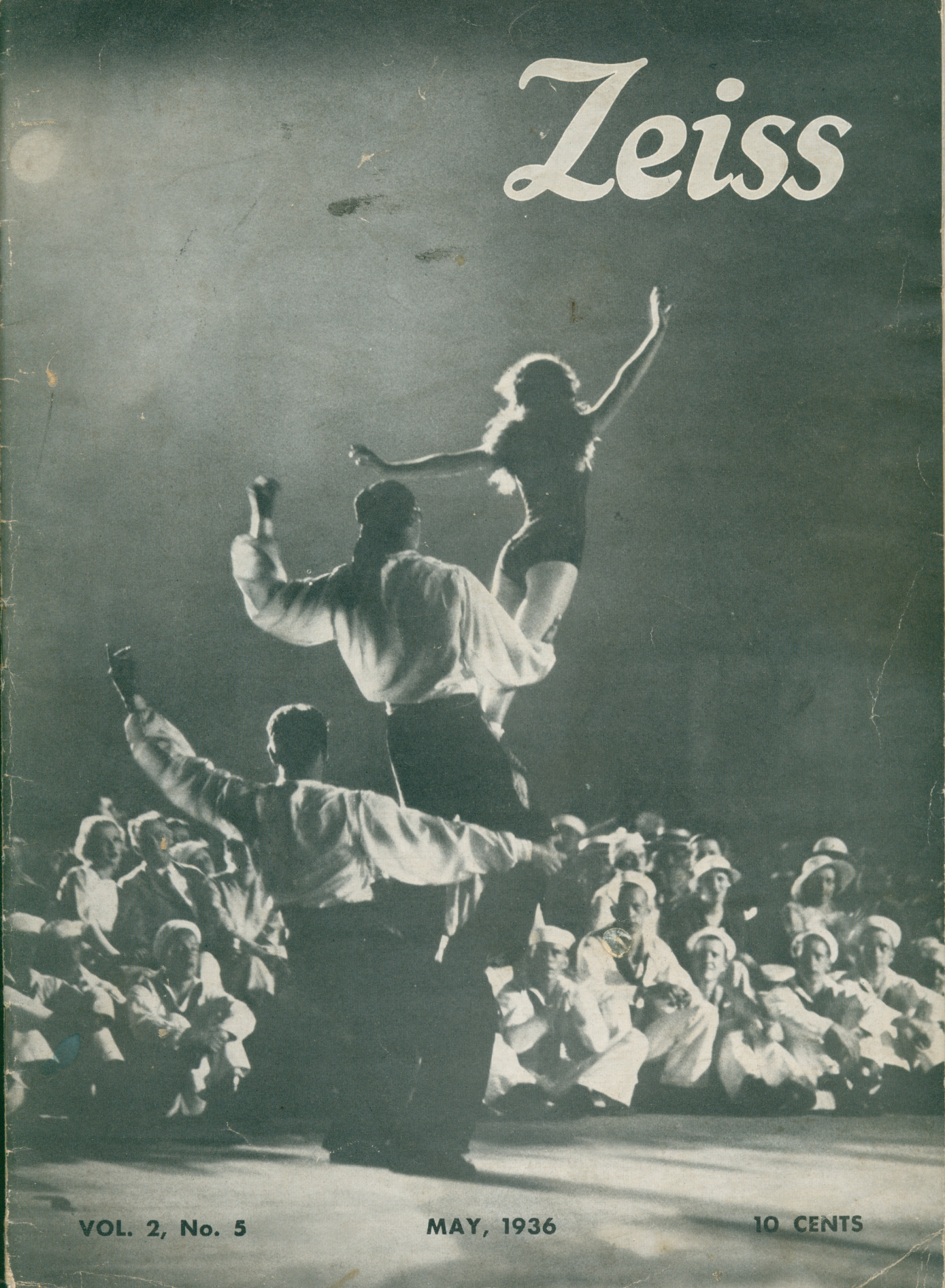
Zeiss



VOL. 2, No. 5 MAY, 1936 10 CENTS

THE LONE PINE — FIRST PRIZE — MONTHLY COMPETITION — A. W. STREITMATTER

Zeiss Ikon Monthly Competition

The first prize award this month goes to Mr. A. W. Streitmatter for his excellent picture *The Lone Pine* which is reproduced on this page. A ZEISS IKON IDEAL B Camera fitted with an F:4.5, 13.5 cm. ZEISS TESSAR Lens and dark yellow filter was used in making this picture, the exposure being 1/10th second at F:16. Mr. Streitmatter certainly deserves this award; not only has he selected an excellent subject from the pictorial viewpoint and arranged and composed it well within the picture frame but he has also solved the rather difficult technical problem of securing the effect of depth and perspective by rendering the mountains soft and indistinct and at the same time giving sufficient definition and contrast to the clouds so that they stand out distinctively and strongly against the blue of the sky.

Mr. Mario Scacheri receives the second prize award for his striking picture *Adagio Dancers* reproduced on the cover. This is an open air night photograph taken with a ZEISS IKON JUWEL A and ZEISS F:4.5, 17.5 cm. TESSAR Lens. The camera was hand-held with an exposure of 1/5th second at F:4.5. A difficult subject to portray with the larger camera with a slow lens, Mr. Scacheri has succeeded in doing so without excessive motion by waiting for that brief second of suspended animation that occurs during practically all motion.

The picture *Volunteer Firemen* reproduced on page 99 earns for its maker, Mr. Roy Shawcross, the third prize award. (*continued on page* 99)

ZEISS MAGAZINE, *Devoted to Zeiss Ikon Photography,* is published monthly by Carl Zeiss, Inc., at 485 Fifth Avenue, New York, N. Y. Subscription rate in the United States and Possessions is $1.00 per year; in all foreign countries, $1.50. Single or sample copies, 10 cents. The Editor will welcome original manuscripts on photography with current models of Zeiss Ikon Cameras, remuneration for which will be at the customary rate for photographic magazines. Unsuitable manuscripts will be returned promptly.

ZEISS MAGAZINE

Devoted to Zeiss Ikon Photography

Volume II MAY, 1936 *Number Five*

Flower Photography

F. SEYMOUR HERSEY

The camera enthusiast, tired of the usual subjects, will find the photography of flowers an interesting and diversified field for his camera. Whether wild flowers or the horticultural varieties, the subjects are almost limitless, and the manner of picturing them affords full scope for the exercise of both pictorial and technical ability.

Because of their many desirable features including the ZEISS TESSAR Lens, double extension bellows and precision construction, the ZEISS IKON MAXIMAR and IDEAL Cameras are very suitable for this work. The IDEAL is preferable on account of its greater flexibility and longer focal length lens but excellent work can be done with the inexpensive MAXIMAR. A good rigid tripod is essential. The telescoping metal ones are not steady enough, but they possess one advantage, viz., when used closed the camera can be placed at the same level as flowers close to the ground, and in this position they are free from vibration. One of this type plus the ZEISS IKON Wooden Tripod will adequately handle any problem that may arise. The ZEISS IKON Tilting Tripod Head, or the ball and socket Swivel Tripod Head, is a necessity.

LARGE AND SMALL DAHLIAS: *Large dahlia, pink and mauve blend; pompon dahlias, white, pink, yellow and deep red; background, primrose and pale violet crepe paper. Medium yellow filter.*

Some workers recommend the use of orthochromatic film unless the subject includes red flowers or leaves. My experience has been that more satisfactory results will be obtained through the use of panchromatic film and filters. The sensitivity of orthochromatic film to green is very low and there is a tremendous excess sensitivity to the blue. The panchromatic film is not only sensitive to the red, but is more sensitive to the green and yellow than orthochromatic film. This higher sensitivity means that the use of filters will not result in the much increased exposure required when they are used with orthochromatic film. Also that the detail and tone quality and rendering of the print will be better.

The ZEISS Light and Dark filters will handle a large percentage of the work attempted. A subject containing red blossoms and green foliage, however, will, frequently, not respond

satisfactorily to these filters due to the fact that the visual contrast is a color rather than a tone contrast. This occurs when the light intensity or luminosity of the two colors is such that the film will give them an equal monotone rendering. Under these conditions substitute either the ZEISS IKON Green or Light Red filter, depending on whether the foliage or the blossoms are to be shown lighter in tone. The rule is that the color corresponding to the color filter used will appear light in the print.

The double extension bellows of the MAXIMAR and IDEAL Cameras are a distinct advantage in flower photography. Many blossoms and plants are so small that the detail will be lost unless the image is of a good size. The bellows extension on these cameras permits them to be brought close enough to the subject to secure an image on the negative the same size as the object photographed. When the ZEISS PROXAR Lenses designed for use with the TESSAR Lens are attached, an image almost half again as large as the object will be secured.

A background is often needed to isolate a plant or flower from its surroundings. Wall board is admirably suited to this purpose. The type known as Upson Board is light in weight, rigid, and has a good surface texture. The material is a light buff or ecru. If unsatisfactory, the surface may be painted any desired color. A single background will serve for different purposes if one side is covered with two or three coats of flat white paint and the opposite side with a pale gray. Or one side can be painted a light gray and the other a darker gray, providing again a choice of two different background tones. Brushing lacquer (not enamel) is recommended in lieu of paint since it flows freely and will dry smooth with less chance of showing brush marks. Many delicate tints can be obtained and with some, by the use of different filters, it is possible to get a light or dark toned effect from the same background.

Small backgrounds about 20″x26″ are more useful for close up work. Mine are made of a sheet taller growing flowers will require a piece about 4′ square. This size will be inconvenient to carry when securing photographs of flowers and plants in the woods and fields away from home. For this purpose a piece 30″ square will generally suffice and is about as large as even the most enthusiastic amateur will care to take with him.

The natural color of this

DAHLIAS: *Buff color, light bronze suffusion at center; red vase with white cameo design. Medium yellow filter.*

DAHLIAS: *Colored deep red, buff, white with faint wash of opalescent pink and light yellow; gray green vase; pale blue lacquered background. Medium yellow filter.*

Photographs by F. SEYMOUR HERSEY *with* MAXIMAR *B Camera and* TESSAR *F:4.5, 13.5 cm. Lens.*

of double-faced corrugated strawboard covered with crepe paper, or any other suitable paper, or with fabric drawn tight over the board and fastened at the back. It is well to make several of these of different designs, as the use of one ground with all subjects tends to become monotonous.

When photographing flowers outdoors attention should be given to the lighting. Direct overhead lighting should be avoided and, for this reason, flower photographs should be taken in the early morning or late afternoon. Frequently a hazy day will give better results than bright sunlight. Experience will be a deciding factor in this respect. Some flowers photograph well on dull days while others will appear flat and lifeless.

In adjusting the camera select a viewpoint as near the level of the blossoms as possible. A view looking down is seldom satisfactory. The lens should be stopped down well so as to get the fine detail and texture of the petals as much of the beauty of the flowers depends on this detail.

Another method of flower photography is to arrange your subjects as cut flowers in vases, permitting them to be photographed in the house or out of doors. For indoor work, by daylight, the light from a north window is best, but if not available a west window may be used in the morning or an east one in the afternoon. Avoid a window through which the sun is shining. The stand, or table, on which the vase of flowers is placed, should be two or three feet from the window and slightly back of it, and the background should be about two feet back of the table. It is essential that both table and camera be absolutely level.

The side of the flowers away from the window will not be so well lighted as the opposite side and some sort of a reflector must be placed so as to throw light on this shadow side. Any white surface may be used. A white towel placed over the back of a tall chair will serve, or if a larger surface is required a sheet may be hung over a tall folding screen. If much work is done a good permanent reflector such as a piece of wallboard, similar to that used for the background but painted white, will be more convenient. If aluminum paint is used instead of white, the reflected light will be stronger and harder. In an emergency, I have had a member of my family hold an open newspaper in the proper position and obtained satisfactory results. As a general rule the reflector should be placed about as close to the subject as possible without actually showing in the picture. In placing it, remember that light falling upon its surface is reflected at an angle equal to the angle of the incident light. A photo-electric exposure meter can be used to show the difference in illumination between the two sides. Readings taken at a distance of about six inches from the top, bottom and sides of the subject will often show variations of as much as 100% in the lighting of different parts and are of considerable help in placing reflectors.

No attempt will be made to discuss the photography of flowers indoors (*Continued on page 98*)

(Left) POMPON DAHLIAS AND BOLTONIA: *dahlias white, pink and deep red; boltonia white with yellow centers; basket wine-color. Medium yellow filter.* (Center) DAHLIAS: *black vase with inlaid silver design; mahogany stand; maroon-colored fabric background. Light yellow filter.* (Right) ORIENTAL POPPIES: *taken where growing. Red filter.*

The Contax in Penology

RENE BREGUET, M.D.*

In 1934 the New York State Department of Correction sponsored an exhibit of educational and vocational activities in penal institutions. The first request for the exhibit was a photographic record of prison life and activities; a record that would not only include the working and leisure activities of the inmates, but would also show the different examinations and treatments and the numerous divisions of a penal institution.

I had just acquired a CONTAX and offered my amateur services without a full appreciation of the magnitude of the task that lay before me. Time was short and things had to move fast. There were weeks of feverish activity on the medical as well as on the photographic front. How grateful I was to my faithful little CONTAX. So little and so inconspicuous that in the beginning no one paid much attention to it. The doctor was just amusing himself—and what informal pictures I secured as a result.

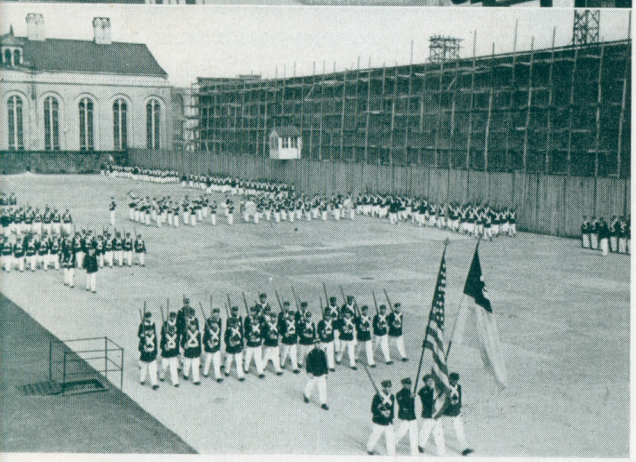
The task grew as it went on and I began to realize the capabilities of the CONTAX. It became more and more difficult to retain informality as the subjects began to realize the deadly accuracy of my little camera. I photographed the whole life of the Reformatory, securing records of every conceivable aspect of prison life: the buildings, both inside and out, various physical and mental examinations, work in the more than forty trade shops, all the different classrooms, physical training, sports and military drill, routine medical operations and first aid and the many thousands of other interlocking activities to be found in any prison.

*Senior Medical Officer & Psychiatrist, New York State Reformatory, Elmira, N. Y.

Single Hospital Room Through Wire Glass.

(Top) *School Library.* (Bottom) *Pour in Foundry*

In an enterprise of this nature, detailed documentation and accuracy are important. Many pictures must be secured at a given time irregardless of the many varied conditions of light and action. My SONNAR F:1.5 proved excellent and was indispensable. Under no circumstances was it necessary to add to the usual lighting, whether artificial or natural. The impressions conveyed in the picture remained absolutely true to fact, and cloudy or brilliant weather, whether indoors or out, made no difference. When I commenced using this lens I wondered how good definition and depth could be attained with such large apertures. I soon found that the minimum stop, F:11, was more than sufficient and that this lens at F:1.5 has excellent definition and remarkable depth. The latter due to its short focal length and the former to quality



(Top) *Commercial Art Class.* (Bottom) *Color Parade.*

materials and precision workmanship.

The quality performance of this lens is unbelievable. Study the accompanying photographs. Notice the clarity and definition. I once tried to remove a speck of dust from a CONTAX negative, but was unsuccessful; on enlarging that particular negative I discovered that the speck of "dust" was a clock on the distant wall of our large institutional kitchen: time, two and one-half minutes past ten! One of the inmates shown reading in the picture of the library consulted me once about a small exostosis or growth on his forehead. See it? Also the tattooing on the arms of both inmates. And the extreme depth of focus shows in the foundry picture photographed at F:1.5. Perhaps the best example of the unbelievable performance of this lens is shown in the photograph of the single hospital room. This picture was taken through polished wired plate glass with the lens pointing straight at the window and windows back of the camera shining on the glass. Notice how the lens has performed under these difficulties; every detail of the room has been brought out, the prisoner's facial expression remains plainly visible and the wire in the glass and reflection of the window back of the camera is plainly seen. And the, to me, remarkable performance of this lens lies in the fact that these pictures include the whole negative area and there is no falling off in definition in the corners—the remarkable definition continues right to the edge of the picture.

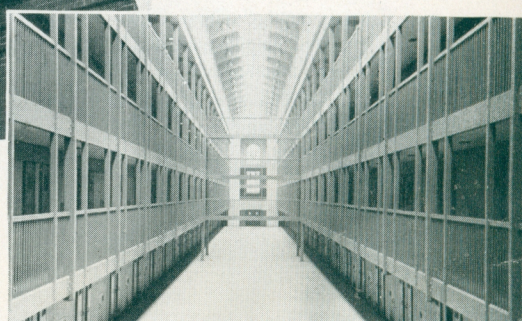
A photographic documentation of this type of a penal institution offers many advantages. In our institution it is an important part of our permanent exhibit and has also been used during several penal conferences. Slides made from 120 of these negatives are in constant demand for use in colleges and for lectures to laymen. Visitors from far and near interested in penology carry back with them our illustrated folders, and many technical articles in special magazines have benefitted by these good illustrations.

We also intend to use the CONTAX for close clinical work in our Medical Department and for the reproduction of tabulations in our Sociological and Research Departments. Judging from a few photographs taken in local hospitals of skin lesions and anatomical specimens, we feel that the CONTAX will have a definite place in these fields, especially with the new CONTAMETER. In fact, the more we use this marvelous little camera, the more we realize its unlimited possibilities in picturing and recording the many diverse activities and departments of a penal institution. And many of these photographs which are proving to be of such tremendous value (*Continued on page* 98)

Photographs by Rene Breguet, M. D.

(Left) *West Gate Tower.*

(Below) *Cell Block Interior.*



Among the Beginners

Making the Print ~ Part Two

CHARLES C. MUNRO

Printing papers are obtainable in several grades of contrast, various weights or thicknesses and different surfaces and tints. Certain rules can be made as to the correct choice, but it is experience that will give the knowledge and feeling required to select a paper of the correct grade and surface for a given negative. The best recommendation that can be made is that the beginner use a white, double-weight semi-matte surface and try the different grades of contrast with each negative until some experience has been gained. Within these limits, do not be afraid to experiment. Try all the different grades of contrast with the same negative if undecided as to which is correct. At first, do not try to judge the result until the paper has dried, for many papers have a tendency to dry darker and softer (less contrasty) than they appeared when wet. When satisfactory prints can be made from negatives of different degrees of contrast, then begin to try some of the other surfaces and tints.

There is a decided lack of similarity among the different manufacturers in naming the different grades of contrast and the different paper surfaces offered; this will not cause confusion if only one make of paper is used until a greater degree of experience has been gained. The dealer from whom the printing paper is secured can furnish descriptive literature from the manufacturer showing the negative contrast for which his different grades of paper contrast are intended.

Last month the reproductions of three prints having much the same tone range were shown so as to illustrate how, if the proper application of different grades of paper contrast were made, simi-

Photographs by Fenwick G. Small

Example of variation in print contrast obtainable through the use of different grades of paper contrast with a negative of average or medium contrast. From top to bottom the pictures are reproduced respectively from prints on Agfa Brovira Hard, Medium and Soft. Attention is called to the extreme contrast in the top picture and the compression of tones or lack of contrast in the bottom picture. The middle picture is correct and shows a good range of tones.

lar prints could be secured from negatives of different degrees of contrast. This month some prints are reproduced so as to show the effect secured by varying the grade of contrast of the paper with the same negative. The possibilities of control over the contrast of the print through the use of the proper grade of paper contrast can be readily seen.

The negative of the lake picture was of medium contrast. The reproductions are of prints made on Agfa Brovira Soft, Medium and Hard Paper. The print shown at the top was made on Hard or contrast paper which has a very short tone scale and is contrasty. There has been a considerable loss of tones in the highlight portions of the print. Longer exposure of this print so as to secure detail and a darkening of the tones in the highlight portions would have so darkened the shadows as to render them black and cause a loss of detail in this portion of the print. The print shown at the bottom was made on soft paper which has a very long tone scale. In this case the tone scale is too long for this negative and we have a compression of the different tones which has resulted in a lightening of the shadow portion and darkening of the highlights causing the print to be flat and uninteresting. The print shown in the center is on a medium grade of paper contrast which is correct for this negative. As a result we have a full tone scale ranging from almost clear white highlights to deep lustrous blacks. It will be noticed that the shadow portions are very much similar to those in the upper print on a hard grade of paper contrast while the highlight portions are very much like those in the lower print, which was on a soft grade of paper contrast.

The pictures of the Iris are reproductions of prints made from a soft negative on Agfa Brovira Soft and Hard. In the print reproduced on the left, the short tone scale of the negative has been so repressed by the short tone scale of the paper that the resulting print is flat and uninteresting with degraded highlights and grayish lustreless shadows. The print reproduced on the right was made on Agfa Brovira Hard, and here we have a good tone scale ranging from highlights just showing detail and a slight darkening to rich lustrous blacks in the shadow portions.

Example of soft negative printed on soft and hard paper. Picture on left is reproduction of print on soft paper, on right hard paper.

Attention to the selection of the proper grade of contrast in the printing paper is well worth the beginner's attention. It is recommended that the grade of contrast and exposure and development time be written on the back of each sheet of printing paper before the exposure is made. After the prints have dried, examine them and then examine the negative by transmitted light; then place the negative in the enlarger, turn on the light and, after focusing sharply to the same size as the print, examine the image projected on a sheet of white paper placed on the easel.

(*To be continued in June*)

My *IDEAL* Camera

RICHARD WURTS*

Small in size and light in weight, adaptable and versatile in use, the IDEAL Camera is invaluable to commercial photographers. Alone, it will handle almost any photographic assignment and will frequently produce satisfactory results where a larger camera would fail dismally. Used in conjunction with the larger camera it permits the making of supplementary views at slight expense, and sometimes these extra pictures, not called for in the assignment, are more valuable to the customer than those made with the larger camera. High speed indoor and night exposures can be made with photo-flash bulbs by attaching a synchronizer to the Compur shutter. When copying drawings, plans, paintings or making reproductions of small objects, the side motion and rise and fall of the lens permits rapid and easy centering of the image on the ground glass. Its smaller size allows it to be used in crowds without attracting undue attention. Public officials will often stop the commercial photographer with his view camera and tripod, but will say nothing if the IDEAL is used hand held. And for this purpose either the brilliant finder or wire iconometer finder may be used for centering and composing the picture as easily as the ground glass. From a professional viewpoint the 9 x 12 cm. negative is not too small to handle readily in the various finishing processes or to spot and retouch. And contact prints of this size are large enough to be used for reproduction purposes.

The versatility of the IDEAL B is best shown by a series of photographs I made at an exhibition of the history and development of puppets. To obtain a good view of the small figure of Punchinello which stood about 10 inches high I had to place the camera within 2 feet of the puppet. In another part of the exhibit there was a female figure which had been used in the Opera, Oedipus Rex; this puppet was nine feet in height and the camera could not be placed far enough back to include the entire figure. When the PROXAR Lens was attached to the camera lens there was no further difficulty in securing the picture.

An occasion which showed us the value of a high speed compact camera as a supplementary instrument occurred at the Hayden Planetarium in New York City. We were working against time and holding up the technicians completing the installation of equipment in the projection dome just before the formal opening. We wanted to give a comprehensive story of the ZEISS PLANETARIUM Machine by showing in one picture the planetarium machine, the Dome Room with the skyline silhouetted around the horizon and the actual projected image on the dome. No light meter made could give us any idea of the correct exposure for the faint projected image on the dome. Both the

*Wurts Brothers, New York City.

(Left) *Six seconds exposure at* F:4.5 *on Superpan Film.* (Right) *Zeiss Planetarium Machine in the Hayden Planetarium. Five seconds exposure on the machine and ten minutes exposure on the dome, both at* F:4.5. *Superpan Film.*

(Below) *Puppet on left was nine feet high, on right ten inches. Equal sized images were secured by use of a Proxar Lens for tall figure and the long bellows extension for small one. Exposure for tall figure was five seconds at F:32, for short figure ten seconds at F:22, Superpan Film.* (Right) *One-half second exposure at F:11, light yellow filter, Superpan Film.*

All photographs by Richard Wurts with the Ideal B and F:4.5, 15 cm. Tessar Lens.

ZEISS IKON IDEAL and our 8″ x 10″ view camera were used. First, a short exposure was made on each negative with a special light concentrated on the PLANETARIUM Machine. Then the cameras were focused on the dome and another exposure made on the same negative. While it was hard to determine sharp focus on the dome with the TESSAR Lens on the IDEAL set at F:4.5 due to the curved surface and weak light, it was even more difficult with the 8″ x 10″ camera since we had to use a wide angle lens with the diaphragm set at F:11. When the negatives from both cameras were developed we found that all of them were badly underexposed. The 8″ x 10″ negatives were worthless, but several of the 9 x 12 cm. size were fair. The best of these were intensified and enlarged positives made on process film. From one of the positives we secured an excellent 8″ x 10″ negative and made prints with fine definition and contrast. This picture was considered unusual by the scientific experts of the PLANETARIUM and has been used since in numerous stories and articles to help explain this fascinating new medium of instruction.

More than half of the pictures we made of the wonderful animal groups in the new Akeley African Hall soon to be opened at the American Museum of Natural History were taken with our IDEAL Camera. A large view camera was used directly in front of each exhibit to make a general view, but the great majority of the close-ups showing details of the animals and their surroundings were taken with the lens of the IDEAL almost against the glass front of the cases. Not only could two or three such shots (*Continued on page 96*)

The Contax Plate Back

G. S. SIMONSKI

AMONG THE many exceedingly useful accessories supplied by ZEISS IKON for the CONTAX Camera, there is one that is truly marvelous in its versatility. I refer to the CONTAX Plate Back. While developed especially for scientific and research purposes, its application is not limited by any means to the scientific field, for its ingenious design and precise construction make it useful in solving many of the photographic problems confronting the serious worker. With it the versatile CONTAX is easily altered so that it may be used with plate holders and a ground glass back upon which may be observed focus and composition.

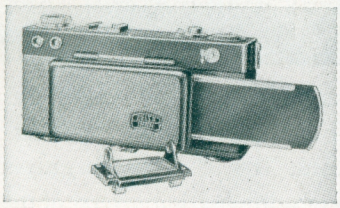
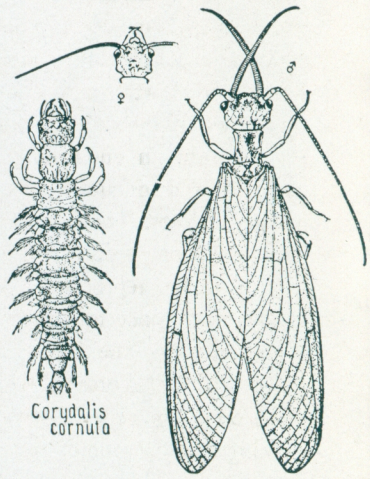


FIG. 84. — The angular-winged katydid and its eggs

THE MEADOW GRASSHOPPERS



Above: *Contax with Plate Adapter during exposure, plate holder shutter withdrawn, also insert ground glass.* Right: *Copies of two line drawings about the same size as the originals.*

Opposite page, Left: *Copy of half-tone about the same size as the original.* Right: *Photograph of Hydrometer made for storage battery advertisement.*

The writer has found so many uses for it and so many ways and means of applying it and the CONTAX in the solution of various problems that he scarcely knows where to begin in his discussion. Since the choice of the negative material used is of paramount importance in the production of a picture, let us consider this item as an introductory subject. And here is one of the greatest attributes of the CONTAX Plate Back. With it and a supply of plate holders, it is possible to use different kinds of negative material for the same subject, or to easily alter the choice of negative material from one subject to the next. Frequently, especially in connection with a specialized type of negative material, only one or two exposures are required, and in this case several plate holders loaded with the required type of film result in greater economy and ease of operation.

My plate holders are always loaded with a variety of films so that no matter what photographic problem arises the solution is the CONTAX equipped with its Plate Back and loaded with the correct negative material. True, most work can be done with the CONTAX using its regular standard equipment—but I find it easier to carry plate holders than magazines loaded with such film as is desired and experience has shown me that the exposure and development of a few negatives of each kind is easier. Therefore, several of the plate holders in my kit are loaded with panchromatic material, several with orthochromatic, while others have in them process, infra-red and "offset" films. Thus equipped every phase is covered—panchromatic for general use — orthochromatic where

complete color correction is not necessary—process for copying delicate halftones, old tintypes, faded prints, etc., while infra-red has its use for the striking bizarre effects of over corrected skies and dense shadows.

Then the use of the so-called "offset" film. This is only obtainable in flat sheets and is not procurable in the 35 mm. size. One seldom hears of it, yet it is very useful for the copying of black and white illustrations, pen and ink sketches, printed matter, and in stepping up contrast in flat unimpressive halftones. Eastman calls their offset film Kodalith, Hammer — Hammer Offset Film, Agfa — Reprolith; the writer has used all three and any one is excellent. The manipulation is simple, the emulsion is very slow and development is usually complete within a couple of minutes. It is an exceedingly fine grain orthochromatic material and can be used with the usual ruby safety light.

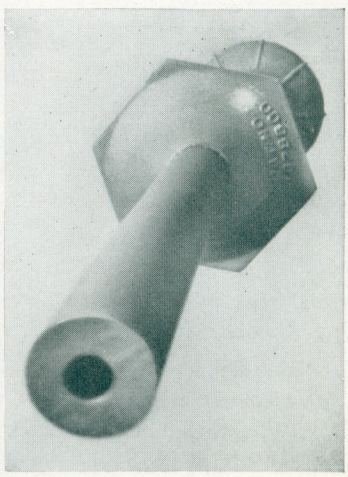
ZEISS PROXAR LENS

Recently an entomologist requested that there be prepared for him a series of about two hundred lantern slides. These were to include all kinds of subjects from actual insects in their native haunts to drawings reproduced in text books. My previous experience told me that this was a job custom built for the ZEISS IKON CONTAX and the Plate Back. Accordingly my CONTAX, Plate Back and other equipment were prepared for the undertaking and the photographing of the actual insects — some outdoors — some indoors — was begun.

All Photographs by G. S. Simonski

ZEISS PROXAR Lenses, in combination with the Insert Ground Glass, were a valuable aid in this work for they served a three-fold purpose, namely, the production of a large image in proportion to the negative area, the use of the complete negative area and, through the use of the Insert Ground Glass, the employment of a relatively larger aperture than with the usual method of measuring the distance between the object and the camera. The latter was made possible by opening the CONTAX Plate Back and inserting the ground glass in the camera. This permitted critical focusing, visual inspection of the depth of focus, and instantaneous exposures were possible. No difficulty whatsoever was experienced — after focusing, snap out the insert ground glass, drop the hinged back of the plate holder and pull out the slide. It cannot be pulled too far—it just won't go—in fact, that very pulling action serves to accurately place your film in the focal plane. Just look at one of these plate backs and observe how ingeniously and precisely it is designed and you will join in my enthusiasm.

For this type of work fast panchromatic film may be used. There is no need to worry about grain because only about three times enlargement is necessary in making lantern slides from the CONTAX negative. Thereafter, the fine grain of the lantern slide plate is screen—assuming, of course, the projector illumination to be sufficient. The illustrations contained in (*Continued on page* 98)



Photographic Lenses
And How They Are Made

C. E. BECK

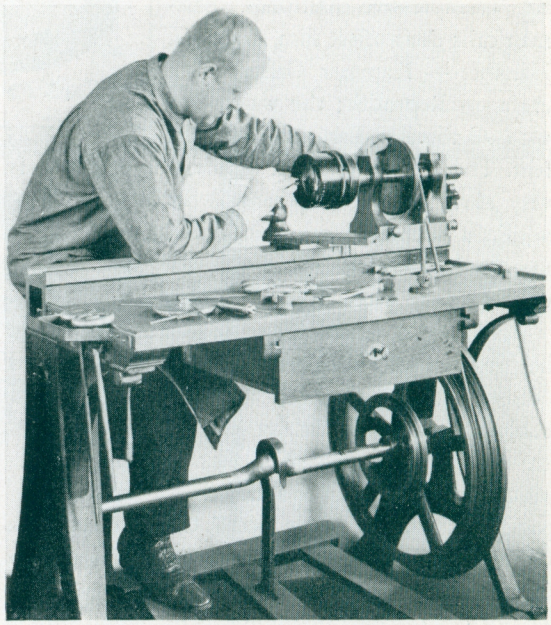
When the lenses have acquired perfectly polished surfaces and when by the tests applied to them they have proved to conform strictly to calculation the next task is to "center" them, i.e. to grind the periphery of the lens so that the optical axis is at the center of the cylindrical boundary of the lens. The optical "axis", it should be noted, is the line joining the centers of the spheres which form the free lens surfaces.

For testing this adjustment there are two methods, an *optical* and a *mechanical* one and, as before, the optical method is the more accurate of the two. It is based in principle upon the reflecting properties of polished lens surfaces. The lens which is to be centered is cemented by one of its surfaces to the chuck of a lathe, and a flame or point of light set up at some little distance from it. When the lens is made to rotate the two images of the flame formed by reflection at the two spherical surfaces will be seen to rotate about one another if the optical axis does not coincide with the axis of rotation of the lens. If both are coincident the reflected image appears to stand still. The lens is trued on the chuck, that is to say, it is brought into such a position that the reflected image appears to stand still, by displacing and tilting the lens over the cementing medium. When this has been accomplished the outer boundary of the lens is ground down to a cylinder on the lathe.

Where centered lenses require to be cemented together so as to form a single compound lens, this is done by means of Canada balsam.

Cementing is done by applying a drop of Canada balsam to the carefully cleaned and warmed lenses. They are then placed upon one another, and by gentle pressure air and excess of balsam expelled. When the balsam has cooled, the lenses will be firmly united, but they require once more to be trued up on the lathe, in order that the optical axes of the two lenses may accurately coincide. The finished combination is then lacquered black at the cylindrical boundary, to obviate reflection of light at the translucent rim. It is now ready to be set in the lens mount.

The mounting is mostly done on lathes with treadle motion. The degree of precision with which this operation is performed is the same as that ap-



MOUNTING A PHOTOGRAPHIC LENS

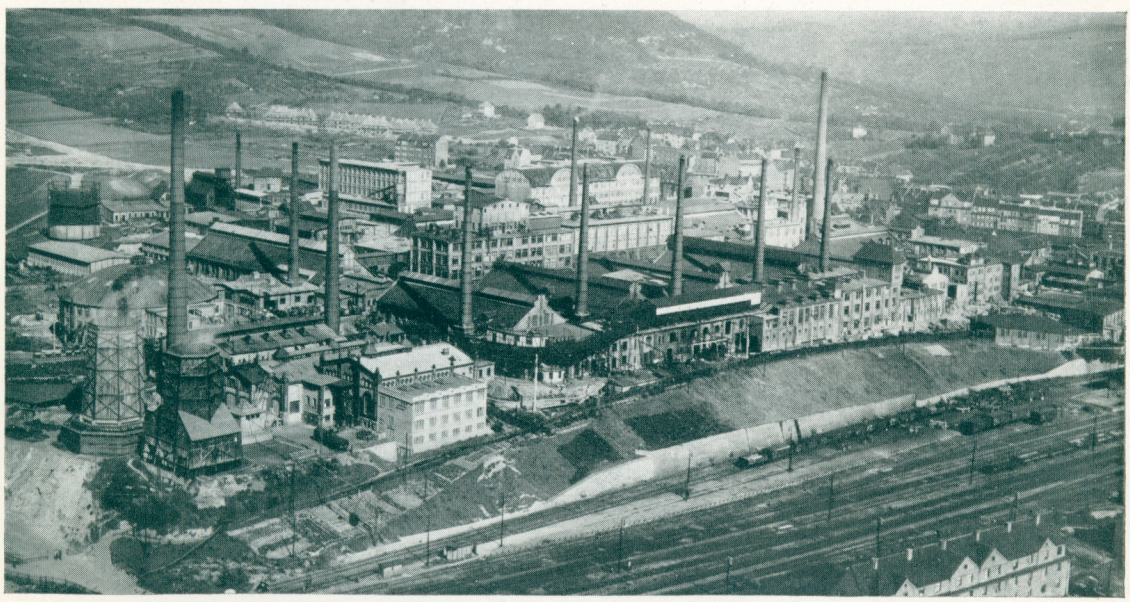
plied in the processes of grinding and polishing, for it will be remembered that the distances between the component lenses of the objective enter into the calculation and must therefore be adhered to within the smallest fraction. Extreme care must also be exercised to avoid any excessive pressure, and still more to any one-sided pressure being exerted by the mount upon the lens, as this would give rise to internal strains in the glass, or it might even cause otherwise perfect lens surfaces to be distorted in a more or less pronounced degree. When all the various stages in the making of a lens, as here described, have been carried out with rigorous precision, even then a conscientious optician does not feel entitled to place the resulting product on the market. Each finished ob-

jective is tested individually by specially appointed lens testers, before it is allowed to enter the world's markets. Once again it is tested for striae, strains and other possible flaws in the glass, and finally it is subjected to a practical photographic trial on the test chart. Also, the focal length is determined accurately, to fractions of a millimetre, for each objective. Its agreement with the value prescribed by the calculation furnishes a criterion as to how far the practical achievement conforms with the calculation. Process lenses, as well as mirrors and prisms used in conjunction with these, are examined separately in the photo-mechanical laboratory so as to ensure that exceptional degree of optical correction which is needed for this purpose. It will be readily appreciated that such a degree of precision in the system of manufacture with its incidental phases of weeding out is quite incompatible with mass production as ordinarily understood, and that this necessarily influences the cost of such products. Instruments produced in this way *cannot possibly* be "cheap." On the other hand, the ultimate possessor of such an instrument has the satisfaction of knowing that his objective is equal to its producer's promise.

It will also be realized that such an instrument should not be expected to answer requirements which are in conflict with the natural laws of optics. Many sins are committed in this respect. When the optician's work does not come up to such visions of the impossible, the layman is too prone to blame the instrument. Thus, it happens very often that an intending purchaser of a lens attaches an exaggerated value to the absence of bubbles, and, indeed, insists that the lenses should be entirely free from these. The wish to possess such a lens without a trace of bubbles is intelligible enough, but unfortunately, it is utterly impossible to accede to it for reasons which we have already explained above. The optician will certainly take great pains to eliminate any material which might in the slightest degree detract from the practical value of an objective. But a few bubbles are not to be reckoned in this category. When it is considered that the smallest stop with which a photographic objective is used has an area of about 4 square millimetres, while the aggregate area of the bubbles, contained in an objective, amounts to about ½ square millimetre, it follows that the loss of light which may be occasioned by the presence of these isolated bubbles amounts to a negligibly small percentage, not more than about ten per cent of the light-transmitting capacity which the objective has when operating with its smallest stop. When, however, we consider that in the majority of cases the objective operates with far larger stops, the loss of light occasioned by the presence of these bubbles becomes (*Continued on page* 98)

THE OPTICAL GLASS WORKS IN JENA

ZEISS PHOTOGRAPHS



Notes And News

The Edwal Developers

The correct time of development for Formulas I and II given by Dr. Lowe in his article on Paraphenylene-diamine commencing on page 75 of the April issue of Zeiss Magazine is as follows:

Superpan Film	30 min. at 65° F.
	25 min. at 70° F.
Fine Grain Pan Film	20 min. at 65° F.
(As Panatomic, Finopan)	16 min. at 70° F.

and not the same as for Formulas III and IV as is stated on page 78 of that issue. If the above times of development are used for Formulas I and II exactly the same gamma will be secured as that given by Formulas III and IV for the time of development mentioned in the April issue. Since the times of development were inserted in editing the error is in no way the fault of Dr. Lowe. We hope that it has not inconvenienced any of our readers.

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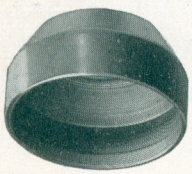
Sunshades and Filters



If not already a part of your equipment, a good sunshade and some filters should be secured for the forthcoming summer season whether your favorite place for taking pictures be the beach or the mountains. Although a sunshade should always be used when taking pictures, the use of one is imperative when the light is strong if crisp, clear negatives are desired. And at least one or two filters should be at hand if clouds and correct color rendition are desired in landscapes and marine pictures. Filters of optical glass colored in the mass and correctly designed sun-shades are available for every Zeiss Lens. You will be surprised at the improvement in your pictures that can be secured through these easily used and inexpensive accessories.

•

Lens Cases

Not only is it an unpleasant experience to remove the extra lens for your Contax from your pocket and find it full of dust, tobacco and grit inside and out but, in addition, it does the lens and the focusing mechanism no good and can cause positive harm. When lenses are not mounted in the camera, the front and rear lens caps should be attached and the lens kept in its case. Many Contax owners who are particular about the condition of their equipment keep their telephoto lenses in the round reinforced leather cases which also provide space for two filters and the Contax 42 mm. Sunshade. Another inexpensive accessory of value for the Contax is the bakelite cap which fits in position over the lens hole when the lens has been removed from the camera. This should be in place whenever the camera is carried or left around without the lens in place. Precautions of this nature will help more than anything else to prevent dust spots on the film as well as damage to the Contax and its lenses.

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Zeiss Focusing Magnifiers

Avaliable in magnifications of 6X or 10X and in focusing mounts or sliding sleeves the Zeiss Aplanatic Magnifiers are excellent for examining the negatives from the Contax and other miniature cameras for grain, definition and subject matter; also for sharply focusing the image on the ground glass. Illustrated is the magnifier with the focusing collar and clamping ring. The magnifier is sharply focused by turning the upper knurled collar and, when in focus, fixed in position by screwing the lower knurled ring down as far as it will go. The magnifier in the sliding sleeve is provided with a millimeter scale so that the position of the focusing adjustment may be quickly restored once it has been correctly determined. Examine them at your dealers or write to us for descriptive literature.

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MY IDEAL CAMERA

(*Continued from page* 91) be made in the same time required to expose one general view in the larger camera but many of these pictures could not have been made with the larger camera.

Although I am a commercial photographer specialising in architectural work, photography is my hobby as well as my profession. In this respect I find the Ideal the best camera to use in making pictorial photographs for entry in the various Salons and Exhibitions. There is no camera as well suited for this work since it has all the needed adjustments and is light in weight, compact and easily carried in the field.

The Ideal is the best all round camera for the professional or amateur since it will handle almost any photographic problem and produce excellent results. Its fine Tessar Lens cannot be equalled for definition and brilliance and by the addition of Zeiss Proxar and Distar Supplementary Lenses the equivalent of a battery of lenses is secured; its precision construction and correct design make for ease in handling and adjusting the camera while its small size and light weight allow it to be transported easily in the field. An Ideal combination.

The End.

Temperature and Climate

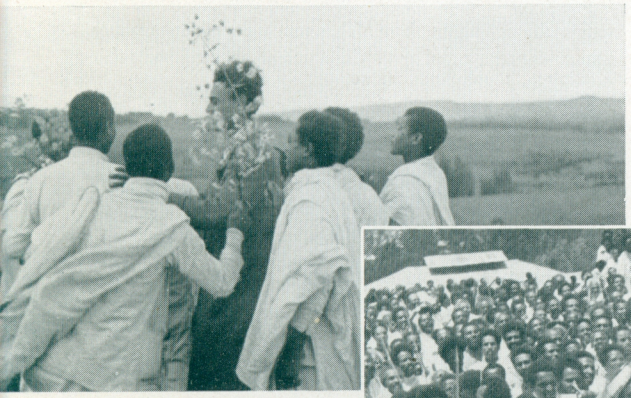
The unlimited durability and dependability of the all-metal focal-plane shutter in the CONTAX, SUPER NETTEL and CONTAFLEX, its ability to withstand extremes in temperature and its resistance to dampness is graphically shown by these photographs taken under such extremes of temperature and climate.

His train snowbound for three days last winter in a small South Dakota town, the temperature at 30° below zero and focal-plane shutter cameras of other makes useless because of frozen shutters, Mr. Evans had no difficulty in making an excellent photographic record of his enforced stay. On the other side of the world, Mr. Israels used his CONTAX to secure pictures for Times Wide World in the torrential rains and 120° temperatures of Ethiopia.

Snow Photographs by Herbert E. Evans

The correct design and construction of the CONTAX proved itself under these rigorous tests. Both of these photographers, working under opposite but equally adverse conditions, had nothing but praise for the dependable CONTAX and its mechanism. Only one of the many qualities inherent in the CONTAX which have made it the leading 35 mm. miniature camera.

Ethiopian Photographs by Josef Israels, II



PHOTOGRAPHIC LENSES

(*Continued from page* 95) utterly insignificant. Indeed, in the case of an objective, 1.18 inches in diameter its rapidity is only reduced by 1/9000th part of its rapidity at full aperture. We have already pointed out that the presence of small gas bubbles cannot be avoided in optical glass making. To the uninitiated these bubbles are particularly conspicuous, and he is inclined to endow them with exaggerated significance. While they are entirely unavoidable in the production of the new glasses, they are nothing more than *blemishes which can offend the eye only,* since the loss of light which they occasion is too slight to be appreciated. The true amount of this loss may be realized by a small calculation. Let us suppose a certain lens 3cm. in diameter to contain 10 bubbles 0.1 mm. in diameter. This would mean that within a surface of 706 square millimetres an area of 0.0785 square millimetres would be ineffective, so that the total loss of light occasioned by the bubbles would be only 1/9000th of the incident or transmissible light. When the lens is stopped down to 1 cm. this opening will contain two bubbles. In this somewhat *unfavorable* case the loss of light would therefore be 1/5000th of the total transmissible light. These are amounts which have no practical significance whatever, and the most punctilious photographer would not trouble to take account of them when estimating the time of exposure in any given case.

You will thus see that manufacturing opticians are well within their logical rights when refusing to admit the presence of bubbles as reasonable grounds for complaint.

It will have occurred to you that the production of photographic lenses involves a vast expenditure of time and that it makes even greater demands upon manual skill. True, in large establishments, as you have seen, the operations are considerably simplified and abridged by the introduction of special machines. Nevertheless, in optical manufacture far more is left to the personal skill of the workmen than in other branches of manufacture, and this is not likely to be superseded for some time to come by mechanical devices.

THE END

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THE CONTAX IN PENOLOGY

(*Continued from page* 87) could not have been taken without the CONTAX.

The only objection I have heard against the use of the miniature camera is the trouble with fine grain and the necessity of making enlargements. Those of us who have used the CONTAX know that these arguments are specious. I use one kind of film and paper and calculate the exposure with the aid of a photoelectric exposure meter. If feasible, the camera is supported on a tripod during exposure, for it aids in securing increased sharpness and better composition. As to experimenting with different chemicals and developers, Heaven forbid. I am no chemist. We should remember that the manufacturers of films and papers have been doing all this experimenting for years. They know their product and what is best for it and for that reason I invariably use the chemicals and developers recommended by the manufacturer of the particular film and paper I use. This has, I believe, saved me many headaches. Far from being objectionable, enlarging has many definite advantages over contact printing. Not only is it as fast but it is easier and more convenient to handle and view the thirty-six Contax negatives secured from one roll of film than to handle an equivalent number of large glass plates or cut films. It also allows when necessary for a recomposing of the picture through cropping and the securing of a better balance and tone quality through the use of shading and dodging. Finally, one is not limited to one size print. The rest is a matter of patience, experience and . . . fun.

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FLOWER PHOTOGRAPHY

(*Continued from page* 85) by artificial light. Many flowers appear a different color under artificial light and considerable experimenting is necessary to obtain a satisfactory and truthful rendering of such subjects.

There are some advantages in photographing cut flowers outdoors instead of indoors. The light is stronger and more uniform, giving more quality to the print and allowing for shorter exposures. The work should be done in some place sheltered from the breeze, either on the north side of the house or under a shaded porch. As in all flower photography, it is important to remember to keep the camera level with the blossoms.

A third method calls for the use of a low box, or other support, and the small crepe paper backgrounds mentioned above. The background is placed horizontally on the low box and the flowers are then laid on it in any suitable arrangement. The camera is placed on a tripod so as to point vertically downward, care being taken to see that the shadow of the camera or the tripod does not fall across the field of view of the lens. The entire set can be placed to secure any desired lighting and individual blossoms or leaves can be raised or turned slightly by placing bits of wood or pebbles under them where they will not show. This method gives the photographer more control over the arrangement of the subject than any of the other methods described.

Whether a pictorial effect or a critical delineation of the details of the subject for scientific purposes is desired, the photographer may rest assured that the ZEISS IKON IDEAL or MAXIMAR Cameras and ZEISS TESSAR Lens will fulfill the most exacting requirements and produce excellent results. The closeness of the subject to the camera with the resulting larger size image and the delicate details of the flowers combine to give the camera and lens a most critical test. The mechanical precision of these cameras combined with the fine definition and quality of the image produced by their lens equipment assures the finest possible results under all conditions.

THE CONTAX PLATE BACK

(*Continued from page* 93) text books and magazines presented a problem best mastered by the use of the CONTAX Plate Back. The ground glass enabled the subject to be brought absolutely parallel to the surface of the film, thus preventing distortion of the object shown in the original illustration. The Plate Back with the accompanying insert ground glass permitted the use of various CONTAX Lenses and PROXAR Supplementary Lenses in photographing various size illustrations.

The largest illustrations presented no difficulty, since they could be copied with the TESSAR 50 mm. Lens either alone or in conjunction with one of the PROXAR Supplementary Lenses. Some of the illustrations were exceedingly small and this presented another problem. The F:4, 135 mm. SONNAR Lens was attached to the CONTAX and the 2X42 PROXAR Lens was added to the SONNAR Lens. By fully extending the focusing mount of the SONNAR Lens, an image approximately one-half actual size was secured from which excellent enlargements could easily be made.

The unorthodox use of the SONNAR Lens and the PROXAR Supplementary Lens became a simple matter with the aid of the CONTAX Plate Back and the insert ground glass. No other combination will give such a wide latitude; they permit critical focus, the observance of composition, freedom from parallax and the employment of the entire negative area.

The so-called "offset" film mentioned previously is excellent for copy work, since it gives negatives with the very finest of detail with the high lights free from pin holes and densely opaque, while the dark tones of the object will be absolutely clear film. Since it only comes in the form of cut film, the CONTAX with its Plate Back is necessary to make use of it. An excellent formula for the development of this film is as follows:

Sodium Sulfite*	5 oz.	60 gm.
Hydroquinone	4 oz.	50 gm.
Potassium Carbonate	8 oz.	95 gm.
Potassium Bromide	1½ oz.	18 gm.
Citric Acid	½ oz.	6 gm.
Water	80 oz.	1000 c.c.

(*Anhydrous)

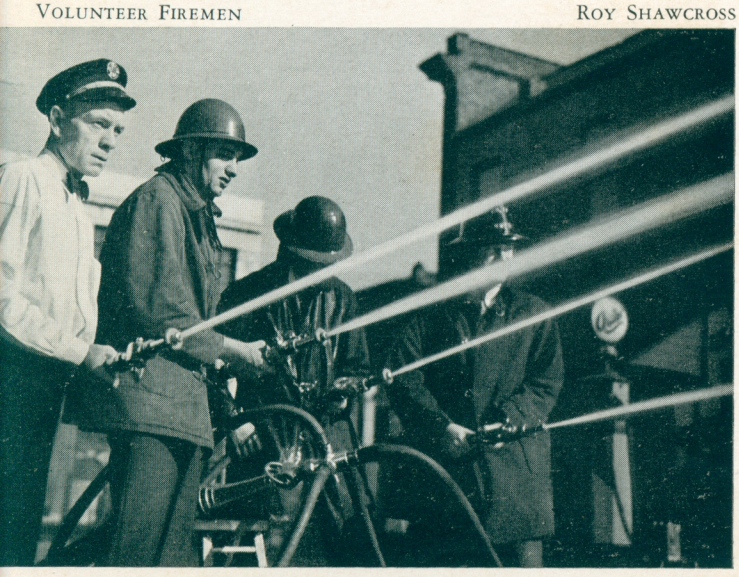
Dilute 1 Part of Stock Solution with 1 Part of Water; Develop for 2 Minutes at 68°F.

A problem presented by the advertising manager of a large storage battery manufacturing concern was also solved with the CONTAX and its Plate Back. To illustrate an idea he had conceived he desired a photograph of a battery hydrometer in distorted perspective—the nozzle being turned toward the viewer and enlarged—the bulb disproportionately small. Several photographers had attempted the production of such a print but the results were not satisfactory. The solution was easy—the hydrometer was suspended by threads from springs so as to eliminate any vibration and its rubber nozzle pointed toward the camera. The 28 mm. wide angle TESSAR was put on the CONTAX and over this was slipped the 2X42 PROXAR Lens. The extremely wide angle combined with the extreme depth of focus secured the desired distorted effect. All credit is due to the CONTAX and its Plate Back. It was only by employing the Plate Back in conjunction with the ground glass that the desired angle could be observed, the image placed exactly as desired and the necessary perspective obtained.

Only with the CONTAX and the Plate Back do you have what might be termed "universal versatility": the choice of any negative material—the observance of composition and depth of focus—freedom from parallax —the use of any combination of lenses of any focal length in combination with the PROXAR Supplementary Lenses and many other advantages. Certainly more cannot be said of this wonderful accessory.

THIRD PRIZE — MONTHLY COMPETITION

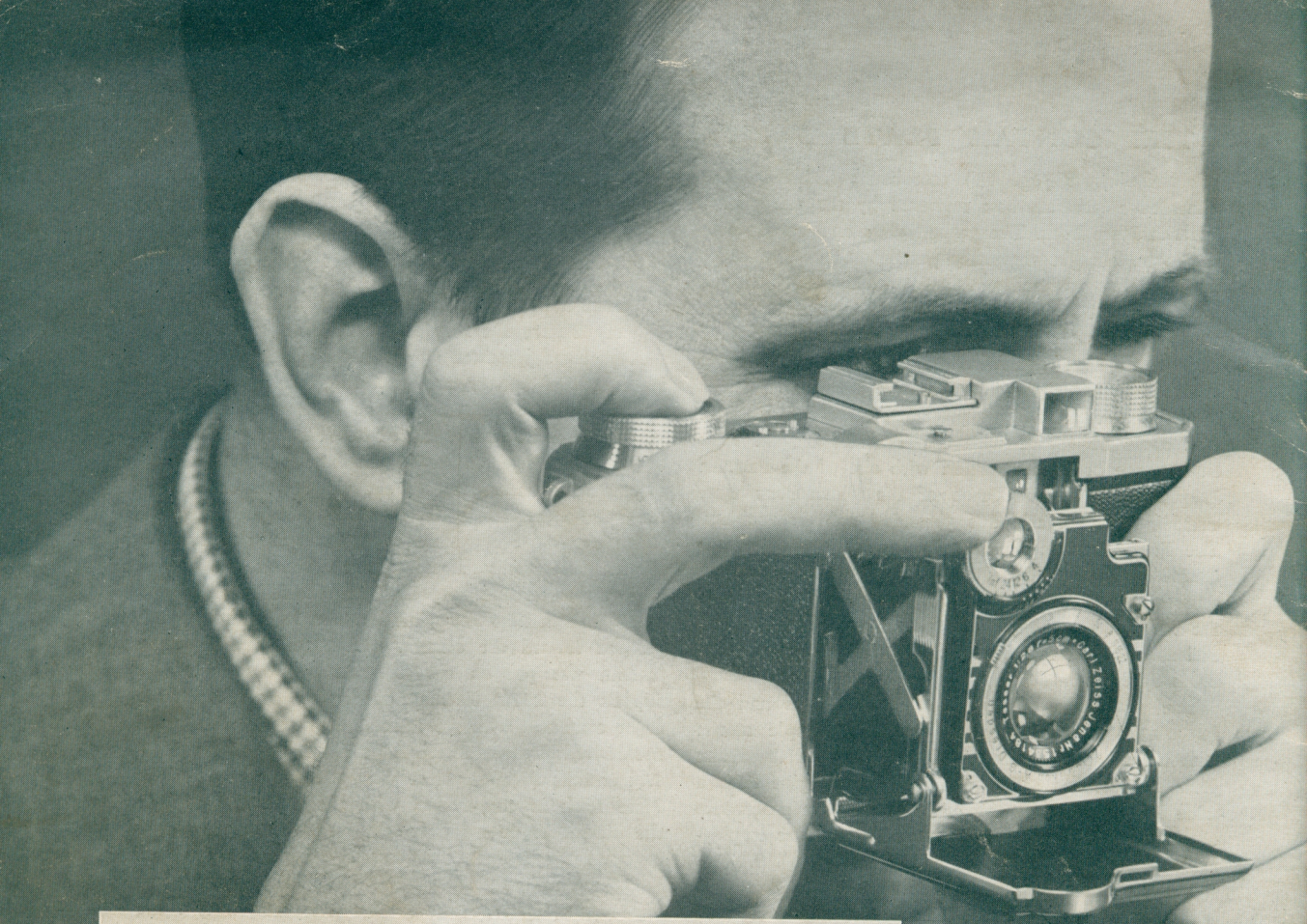
VOLUNTEER FIREMEN — ROY SHAWCROSS



MONTHLY COMPETITION

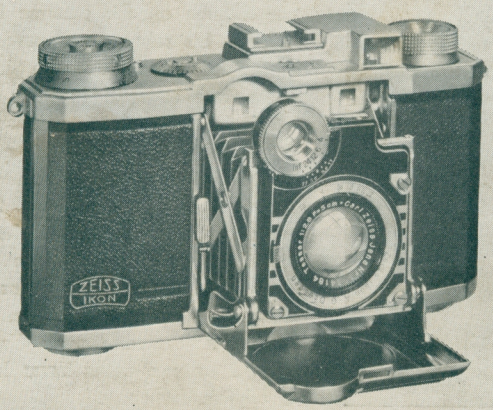
(*continued from page* 81) Made with a MAXIMAR B Camera and ZEISS F:4.5, 13.5 cm. TESSAR Lens, Mr. Shawcross has secured good balance by selecting the proper viewpoint for the camera. It is too bad that the fireman on the extreme left was not wearing his rubber coat, nevertheless, it is an interesting and attractive picture.

Be sure to send in your pictures for the ZEISS IKON Monthly Contest before the tenth of June for entry in the current contest the awards for which will be announced in the July issue of ZEISS MAGAZINE. The Competition Rules were published in the March issue or may be secured on request from our New York Office at 485 Fifth Avenue, New York, N. Y. Any picture made by the entrant with a current model ZEISS IKON Camera is eligible for entry.



THE *New* SUPER NETTEL

As precise and efficient in operation as it is modern in style • Fast F:2.8, 50 mm. Tessar Lens • New rotating wedge auto-focusing rangefinder • Metal focal-plane shutter • 35 mm. daylight loading spools or bulk film in cartridges • Complete assortment of accessories including the Contameter



ZEISS IKON

CARL ZEISS INC., 485 FIFTH AVENUE, NEW YORK