Those possessing Cine Kodak Special cameras will, of course, not be troubled with areas since the image can be seen directly through the lens in the filming position.) The dime stores sell a small magnifying glass with a diameter of about 1 1/2" and unknown (to me) power. These allow the title board to be brought into focus at a much closer distance than otherwise possible. Greater power brings the board still closer, and I have found that by using one lens out of an old rectilinear lens assembly that came on a discarded camera I happened to have, I could focus perfectly at a distance of 2" from the front of the lens. This lens is used for copying newspaper columns, etc., and, in the same manner as all auxiliary lenses, obtains a very effective "melt" by simply moving in or out of focus.

Since the matter of focus and auxiliary lenses and aperture sizes is a complicated thing to write about, I am going to leave this subject to someone more capable than I, and let my readers "cut and try" for closeups. What we are interested in here is tricking titles, so I'm going to imagine you have a camera like mine and go ahead from that standpoint, letting you work out your own variations.

THE "ZOOM" AND "RETREAT"

One of the handiest and most elemental of the title's tricks is the "Zoom" shot, which consists of starting the title a great distance from the lens and bringing it toward the camera until it has the proper size in the picture. The "ZOOM" may be filmed with a "follow-focus" or by means of presetting the focus on the final position and starting the scene out of focus. Personally, I prefer the latter since

Trick Titler

Simple Titling

by
Ed. Ludes

it is easier to do, takes less thought and offers less chance of error in focusing.

To make a long "zoom" bring the title card as close to the lens as desired (about 10", giving a 3"x4" picture area). Focus the lens on the card at this point. Now back the carriage away from the camera to the end of the bed and have the area included in the lens at this distance all black except for the small title (which is hopelessly out of focus here). Put the lamps in reflectors back of the lens and train them on the final position of the title card and, starting the camera, bring the title in a fairly steady motion to the predetermined position of focus, taking not too much time for this operation.

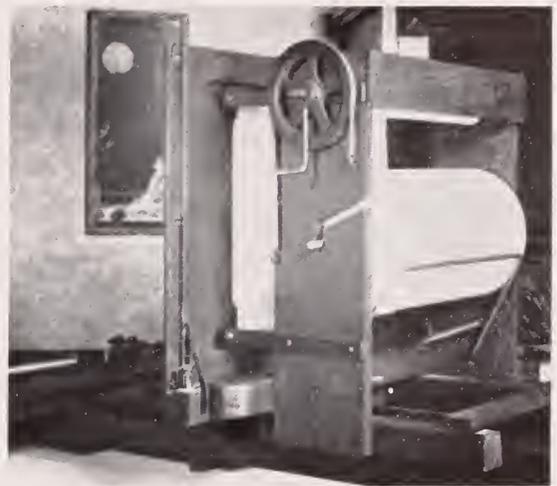
On the matter of lighting all shots (including the zoom) it will be a great help to fasten two photoflood lamps in long upright reflectors on each side of the "wipe" device baseboard, making four lamps in all, and protecting the lens from glare. This way, the lights will be the same distance from the title board and the picture will have the same exposure in all positions, whereas, the way we have just taken our "zoom," the title will come out of darkness into light and into focus at the same time.

A "RETREAT" is the exact opposite of the "zoom" but may be handled in several different ways. First, we may focus (and light) our subject at a distance of three or four feet from the lens, then by starting the camera with the title close to the lens, we quickly slide it back to the predetermined position. Or, we may make the title appear to come into the scene from above by starting the same way except that when the title is close to the lens, the card is raised so that only black will show. As the carriage is moved away from the lens, the title card is dropped slowly (in its slots) until it finally comes into position as the whole reaches maximum focus. This last trick requires a steady hand and is a bit more difficult to accomplish successfully, but it can be done—and very prettily, too.

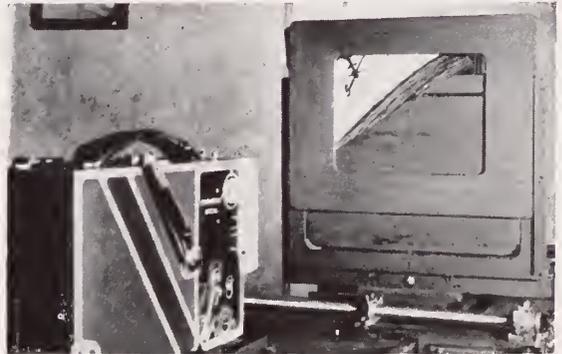
"BOMB" ANNOUNCEMENTS

We have all seen the effect used in theaters of making a "bomb" announcement—where a shell appears to explode on the screen and disappears, leaving a title or "announcement" in its place. This is a variation of the "zoom" and is accomplished on the titler in one of two ways.

First, the title may be set a predetermined distance away from the lens and left there for each exposure. The "bomb" is started by drawing a small shell starting to crack, exposing this for two frames, and substituting a slightly larger drawing of the bomb cracked still further and starting to fly apart. Keep the flying pieces in a fairly round circle and begin to show white in the middle of the bomb. The next drawing shows the pieces still further away and with the center showing white (imitating the



The "Scroll" in position—with front mask in place in front of holding board. The wire loop, held with springs on each side, keeps the supply roll from unwinding—the pulley and belt device at top keeps the take-up spool from unwinding and thus the paper is held flat over the front guides.



Showing mask in place, with "Insert" and a photo being slipped into position where it is held without adhesive.

gas which is to wipe in the bomb). Continue in this manner until five or six drawings are used. Allow two frames for each drawing. When the last drawing is shot remove the title card and substitute a completely white card. Expose three frames, then put the announcement in place and start the camera—taking at normal speed.

The second method is one which takes advantage of the "zoom" and is simpler to make. Put a large black card in the holder and expose several frames of this jet-black (or, simply hold the hand over the camera, although the former is recommended since it matches the "depth" of the black background to the scenes to follow). This done, mark the position of the holder on the bed and bring it as close to the lens as you can possibly focus—the closer the better. In this position indicate the field area on the large black card and draw a picture of a "shell" pointing at you. This will consist, of course, of a plain circle, but with shading to its center to indicate the shape of the nose. Mark the position of the holder at this point and we are ready to make the picture.

Start exposing one frame at a time with the holder in its original position away from the lens and gradually moving toward the lens. Do not be in too much of a hurry to move the holder at first—an inch at a time is plenty. As the holder is moved and exposed you must match the movement with your focus. As the holder nears the closest point toward the camera it may be moved farther each time until the last movement brings it forward about two or

three inches. Remove the black card—substitute white and expose three or four frames. Move the holder to any convenient position and put the title in place and expose in normal fashion.

An improvement on the above would be to release a cloud of thick white smoke in front of the lens before shooting the title, letting it clear away and expose the title.

THE HORIZONTAL "TWIST"

We have seen how easily we can film plain titles, zooms and retreats, so let us proceed to the next bit of trickery, namely, the horizontal "twist."

Remove all masks from the holder board, and put the twist device into position in the board aperture. Affix the handle and insert the idler screw in the hole on the right hand top of the holder so the insert may be pushed against this screw and be parallel with the face of the holder. Prepare a title card such as:

Swimming, too, helped
pass the time—

and fasten it in position with Scotch tape, taking care that it is level, and centered. This done, lift the idler screw, start twisting the board anti-clockwise, dropping the screw as soon as the board has passed under it so that the other face may come into position.

On this side we affix a previously prepared photograph of a person on a springboard getting ready to dive. Align the photograph and shoot the scene as follows: Bring the title back into position. Focus carefully. After setting for proper exposure and lighting correctly, start the camera and press the trigger so it will keep running without your hand on the button. Allow sufficient time to read the title, then (being sure to be as steady as possible) lift the idler screw enough to release the board, twist it anti-clockwise neither too fast nor too slow—just "definitely." As soon as the board has passed under the screw let it drop into position and, continuing the swing of the twist, the picture will finally come to rest against the screw and in perfect plane with the holder. Fade out and stop the camera.

It would be advisable to rig up a piece of black material in back of the holder so that when the twist is swung nothing will be seen. With the scene as outlined thus far in your camera, you can still go a step further.

Backwind the film (I hope you can) to the start of the fade, remove the camera from the titler, go out and find the board in the photograph and, shooting from the same angle, have the person in the photograph assume the same position he took for the other picture—start the camera and fade in—after which the person dives.

It sounds more complicated than it really is, but this outline will give you ideas from which you can get your own scenes and subjects. For instance, suppose we are titling a summer vacation picture and have already secured just such a shot of a man diving from a springboard. Have an enlargement made of the first frame of the scene (if it is clear and in fair focus and without too much blur due to movement) and, using this enlargement, proceed on the titler as already outlined with the exception of the fade-out. Cut the scene and title so that the title comes on, twists into the enlargement of the first scene and cuts into the scene itself. All tricky stuff—all easy to do—and all very mysterious, yet adding "life" to otherwise ordinary movie shooting.

Another use of the twist would be in working two titles into a scene. Suppose we are making a drama. The action calls for the following:

Two more laps to go—BUT—

WHAM!

The first part of the title can be printed on a card on one side of the twist, and the word "WHAM!" on the other Photograph as above. If desired, you can combine the

"zoom" with this shot by "zooming" the word "WHAM!"—taking care to follow focus if you do. Sometimes it is effective to follow a "zoom" with a "retreat." For instance, in the case above, the word "WHAM!" could be followed by the word "ZOWIE!" in a retreat. Continuing with retreats and zooms we could draw stars—birds and anything else the idea could call for. This business could be cut into the picture to show a racing car bumping along with a flat tire, etc. Still another variation would be to combine a "retreat" with a "lift," that is, to have, let us say a "birdie" chirping merrily to show that someone has been knocked out. The drawing comes into the picture as a retreat and leaves by being withdrawn from the grooves of the holder with the camera running until it is completely out.

Learn to combine one stunt with another and the combinations will provide no end of fun, practicability and pep to your films.

THE "WHIRL"

This little device is for whirling titles and stopping to find a new title in its place. In use, it serves merely as a support for the title card, and because of its purpose no provision is made for slipping a card into a framework, as was done in the case of the title card holder. The way my whirl device is built now, it mounts on the back of the holder carriage by means of the same screw (carriage bolt) that holds the scroll. The insert (twist) is, of course, removed for this and the disc protrudes through the front of the aperture in the holder. Mount a SQUARE title card on the front of the disc by means of Scotch tape from the back of the disc to the back of the card. Have the title printed in the usual 3:4 ratio as far as shape is concerned, but keep in mind that as the title is whirled, the title stands on one end and what was the width becomes the length, and should, therefore, be block. This is the reason for using a square card.

To use, simply affix a title card as outlined above. Start the camera and after allowing time to read, start the whirl slowly, gaining speed and finally whirling fairly fast. If your camera can make double exposures, then fade out on the whirl with a FAST fade. Otherwise cut it. Bring the handle of the whirl back into position and change the title card for the title or snapshot, or whatever is to follow. If you are double exposing then backwind the camera to the start of the fade and fade-in on the following. Otherwise, simply start the camera while the new title is being whirled. This whirl is slowed down until the handle finally clicks into position and stops with the new subject in place. This is most effective if you can make a lap dissolve of the two whirls, but even without this added bit of perfection, the whirl is most effective.

Combinations of previous tricks can be used with the whirl, especially with a fade in and out device on the camera. For instance, fade-out on a title after it has started whirling and cut in cold on a retreat. Or use the whirl for a pinwheel effect in combination with the "birdie" gag described already. No need to take up space here to enumerate all the possible combinations—for a little thought on your part will suggest many new ones that you'll want to try.

THE SCROLL

No need to mention what a scroll is—all of you have seen it in use in your neighborhood theatres. Long announcements originally brought the scroll into popularity, but since then it is combined in trick title photography to show clouds floating upwards—stars, futuristic designs, etc.

(Continued on Page 374)



“... and it
doesn't cost much
to run, either —
10 cents a shot.”

Give economical home movies with Ciné-Kodak Eight

IT'S going to be a popular gift this Christmas—the Ciné-Kodak Eight! This efficient little camera gives a life-time of faithful, versatile movie making at the lowest cost ever!* The “Eight” makes sparkingly clear movies on bright days or dull—even indoors under artificial light. It's a gift that will delight any one.

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Model 20, fixed-focus, with Kodak Anastigmat $f.3.5$ lens, built-in exposure guide, automatic footage indicator and eye-level finder—only \$34.50. Model 25, same as Model 20, equipped, however, with $f.2.7$ lens—price \$45. Model 60, de luxe, price \$91.50 with carrying case, has $f.1.9$ lens, interchangeable with $f.4.5$ telephoto lens (extra).

*If it isn't an Eastman,
it isn't a Kodak*



*Ciné-Kodak Eight Film is priced at but \$2.25 per roll. Each roll makes 20 to 30 newsreel-length scenes. And that's all it costs, because the price of the film includes its finishing.

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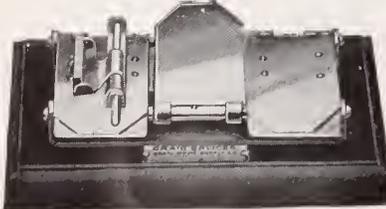
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A HOME-MADE TRICK TITLER

(Continued from Page 372)

The film is given a slight exposure and the title double-exposed normally into the scene.

If you have built your scroll as described in the preceding article, you will have room for a roll of paper 8 1/2" long. I cannot say exactly where this paper may be purchased, but if you call your local telephone company's supply department and tell them your needs they may be able to help you. In my case, the roll of paper was originally intended for the telephone company's teletype machines, and had been replaced by a duplicating type of roll with carbon between two sheets. Fortunately I was given the single roll and have not had to look for more yet.

The roll of paper is put on the broomstick idler and slipped into position with the paper fed from the top of the roll toward the front. Run the paper under the lower steel rod which projects from the side supports, up and over the upper rod, then to the slot in the upper broomstick roller, or takeup spool. Tear the paper to a brood point, stick this point into the slot in the takeup spool and turn the crank on the spool to tighten it. When it is properly threaded, draw the title in the proper place and you are ready to go. There are several things I must mention here before you shoot. The paper is white and, for reversal film, must be coated black before drawing the title. Then, too, you will find the 6"x8" mask a perfect outline for the scroll, and it may be slipped in place in the front holder slots. If you are using positive film for direct developing and projection, leave the scroll paper white and use a white mask.

Photograph like any other title by allowing time to read the first announcement and then, slowly turning the crank, wind the scroll on the takeup spool, which, in turn, slowly raises the title and exposing more and more printing.

Don't just consider the scroll as a means of making long announcements. Remember, its most valuable asset is its ability to provide moving backgrounds for double exposure work. The variations of this device in combination with the others are manifest and need not be mentioned further here.

THE WIPE-OFF AND CHASE-OFF

These tricks are just what their names imply, and are easily accomplished on this titler. To make a simple wipe-off from left to right: put a title in position. Set it and focus it at the proper distance from the camera lens. Determine the WIDTH of the picture area at this point. Then determine the time you wish to allow for the wipe. Find the number of threads per inch in the lead screw and how many inches you have to cover

(width of picture) and, allowing the number of frames in the total length of the time allowed for the wipe, you have the number of "operations" on the crank. Then move the crank for each "operation" a distance necessary to make the wipe cover the entire picture in the total number of operations. This sounds complicated but a little thought will show that it isn't a bit that way.

For example, let us say that we are photographing at a distance of 26" from the lens and have, therefore, a picture width of 10". Let us say we want to complete the wipe in two feet of film, or 80 frames. This means that we have to advance the wipe 80 times and over a range of 10", or 1/8" for each operation. Now if our lead screw has 8 threads per inch, this is simple—all we must do is give a complete revolution to each frame (figuring on using stop-motion). But if our screw has 12 threads per inch, we must give more than a complete revolution to each "operation," or exposure of a frame. We figure then on giving the handle one and a half complete revolutions for each single frame, which still advances it the required 1/8 of an inch.

Do not forget that the wipe is started only after sufficient time has been allowed to read the title and that a change in exposure will probably be necessary when changing from normal speed to stop-motion (usually about one stop larger for stop-motion).

The card which composes the wipe is installed in the manner described at the time constructional details were given, and can be of any shape as long as it is large enough to cover the entire picture. Bear in mind, too, that it is advisable to have the lights BETWEEN the wipe-off card and the title.

The chase-off is merely an elaboration of the wipe and consists of first making a wipe as described above, then backing up both the film and the wipe, change the wipe cord to the opposite side so that it COVERS the new title at the start and advancing the same way as before, proceed to wipe IN the new title. If you have been careful in your calculations you will have a perfect chase-off.

Of course it is not necessary to use two titles to make chases. A title and a photograph may be combined or, with a little more caution and thought to details, a scene can be chased in fairly accurately by making the title wipe at normal speed and turning the wipe-off handle steadily. Count the number of revolutions of the handle, backwind the film and wipe to the starting point, reverse the wipe card, and remove the title and "insert," so that the camera will shoot completely through the holder

aperture. Focus on the scene desired and, starting in as before, keep the wipe handle going at the same speed and so on. With good luck you will have made that greatest and most desired of all tricks in a 16mm camera—AN ACTION WIPE-OFF!

Just a word of caution here. When running the wipe-off traveller back for a "chase," it is a good idea to run it several turns past where it is to start

fram, and then reverse the handle and start it back. In other words, when using the wipe, bring the traveler to starting position TOWARD THE DIRECTION IT IS TO TRAVEL. This takes care of any play in the traveler and as long as the mechanism is not backed up this play will have no effect. A little oil on all working parts will tend toward smoothness of operation. Grease is recommended in the halder carriage runway.

TREND OF THE TIMES

Cameraman Dascomb Dies

● Newsreel Cameraman Ed. Brooks Dascomb, of the Paramount Newsreel staff in France, recently died from the effects of a bullet received during the filming of the assassination of King Alexander at Marseilles, France.

The pictures taken by Dascomb were considered one of the greatest newsreel scoops in Film history.

Cinema Exposition

● According to a report of "Lichtbild-buehne," a German trade paper, the German government in co-operation with the German Eastman Kodak Co. will sponsor an International Cinematographic Exposition to be held in Berlin. The purpose of this exposition is to show the great progress made by Mation Pictures in all departments. So far 22 foreign countries have already pledged entries of cinematographic interest. So far the U.S. is not represented.

German 16mm Camera

● The well known Zeiss-Ikon Co. of Germany recently perfected a new professional 16mm motion picture camera "MOVIKON," according to foreign trade paper reports. This little handy camera can do everything a professional camera can do. A picture speed of 12, 16, 24 up to 64 frames per second is provided.

It has an adjustable shutter for fades and dissolves. Also a special one frame per turn for stop-motion work. The rewind arrangement for dissolves is something new. The re-wound film does not actually enter into the magazine but into a special space provided, with sufficient protection to prevent any buckling. Focusing direct on film with a special arrangement to replace a piece of matfilm instead of grayback for focusing.

An automatic distance meter is built in. The camera is supplied with a turret comprising a Zeiss Tessar 1,27 15mm; 1,27 20mm; 1,1,4 25mm; 1, 2,8 50mm; 1, 4 75mm.

The new camera sells around \$280, present rate of exchange.

Ceiling Movies

● An enterprising London camera shop announces a sick-room projector for rent. It is a projector that can be put on a table over the patient's bed. Through a 45-degree mirror arrangement the image is projected on the ceiling of the sick room.

The patient is able to view the picture without having to sit up. It is said to have the endorsement of leading London physicians.

Anti-Curler

● Here is a god tip for professionals and amateurs alike that develop their own films. It is always hard to prevent drying film from curling. Especially film from miniature cameras has this tendency and is hard to cut and place between the glasses of the enlarger.

The following formula will prevent curling and leave your films smooth and flat:

Mix a solution of—100 cc water, 100 cc alcohol, 1 cc glycerin. Pass your films through this solution for several minutes and then hang up to dry.

Plastic Projection

● The "PANTOSCOPEWAND," a new type projection screen in a concave form has been invented and designed by Herr Hecht of Dresden, Germany. This new screen is claimed to give a very plastic effect to all films projected on it.

No special lenses or other accessories are needed in the projection apparatus.

No new principles or technical details are given in the announcement of this device.

Amateur Sound

● According to "Cineopse," a French trade paper, more than one thousand French Cinephotographers are already using 16mm cine equipment with sound. Sound-on-16 clubs are formed all

The New 16mm PANCHROMATIC NEGATIVES (Eastman, Agfa, Dupont)

will surprise you with their fine quality, their beautiful tones and grainless reproductions, if you have them developed by the

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The Ideal Gift

● Photo Flood-Spot will be particularly appreciated at Xmas time when it can be used to great advantage by the photographer who wishes to create beautiful, soft, mellow effects—fire-place shots, children playing with their new toys in the shadow of the Xmas tree, etc.

● Photo FLOOD-SPOT utilizes the inexpensive photo-flood bulb and puts your light emphasis just where you want it. Being accessible for quick light changes, it is admirably adapted to the Photo-flash bulb as well.

● It is beautifully and substantially made. A slight maneuvering of the focusing rod gives you a controlled beam of light. Provided with 5" condensing lens, sturdy folding tripod extending from 2½ ft. to 10 ft. of rubber-covered cord and switch.



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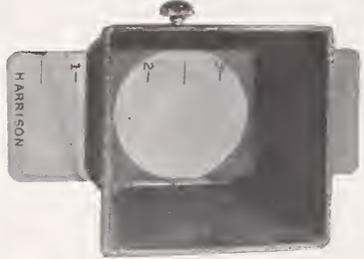
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over their country. They claim that in proportion to its population France has more Cine-Sound-Amateurs than any other country.

Infrograph

● A French steamship line has decided to equip all their transatlantic liners with the Captain Williams fag navigation camera "Infrograph."

Owing to the peculiarity of the Infra-Red rays to penetrate the thickest of fag and mist, the principle was applied to a quick-action camera designed by Capt. Williams.

This fag camera, usually mounted on the bridge of the ship, takes pictures at short intervals of the ship's course.

The camera is connected with an automatic developing device which per-

mits the viewing of the developed negative in 30 seconds.

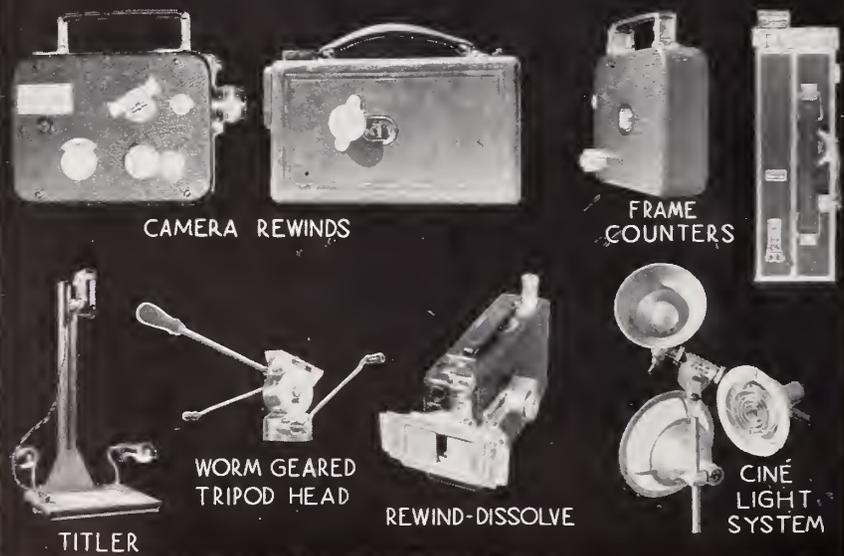
Callision in the fag, the most dreaded marine disaster, will soon be a thing of the past, thanks to the science of advanced Photography.

Sound-Stage Turn-Table

● "Sayauzkine" is the Russian Hollywood. Everything used there is of soviet manufacturing, including cameras and film. Russia is now actually producing their own Super-Pan-Chromatic film.

One of the largest sound-stages there boasts an enormous turn-table. They claim that it is the only turn-table sound-stage in the world. Great economy in time is said to be obtained through this arrangement. Several sets can be built at a time. Most of the lighting of the sets comes from above the stage turn-table, therefore, it is claimed, effecting additional saving of time in lighting the set.

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WORM GEARED TRIPOD HEAD **REWIND-DISSOLVE** **CINÉ LIGHT SYSTEM**

TITLER

8mm Pictures Take Honors in 1934 Competition

(Continued from Page 365)

are fresh in the judges' minds, the ratings are set down by the individual judges. The next day the averages are figured out as set down by all of the judges for that picture. None of the judges ever know what ratings have been given by any of the other judges.

Under the classification of Home Movie, Van Dee Sickler of Los Angeles was awarded the \$50.00 prize for his picture "Mischief," a 16mm subject in 200 feet. The continuity is evaluated around his wife, a Scotch terrier, a cat and a bird. The continuity, titles and photography of this picture were very good.

J. Sherlock of Sydney, Australia, was given the prize for his Scenic picture "The Brook," a 200-foot 16mm subject. It is evident that Sherlock went to great trouble to make this picture. It was based on Tennyson's poem and the scenes were made to fit the poem. This was very evident from the smoothness of the continuity. His photography secured a very high marking.

In the Documentary class Leslie P. Thatcher of Toronto, Canada, was awarded the \$50.00 prize. Thatcher was given a silver medal for travel pictures last year. His picture was a 16mm subject in 200 feet. His treatment was commented upon very highly by the judges.

Again this year the ladies were represented among the winners. Miss Rosanna W. Hill was awarded the prize for Kadacalar with her 200-foot 16mm sub-

If it is true that today's advanced custom-built equipment will be tomorrow's standard equipment, it is also true that your cine needs today are as pressing as they will be tomorrow. The improved cine tools worked out in my shop on special order, such as shown above, are custom-built but not prohibitive in price. It is impossible to satisfy every need on present-day equipment, but if you will write your requirements, perhaps I can be of assistance. You will be under no obligation.

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312 WEST PAGE
EQUIPMENT AND APPARATUS
DALLAS TEXAS

ject "October." This picture was a special delight as Miss Hill had concentrated upon pastel colors as she found them in the woods and fields. Also she brought the human element into her picture very gracefully and entertainingly.

"The Story of Water," a 16mm subject in 200 feet won the prize for H. Demarest of Hackensack, N. J., in the Educational class. This picture was a finely photographed record of water from the ocean to the clouds and back to the ocean again through its various stages. His photography rated high.

Because of the number of pictures entered by doctors the Scientific class was created this year. Under this classification the prize was awarded to M. Abraham Shur of Bronx, N. Y., for his picture "Reconstruction of Nose," made in 16mm Kadacolor. This picture was made with indoor lighting and showed a very consistent photography.

Prize for Travel picture was given to John E. Earl of Los Angeles for his picture "The Traveler." This was a very delightful 16mm subject that carried much entertainment value in addition to its good photographic quality.

It was impossible to complete all of the judging. All of the pictures are now being considered for the equipment prizes. A few of these prizes have been awarded, but in view of the fact that all of them have not been assigned, the announcement of all of the winners will be held up until the January issue.

The January issue will also give the names of those winning honorable mention.

Let's Talk About Lenses

(Continued from Page 367)

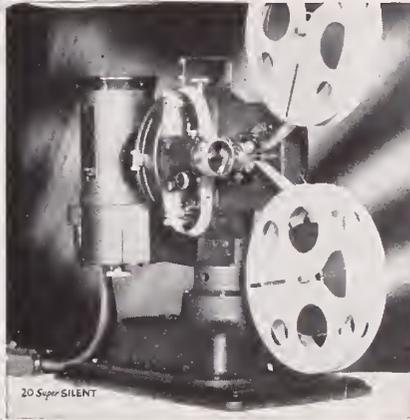
suggestion. For that reason, spherical aberration is deliberately **built into** the lens of the portrait, and in the Cooke Triplet, this is accomplished by adjusting the position of the rear element.

A word of warning, tho—**do not attempt to secure this sort of effect with your own Cooke lenses unless they are specifically so built.** To do so would be to destroy the accuracy of your lenses, and back to the factory they must go! If your Cooke lens has been damaged or if you have reason to believe it is out of adjustment, send it back to the factory, and don't attempt to have anyone else adjust it for you.

Perhaps the most popular type of anastigmat in use at the present time is that of the Zeiss Tessar, sketched in Figure 7. It will be seen that it is very much like the Cooke Triplet except that the



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rear element is a doublet or pair of elements cemented together. Just why this particular type of lens should be more popular than the Coake Triplet type is something I frankly do not know, unless it could be due to patent troubles or to manufacturing casts. Perhaps the Coake Triplet has an element which is para-

baloidal instead of the less expensive spherical surface, but this is only a guess on my part.

All of the better lenses of today are of the anastigmat type, for the demands for sharper and more precise definition of the image are increasingly insistent. The entire trend in both the still and motion picture fields is toward smaller and smaller negatives, for reasons of film economy. The idea is to get the best possible image on the smallest practical negative and then enlarge the image either on paper or on the motion picture screen.

The trend toward smaller negatives is a healthy one, too, for the smaller are the negatives the faster lenses may be made which will stay within the bounds of needle-point sharpness of the image. That means pictures may be made under poorer conditions of illumination and the field of photography is widened accordingly. Incidentally, also, the smaller the lens the less expensive it is, for, as I stated in my article on the future of the little 8mm system, flawless small pieces of optical glass are more commonly obtainable than larger ones.

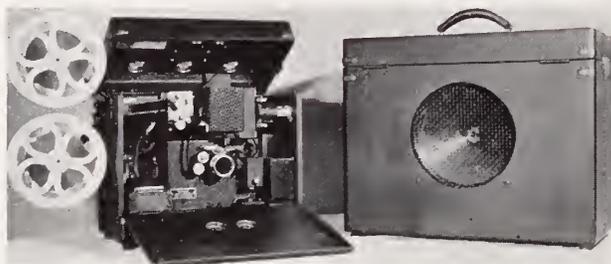
It is interesting to note in connection with lens design progress that we amateur movie makers are very largely responsible for the fact that we have anastigmats today as fast as f/1.9. Although I do not have such information at my fingertips, I believe that 16mm fans had f/1.9 lenses before the 35mm cameramen had them. This much, however, you yourself have probably observed—about the fastest lens ever used on a still camera making 2 1/4" x 3 1/4" or larger pictures is an f/4.5. It is possible to get f/2.5 lenses for the new miniature cameras, and f/1.5 lenses are quite common for 16mm movie work. The fastest lens ever made for 16mm work was the f/.99 Dallmeyer, but it was almost "too fast," for although well corrected for its wide-open use, it did not suit many users when they tried to stop it down for ordinary use.

Now that we have the 8mm film size, too, perhaps the story of lens speed progress will continue, and it shouldn't be surprising some of these days to open an AMERICAN CINEMATOGRAPHER to find an advertisement of a leading lens maker of an f/.5 lens for 8mm work. And, in the words of Mr. Gasden (Amos of "Amos 'n Andy"), "Ain' dot sumpin'!"

Next month suppose we talk about wide-angle and telephoto lenses. Perhaps you've observed that somehow you weren't quite satisfied with your movies made with any lens other than the regular focal length, and have wondered why this is. After reading next month's article, perhaps the reason for the apparent distortion of perspective by these lenses will become a bit clearer. See you then.

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"SHOW IT WITH SOLITE"

Fades and Dissolves

(Continued from Page 364)

only be available to the very fortunate or very patient. A second method is to take the picture of the name-board and afterwards to rewind the film part of the way and re-expose it on a piece of black card close to the camera, in front of which a small quantity of smoke or steam is passed to obscure the card. The result of the double exposure will be to give a name-board across which the steam is seen to pass.

A similar method is adopted in starting on the next scene, it being only necessary to take care that the "smoke" is drifting in the same direction in each of the two scenes. The steam, which is the natural adjunct of the railway, is thus brought into use in the film for the purpose of the "fade out" and "fade in."

It might be thought that ideas of this type are few and with only a limited application. Once the principle is understood, however, adaptations will be discovered. For instance, here are two examples of the "natural" fade—as applied to the cine portraiture of a child. A child behind a newspaper is told to wait for the word "Go!" and then to tear the paper down the middle from the top. The camera is set up, so that an expanse of newspaper only is visible, and is started just before the word is given to "Go." The result is a picture of a newspaper which, as it is torn in two, reveals the impish face of the youngster. All kids love to tear newspaper; but what fun when one is told to do it. A variant of this idea is of a child pulling on a frock or overall. Little more than the head and shoulders should be taken and the camera should be started while the garment is over the child's head and fills the whole of the picture area. As the picture proceeds the tousled head will be seen to emerge from the folds. And the expression will be perfectly natural; for putting on one's own overall or frock is rather an adventure, isn't it!

Such ideas as these require a camera which is still, or nearly so, but a somewhat different effect can be obtained if the camera is moving. The idea is, I suspect, an old one. But if it is well done it is difficult to detect and it is probably for this reason that I have never been conscious of seeing it used professionally. I call it the "swing mix." Suppose that we have two settings, apart from one another, but it is desired that the child or actor is seen to pass directly from one to the other. It is arranged that as the subject moves from the first setting he or she passes fairly close to the camera and across the line of sight. On the approach the camera is panned to follow and is moved faster and faster, the subject moving across the picture

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space. The scene in the second setting is then taken and this starts with the subject passing across the picture in the same direction while the camera follows and subsequently slows down as the desired arrangement of the picture is reached. When the film is edited the join is made of the two quick panorams, care being taken that the subject is in the same position in the frame both at the end of the first shot and the beginning of the second. The effect on the screen is as though one continuous shot had been made and this will scarcely be noticeable even if there is some differ-

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ence in the distance of the subject from the camera at the junction of the two films. It is only necessary to take care that there are no obtrusive objects in the background where the films are joined. This method enables the greatest

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advantage to be taken of natural settings even in the simplest of domestic films.

The same idea, perhaps with a slight modification, is useful in story films. Suppose that it is desired to follow a party of people moving from left to right. The camera is swung to follow the party, gaining on them until they are out of the picture. The camera is then moved increasingly faster and comes to rest on another setting. The actors re-enter from the left. There are actually two shots, the first ending with the very rapid pan past some near bushes having no distinctive features. The second shot commences with a rapid pan on some similar bushes and the camera comes to rest on the required scene. For the second shot the actors must be hidden or they will be seen in the panoram and an alternative method is to simply start the second shot on the required scene. The effect when the two films are joined is the abrupt ending of the pan, and the actors can then enter from the left without need for camouflage.

So much for "natural" fades and mixes. The subject is a very wide one, for people who go about with wide open eyes. Once again necessity becomes the mother of invention. Good luck in this sideline in the gentle art of *leger de cine*.

Special Effect Lighting for the Amateur

(Continued from Page 368)

as silk, celluloid or ordinary tissue over each of your lamps your film will be improved greatly photographically. The drawback of using diffusers is that they cut the light value of your lights in half, thus necessitating the use of twice the number of lights.

For the ordinary amateur a diffusion lens will not give the same result. To properly use a diffusion lens a complete study of diffusion through optical means is necessary.

Another point in indoor lighting of sets is not to omit offstage lighting. In other words, when a character leaves the set by means of a door he shouldn't go into inky blackness. The room he goes into should show at least a faint light.

A final point to remember in indoor photography is that your characters should dress in colors that contrast with their background and with each other. Often when using a minimum number of lights light clothing gives the best contrast even with a light background.

PHOTOGRAPHIC ANNUAL

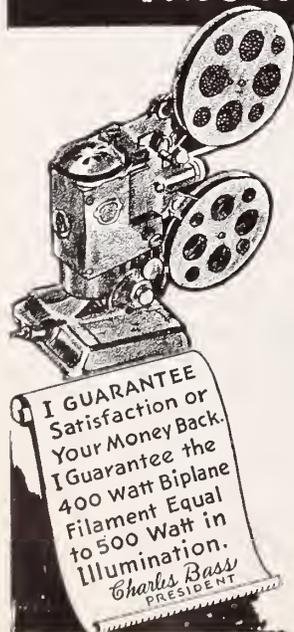
• The 1935 American Annual of Photography has come to our desk.

The Annual has been richly illustrated with representative works from among the leading photographers of the world. A study of these illustrations is in itself a satisfying education in photography.

The text matter is instructive. Among the contributors and the subjects discussed by them are Herbert C. McKay on "Making the Most of Exposure"; C. W. Gibbs on "Focus in Cine Film"; Rudolf vonErhardt, "A Universal Focal Slide Rule"; James C. Kinkaid, "Filters in Press Work"; Fred C. Bowditch, Jr., "Notes on Infra-Red Photography"; Charles W. Seager, "Possibilities with Photoflood Lamps"; Homer S. Powley, "A Standard Darkroom Procedure"; John Lanctot, "The Control of Graininess"; William S. Davis, "Line and Tone as Expressive Factors in Composition."

These are but a few of the interesting subjects covered in this issue of the Annual. It is published by the American Photographic Publishing Co. in both paper and cloth binding. The cloth binding sells for \$2.25 and the paper for \$1.50.

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16MM NEWS REEL

● According to plans evolved by the Peerless Motion Picture Company of Hollywood, that organization will launch a 16mm News Reel, to be released monthly.

This news reel will in all likelihood be in 400-foot lengths. Its reporters will consist of outstanding amateurs throughout the world. The events will be in the nature of feature news events instead of sport news. This means that it will have a longer life and a wider interest.

Wm. J. Seeman, one of the most prominent amateur cameramen on the West coast, will be appointed editor of the newsreel.

Just when the first of these will be launched has not been decided, however, plans are being laid for a release sometime around the first of the year.

OAKLAND SHOWS PRIZE PICTURES

● The Oakland Amateur Movie Club had a showing last month of the AMERICAN CINEMATOGRAPHER 1933 prize winning pictures.

The club made a special event of the occasion and not only had members present, but the meeting was thrown open to friends and dealers throughout the city.

NEW 8MM CLUB

● The newly organized Los Angeles 8-mm club under the direction of Claude W. A. Cadorette and Randolph B. Clardy, winner of the American Cinematographer prize for photography and scenario in the 1933 Amateur Contest, will hold its first meeting the second Tuesday of January at the Bell & Howell auditorium in Hollywood.

Plans for meetings will include instructive talks and criticisms; exchange of film with other eight millimeter clubs; prize contests every two months and a grand yearly contest; a club production each year. Meetings will be held at the Bell & Howell and Eastman Auditoriums.

The yearly fee is established at \$3.00. Temporary headquarters of the club are at the home of Cadorette, 233 N. Kenmore Ave., Los Angeles, Calif.

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FOR SALE—CAMERAS

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BEFORE buying film, equipment, parts, get our prices on new and used. Trades accepted. Film library catalogue. Mogull Bros., 1933-A, Boston Rd., N. Y. C.

AKELEY Camera No. 280; chromed pressure plate, with tripod, 4 extra 200-ft. magazines, standard matched Zeiss lenses, 1 B & L 6" 14.5 lens and matched finder, slow motion attachment and 2 cases. Perfect condition, \$850. RABSONS MUSIC & CAMERA CO., INC., 1373 6th Ave., New York City.

35mm APPARATUS at give-away prices, all in good operating condition. Universal 200-ft. camera, f3.5 lens, case, \$40.00. DeVry, f3.5 lens, \$40.00. Professional step printer, \$30.00. Universal 200-ft. camera, 40mm, f1.9; 50mm, f3.5; 90mm, f4.5; 6 magazines, case and Universal tripod, \$90.00. George Horst, 1924 Green st., Philadelphia, Pa.

MITCHELL STEEL GEAR CAMERA, perfect condition, all standard Studio equipment, Astro Pan Tachar lenses, net \$1450. Camera Supply Co., Ltd., 1515 No. Cahuenga Blvd., Hollywood, Calif.

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LEICA MANUAL

One of the most complete books on LEICA photography is now in preparation. This book which is scheduled to appear about the first of the year will contain many chapters written by experts and amateurs who are using the LEICA camera professionally and as a hobby. The entire book will be a practical working manual containing information which can be used by the beginner or the advanced professional worker. The LEICA MANUAL is being written entirely by LEICA workers in the United States and is being published in this country by Willford D. Morgan and Henry M. Lester, independently of the Leitz Company. The editors of this book feel that they are presenting something quite original and valuable for all who are interested in miniature camera photography.

TRICKS

GADGETS

Another Contest

Here's how it works. Send us in tricks you have done in filming with your 8mm, 9½mm or 16mm camera. Explain them to us so that we can explain them to others in the pages of *American Cinematographer*.

For every one we publish you will be entitled to your choice of one of the prizes listed below.

By Gadgets we mean little pieces of equipment you have built, designed or devised. Equipment that works. Little gadgets you have added to your camera, projector or otherwise. For instance, we heard of one fellow who built a splicer out of a mousetrap . . . that's a gadget.

What kind of gadgets have you made . . . what sort of tricks do you do with your camera or equipment? If necessary send us a rough sketch or a snap shot of your equipment if it will help describe it better and quicker.

Here's Your Chance to Win Equipment or Film

Frequently we have published what might be termed tricks. Such as making distorted effects by pouring sweet-oil over a glass in front of the film. Others have been published from time to time.

In the way of gadgets we have reported many things from the building of a complete 16mm camera by amateurs down to making their own reels.

What Have You Done?

Here are the prizes . . . you may make your choice of any one of them.

Beltipod	Two Rolls of 8mm Film
Filter Holder	8mm Splicer and Rewind
Choice of Filter	Humidor Can Case for 12 Reels
Splicer	22x30 Beaded Screen
Half-Dozen 16mm Reels	3 Clamp Lamp Reflectors with
Half-Dozen 16mm Cans	3 Photoflood Lamps
3 Reels and 3 Cans	One Dozen Photoflood Lamps
100-ft. Roll of 16mm Pan Film	

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