Leitz

Leica

camera

CATALOGUE FOR 1931

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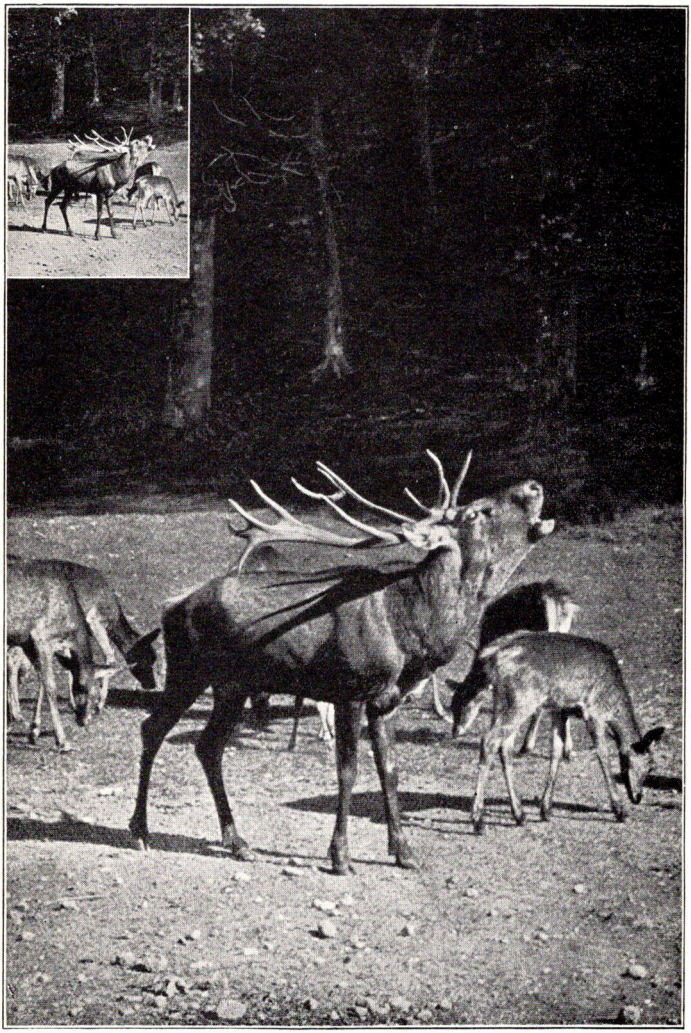

Belling Stag in a deer-park

Taken with "Elmar" lens
5 cm focus

Leitz

LEICA CAMERA

and accessory apparatus

HOVE CAMERA COMPANY REPRINT
34 Church Road, Hove, Sussex, England.

ISBN 0 906447 02 X

Ernst Leitz, Wetzlar and London

November 1931/30000 no prices.
List Photo 1K engl.

LEITZ
LEICA*)-CAMERA

By reason of its unique qualities this camera, ever since it was first placed upon the market, has excited wide-spread attention, to which it is justly entitled, and it is to-day universally acclaimed

The Small Camera par excellence.

This is clearly evinced, not only by innumerable testimonials but also by the opinions expressed in photographic journals and other publications (see testimonials reproduced in the Appendix). Within a few years the Leica Camera has attained a prominent position in all parts of the world, so that at the present time there are no less than sixty-five thousand Leica Cameras in use. Apart from the great world of amateur photographers who treasure it as an ever-ready means of catching the elusive moment, many noted explorers of different nationalities are among the users who recognise in it an indispensable means of furnishing pictorial diaries. Thus it happens that the Leica Camera has done fine service in distinguished hands in the arctic and antarctic regions, as well as in the tropics. From the antarctic seas the camera was actually ordered by a radio message for the use of members of the American Byrd Expedition, whose outfit included several Leica Cameras and who, on the strength of their experience, recommended them for use on other expeditions. Sven Hedin chose the Leica Camera for use on his latest voyage of exploration. Udet selected it as a companion on his flight over high mountains,

*) Pronounced LIKA

Mittelholzer on his flight to Africa, and Dr. Eckener uses it on his world flights. Incidentally it may be noted that his own was not the only Leica Camera on board the "Graf Zeppelin". The book of pictures entitled "With the Graf Zeppelin around the World" by Max Geisenheyner, the editor of the Frankfurter Zeitung, was made up almost wholly of pictures taken with the Leica Camera. Wing-Commander Kingsford-Smith chose the Leica on his flight to Australia in the "Southern Cross". We have selected only these few names because they are known to all. There are many other well-known users, but these few will suffice to show

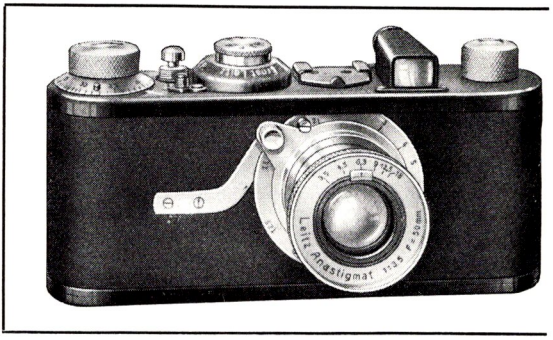

Fig. 1. Leica Camera with focal plane shutter (about 1/2 actual size)

that the Leica Camera has made its mark everywhere and that it leads, in the true sense of the word.

Success such as the Leica Camera has achieved is possible only where an ingenious idea is associated with craftsmanship of the very highest order. Wide as is the range of application of the

Leica Photo Process,

the resources of the camera are continually being still further extended by special additional attachments.

In the Leica Camera the photographic material used is the standard cinematograph film which is obtainable in all parts of the world. Instead of the usual cinematograph picture measuring 24 × 18 mm, however, the camera produces pictures of double the standard cine size, that is 36 × 24 mm, this being the first camera in which such a plan has been put into practice. With this size it is practicable, with the aid of high grade optical systems, to obtain enlargements of very considerable size.

The Standard "Leica" Lens.

The

"Elmar" Anastigmatic F/3.5 Lens 5 cm. focus,

introduced by us has been specially computed for the Leica Camera. It is composed of a dis-symmetrical triplet with a cemented back lens and is corrected in a very high degree within an image field of 48°. It is entirely free from coma and curvature of the image, and

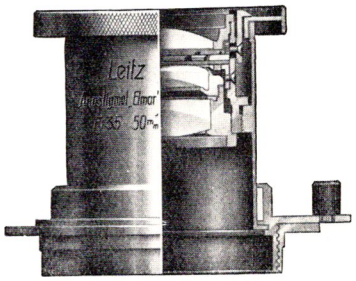

Fig. 2.
Leitz "Elmar" Anastigmat F/3.5 (about actual size)

does not exhibit any appreciable degree of zonal astigmatism or the slightest degree of distortion. These properties are fully utilized by the

Self-capping Focal Plane Shutter

with which the camera is provided. This renders the camera available for instantaneous exposures of $^1/_{20}$ to $^1/_{500}$ second. The short focal length of the lens, viz. 5 cm, has rendered it practicable to replace the customary and far from substantial bellows arrangement by a sliding tube socket, which forms a very accurately functioning lens-carrier with bayonet lock. The mechanism, moreover, embodies a new and very important principle, in that the shutter winding mechanism is coupled to the film transmission. This is operated solely by turning a knob up to a stationary stop without the controlling aid of a film-window and consequent loss of time. This ensures that the camera can at all times be placed in

instant readiness for taking a picture,

so that any elusive situation can be caught at the psychological moment, which otherwise would be irretrievably lost. At the same time, there is no possible risk of the same film section being exposed twice in succession.

A Counter automatically registers the number of photos taken. **The film-chamber** is cylindrical in form and holds $5^1/_4$ feet of perforated standard cinematograph film, which is sufficient for taking 36 pictures of the Leica size of 36×24 mm. Shorter films may be used, provided they are cut to length according to directions (see separate booklet of Directions). The weight of the camera is only 425 grm. (15 oz.). Each film-chamber loaded for 36 pictures weighs less than 2 oz.

This small weight

is a delightful feature of the Leica system of photography, making all the difference to mountaineers and Alpine tourists, no less than to explorers visiting regions which are devoid of the amenities of civilisation and of means of communication. All these advantages are concentrated in a small and handy body measuring only $5^3/_{16} \times 2^3/_{16} \times 1^3/_{16}$ inches. The

Unobtrusive Manner

in which it can be handled is an additional advantage, still further increased by the use of the small angular view-finder for sighting an object at right angles to the true line of sight (see fig. 3). The camera is held on a level with the eyes, in consequence of which the finished picture preserves a

natural perspective with striking relief effect.

The **Leica view-finder** as well as the **rectangular finder** are original applications of the Galilean principle and

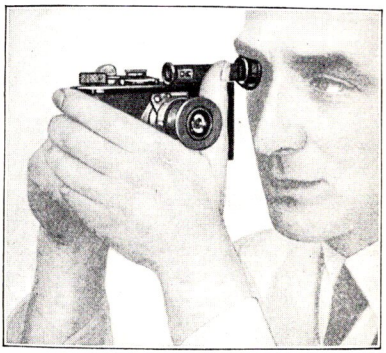

Fig. 3. The camera as it appears with the angular view-finder in use. The latter slips into the clamp for the range-finder

For **prices** see p. 37.

provide an excellent means of judging the composition and pictorial effect of the resulting photograph.

The helical lens motion can be set within a range of $3^1/_2$ ft. to infinity. For setting the lens to greater distances an infinity catch locks the focusing lever in the proper position.

The depth of definition of the lens is so considerable, due to the short focal length, that only for distances of less than ten yards is an accurate setting of the lens necessary, when the use of the range-finder is advisable. A special "Depth of Focus" reading scale, for easily reading off the range of focus at any distance and setting of the aperture diaphragm, is fitted to every lens.

The Leitz range-finder (fig. 15), which is constructed on the coincidence principle, serves for quickly and accurately measuring the distance of the object and is mainly intended for use at distances under 10 yards. It slips into the clip on the camera at the side of the view-finder. (For particulars see p. 27.)

Negative Film. We particularly recommend the Leica special fine grain film of the firm of Perutz, and the new fine grain films of the firms of Agfa, Gevaert, Kodak and Mimosa. These films, ready cut by the manufacturers, are supplied in special Leica packing for loading in daylight or darkroom and are obtainable from all the best photo-dealers.

Film can also be obtained in the longer lengths, namely in tins of 5 or 10 meters, in which case the user has himself to cut and taper the negative material. To ensure proper trimming of both film ends, we recommend the use of our Trimming Template (page 35). (See also Direction on the Leica camera.)

Enlargement. In view of the fine-grain of the special Leica films, the small original negative can be very considerably enlarged without spoiling the picture by a pronounced film-grain effect. This, however, necessitates the use of one of our special enlarging devices, particulars of which will be found on page 47 and following.

The range of uses of the Leica Camera is very extensive, in that it is equally well adapted for taking portraits, for photographing children, animals, street scenes and sporting events, family groups, landscapes, architectural subjects, interiors and furniture studies, as well as for copying work of every kind.

The camera is exceedingly popular with travellers, not only on account of its small weight, but also because it enables them to take an unlimited number of pictures at a very small cost.

LEICA EVER-READY CASE

In order still further to increase the ever-ready qualities of the Leica Camera, we have devised a special brown leather case, the form of which may be seen from fig. 4. This case is carried in front and swings open by a forward movement (see fig. 5), so that the camera is instantly accessible without the necessity of removing it from the case.

Fig. 4. Leica Ever-ready Case

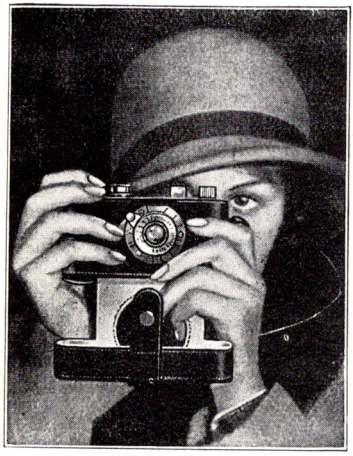

Fig. 5. Ever-ready Case with Leica Camera as it appears in use

The ever-ready case is not only handy and practical but it also shields the camera from unnecessary wear, since the camera need be removed only for loading and unloading. It accommodates a loaded camera but no accessories.

For **price** see p. 18.

LEITZ
LEICA-CAMERA
WITH COMPUR SHUTTER

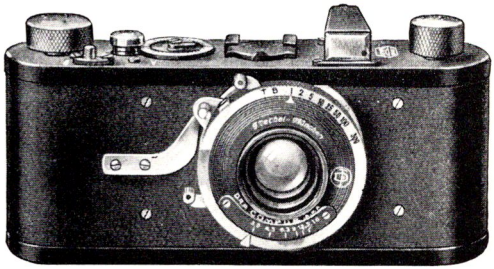

Fig. 6. Leica Camera with Compur Shutter (about $^1/_2$ actual size)

The Leica Camera can be supplied with a Compur shutter in place of the focal plane shutter. The Compur shutter belongs to the class of centrally operating shutters. It can be set to speeds of 1, $^1/_2$, $^1/_5$, $^1/_{10}$, $^1/_{25}$, $^1/_{50}$, $^1/_{100}$ and $^1/_{300}$ second. The shutter and the film transmission mechanisms are wound independently in this model, and it can only be supplied with the standard 5 cm lens.

Particulars respecting Lens Hoods, Yellow Filters etc., will be found on pp. 31—32.

For **prices** see pp. 18 and 38—41.

The Leica Camera de Luxe

In compliance with widely expressed wishes, we make the Leica Camera with focal plane shutter also in the form of a **De Luxe** model. In this model all the metal parts are dull gilt, the body is covered with lizard skin (coloured green, blue, red, or brown), and

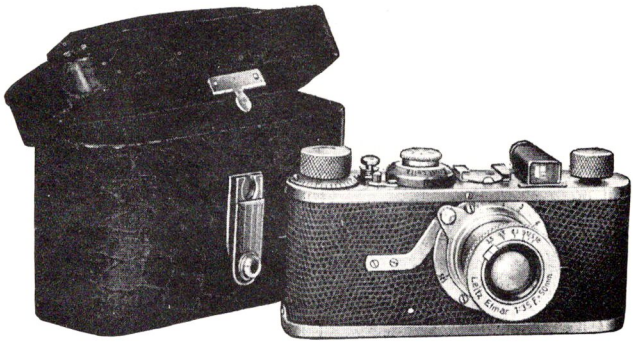

Fig. 7. The Leica Camera de Luxe with Focal Plane Shutter (1/3 actual size)

the case is made of crocodile leather of a colour to match the camera body, the whole presenting the appearance shown in fig. 7. This case is fitted with handles and accommodates the camera together with one film-chamber (without range-finder).

In addition, we supply the black enamelled Leica camera model covered with coloured calf-leather. The case of this model is also made of coloured calf-leather, either in the form shown above (fig. 7) or as a bag with bow-clips.

For **prices** see p. 19.

Leica Camera with Interchangeable Lenses

In deference to the repeated wishes of Leica Camera users, we have supplemented the practically all-sufficient **F/3.5 "Elmar" lens of**

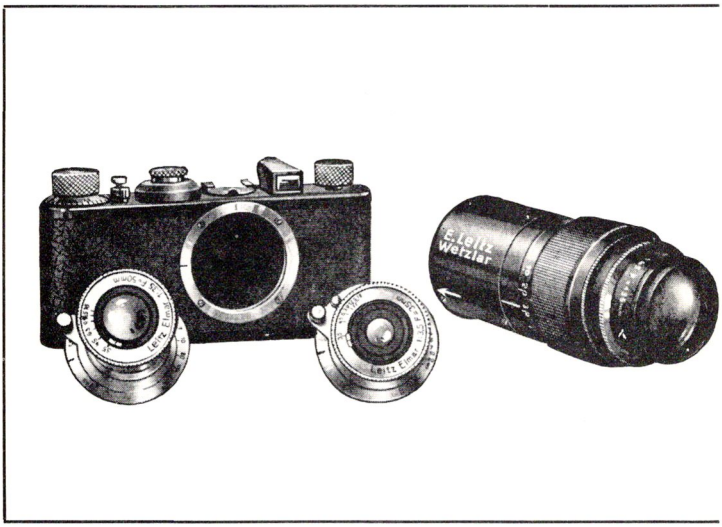

Fig. 8. Leica Camera with Interchangeable Lenses (1/3 actual size)

5 cm focus by the addition to the camera equipment of a few interchangeable lenses. This, however, has been done solely to render the Leica Camera available for still more special purposes. **In no way are these supplementary components qualified to take the place of the "Elmar" lens, F/3.5 which, by reason of its short focus and great light-transmitting capacity, is the ideal all-round small-negative lens.** The stereoscopic impression with which the standard lens endows the picture, due to the pronounced gradation in the depth of definition, is exceptionally striking, so that the great majority of Leica camera photo-

graphers will continue to give it exclusive preference. The working range of the Leica camera is extended in three respects by these interchangeable lenses, which are here briefly described.

The "Elmar" lens F/4.5, 13.5 cm focus serves mainly for obtaining larger figures in the original negative, when photographing objects at far distances, and consequently more detail. It is also useful for portraiture, in that it allows of taking a photograph of head or head and shoulders and filling the whole negative, without the necessity of getting too close to the subject. A distance of $1^3/_4$ to 2 yards will be best for this purpose. We recommend the use also of the new Universal view-finder "Visor" (p. 16) showing the fields of view of the 13.5 cm-, 5 cm-, and 3.5 cm-focus lenses. The image-angle of the 13.5 cm-lens as utilised for Leica negatives is 19°. (The full angle of which this lens is capable exceeds 60°.) Since the depth of definition of this lens is less than that of the lens of 5 cm focus, close attention must be paid to focusing even at greater distances.

When working with this long focus lens it is particularly important to keep the camera steady. This is best accomplished by attaching the "Fofer" range-finder (even where it is not absolutely necessary to use it for measuring the distance, e. g. when taking landscape photographs). When placed firmly against the forehead it provides an excellent support. The left hand should then hold the lens mount from below in rifle fashion, while the right hand should control the release. This should not be done in jerks, but by gradually applying pressure, as when working the trigger of a rifle. Preferably, a tripod stand should be used when photographing with this lens, in order to avoid shaken pictures.

The "Elmar" lens F/3.5, 3.5 cm focus is intended primarily for architectural photographs. With these it often happens that the practicable distance between the camera and the building is not sufficient to show the latter in its entirety upon the negative. Since the 3.5 cm lens embraces an angle of nearly 65°, and the 5 cm lens only an angle of 48°, the former has an undoubted advantage over the latter, when architectural subjects are to be photographed. The smaller lens is also very useful for interiors. This lens, it should be noted, is mounted in an inextensible tube. For the 3.5 cm lens the **universal view-finder** is used. The 3.5 cm lens also has an aperture of F/3.5, but it should be stopped down to F/4.5 or F/6.3 (light conditions permitting),

in order to avoid the vignetting effect which would result from the large aperture and wide angle.

The "Hektor" lens F/2.5, 5 cm focus meets the wishes of those Leica photographers who desire to obtain snapshots under unfavourable lighting conditions both out of doors and indoors. The "Hektor" lens is not a soft picture producer like many other lenses of this aperture, although it naturally does not quite attain the same crisp definition of the "Elmar" lens. The light-transmitting capacity of this lens at its full aperture F/2.5 is roughly twice that obtaining at F/3.5. The depth of definition at full aperture is naturally somewhat less, increasing proportionately as the lens is stopped down.

For the interchange of the lenses the Leica Camera body is provided with a large screw flange, into which the individually adjusted lenses are screwed by a universal thread. Each lens has its own helical focusing motion for sharp focusing. The locking spring to the infinity position had to be discarded in this camera model. When interchanging the lenses the opened camera should not be exposed to the bright light, but during the interval should be held with the aperture turned towards the operator's body.

The body with the interchanging screw flange is specially adjusted and standardised so that any of the lenses quoted can be added subsequently without difficulty. To distinguish these standardised Leica cameras of the interchangeable type from those formerly supplied, they are engraved with an "o" on the screw flange. All cameras which do not bear this mark have to be returned to us for adjustment when an additional lens is to be fitted.

A "Depth of Focus" reading scale for easily reading off the range of the depth of definition at any distance and setting of the diaphragm is inscribed on the mount of every interchangeable lens. For further details see "Directions for using the Leitz Leica Camera".

For **prices** see p. 20.

The New Universal View-finder

for the Leica Camera with Interchangeable Lenses

To enable the user of a Leica Camera with interchangeable lenses to determine the size and "cut-out" of the picture which can be taken with either lens, we have devised a new combination view-finder (fig. 9).

The Universal View-finder is constructed on the principle of a small astronomical telescope in combination with an image erecting prism. The right-and-left mirror reversal, however, remains uncorrected. The operator will therefore see the relations of right and left reversed in the finder image. This new device has the special and important advantage that any slight tilt of the camera will cause the image seen through the finder to assume a pronouncedly oblique position.

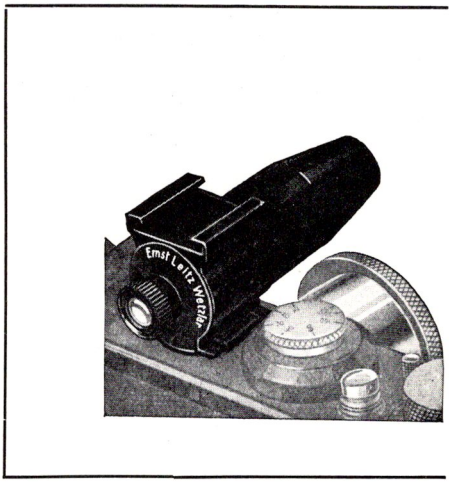

Fig. 9. The Universal View-finder "Visor" on the Leica Camera

The tilt in the finder image, due to the prism arrangement, is twice as great as that of the camera body, thus providing an excellent means of setting the camera accurately horizontal or vertical, as the case may be.

When the camera is turned for taking upright pictures, the finder image will appear upside down, owing to the optical arrangement of the finder. In order to be able to see the view in its natural position, the prism in the eyepiece is made to turn through 90°. The range of motion of the prism is indicated by two limit marks. It should be noted that in the working position of the finder, the oblong eyepiece diaphragm should **always** be set horizontally.

The size of the picture embraced by the various camera lenses is indicated on a ruled glass plate within the field of view of the finder. The outer oblong ruling corresponds to the picture taken with the 3.5 cm focus lens, the intermediate oblong to the 5 cm lens, and the inner small oblong to the 13.5 cm lens. The dotted oblong in the middle of the field of view applies to the 13.5 cm lens when taking pictures at short ranges of about 5 to 9 feet. The parallax between the finder and the 13.5 cm lens, due to the displacement of the optical axis, is rectified at short ranges by this shift of the field of view. In addition, this inner oblong corresponds to the naturally diminished size of the field of view at close-ups. The expedient is indispensable, for instance, as a means of getting a head taken at 6 feet well in the middle of the field. With the aid of the crosslines in the middle of the field of view of the finder, the camera can be accurately set to the middle of the picture at infinity.

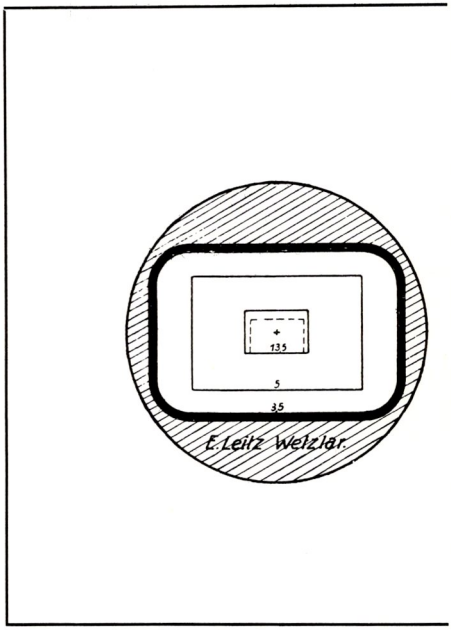

Fig. 10. The field of view of the Universal View-finder «Visor»

The Universal View-finder slips into the clamp provided on the Leica camera for the ordinary range-finder. On the upper side of the Universal View-finder is a similar clamp into which the range-finder fits, so that both may be used in conjunction with one another.

For **prices** see p. 37.

Prices for the Leitz Leica Camera

The Leica Camera with Standard Lens

	Codeword
Leitz Leica camera (body black lacquered with black vulcanised covering) for standard cinema film strips for taking pictures measuring 36 × 24 mm, with self-capping roller-blind **focal plane shutter,** Leitz "Elmar" Anastigmatic lens F/3.5, 5 cm focus, view-finder and **one roll film chamber**	**Leane**
Brown solid leather case with handle .	**Etrux**
	Letto
Leitz Leica camera as above, with **one roll film chamber**	**Leane**
Ever-ready case for Leica camera, with neck strap (see p. 10)	**Esnel**
	Lenel
Leitz Leica camera as above, but with **three roll film chambers**	**Leoni**
Solid brown leather case, with handle and shoulder strap, arranged for reception of the Leica camera with two spare film chambers in double container, and range-finder	**Etrin**
	Leica
Range-finder No. 1F for near objects, without case (accommodated in camera case)	**Fofer**
	Lessa
Leitz Leica camera with Leitz "Elmar" Anastigmatic lens F/3.5, 5 cm focus and **Compur shutter,** one roll film chamber .	**Lecur**
Brown solid leather case with handle .	**Etros**
	Lecom

All prices are ex our London warehouse and are subject to change without notice. Packing is charged for at cost price.

When ordering, please quote the respective codewords, in order to obviate errors.

Prices of the de Luxe Model Leica Camera

	Codeword
Leitz Leica camera (body dull gilt, covered with coloured lizard skin), with self-capping **focal plane shutter,** Leitz "Elmar" Anastigmatic lens F/3.5, 5 cm focus, view-finder, and **one roll film chamber,** including **Case of coloured crocodile leather,** after the style shown in fig. 7	**Lelux**
Leitz Leica camera (body dull gilt, covered with lizard skin), with self-capping **focal plane shutter,** Leitz "Elmar" Anastigmatic lens F/3.5, 5 cm focus, view-finder, and **three roll film chambers,** including **Case of coloured crocodile leather** (in the style of "Etrin") with handle, together with **Range-finder** No. 1 F, gilt	**Lessalux**
Leitz Leica camera (body black lacquered, covered with coloured calf leather), with self-capping **focal plane shutter,** Leitz "Elmar" Anastigmatic lens F/3.5, 5 cm focus, view-finder and one roll film chamber	**Leanekalb**
Case of coloured calf-leather, in the style of fig. 7	**Etkal**
	Lekal
Leitz Leica camera as above	**Leanekalb**
Soft bag of coloured calf-leather with bow-clips	**Epoch**
	Lepok

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Prices of the Camera with Interchangeable Lenses

	Codeword
Leitz Leica camera (body black lacquered, with black vulcanised covering), with self-capping **focal plane shutter,** direct vision view-finder, and one roll film chamber, exclusive of lenses*) and exclusive of case	**Leneu**
2 additional roll film chambers . . .	**Kazwo**
	Lenix
Leitz "Elmar" Anastigmatic lens F/3.5, 5 cm focus with helical focusing mount .	**Elmar**
	Leomu
Leitz "Elmar" Anastigmatic lens F/4.5, 13.5 cm focus with helical focusing mount	**Efern**
	Lefer
Leitz "Elmar" Anastigmatic lens F/3.5, 3.5 cm focus with helical focusing mount	**Ekurz**
	Ledri
Leitz Range-finder No. 1F, with large distance scale and sub-divisions, for the 13.5 cm "Elmar" lens, **without** case (to be accommodated in the camera case) .	**Fofer**
Universal view-finder for the lenses of 3.5 cm, 5 cm and 13.5 cm focus	**Visor**
Square Case of solid brown leather with handle and shoulder strap for the accommodation of the Leica camera, and 3 or 4 lenses, Angular view-finder "Winko" and Universal view-finder, two extra film-chambers in containers, range-finder, and yellow filters and front lenses	**Etgam**
	Lesor
Leitz "Hektor" Anastigmatic lens F/2.5, 5 cm focus with helical focusing mount adapted for the above Leica camera . .	**Hektor**
Total	**Levir**

*) Cameras without lenses cannot be supplied. The price of the camera body is given separately solely for convenience in computing the aggregate price of the camera and the lenses chosen. Single lenses cannot be accepted in return, nor can they be taken for adaptation to other cameras.

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When ordering, please quote the respective codewords, in order to obviate errors.

Prices for Leather Cases and Bags

	Codeword
Solid brown leather case with handle (for the camera with focal plane shutter alone)	**Etrux**
Solid brown leather case with handle (for the camera with Compur shutter alone) .	**Etros**
Morocco leather pouch with bow clips for the Leica camera alone	**Ettas**
Deerskin pouch with bow clips for the Leica camera alone	**Ettel**
Ever-ready case of solid brown leather, with shoulder strap, for the Leica camera with focal plane shutter (see p. 10) . .	**Esnel**
Solid brown leather case with handle and shoulder strap for accommodating the "Leica" camera with 2 spare film-chambers and range-finder for near objects .	**Etrin**
Square case of solid brown leather, with handle and shoulder strap, to accommodate the Leica camera and 3 or 4 lenses, Angular view-finder "Winko" and Universal view-finder "Visor", two extra film-chambers in containers, range-finder, and yellow filters and front lenses . . .	**Etgam**
Case of coloured calf-leather in green, blue, red, or brown, (see fig. 7) for the Leica camera with focal plane shutter and one film-chamber	**Etkal**
Calf-leather pouch (green, blue, red, or brown), with bow-clips, for the Leica camera with one film-chamber	**Epoch**
Solid leather case for the "Fodua" range-finder	**Eudit**
Solid leather case for the "Fofer" range-finder	**Euver**
Soft leather bag for the "Fodua" range-finder	**Eudal**
Soft leather bag for the "Fofer" range-finder	**Eutel**
Morocco leather bag for yellow filter . .	**Euvil**

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Leica Stereo Front Attachment "Stereoly"

(Patent applied for)

For come considerable time Leica photographers have shown a desire for a simple and convenient attachment to the Leica camera for taking stereoscopic pictures. This, though already practicable by the use of the "Fiate" stereo slide (page 41), was hitherto restricted to stationary objects.

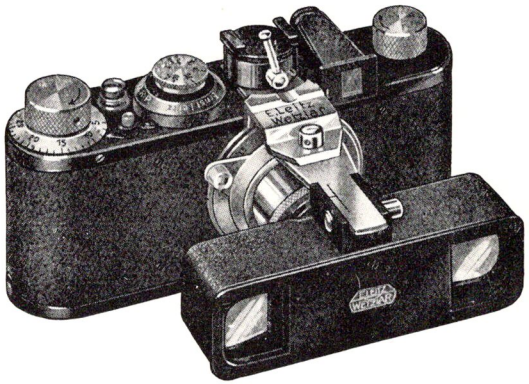


Fig. 11. Leica Stereo Attachment "Stereoly"

The "Stereoly" attachment to the Leica camera is remarkably simple in its design and equally simple to use. In fact it furnishes stereoscopic photographs with even less trouble than when a special Stereo camera is used.

With the stereo attachment "Stereoly" it is an easy matter to obtain at all times a faultless stereoscopic picture of moving as well as of stationary objects. As will be seen from fig. 11, the attachment is fixed by a special supporting arm in front of the camera lens. This arm has a fixing bracket on one side,

which slips from the front into the clip provided for the range-finder, where it is secured in position by means of a clamping lever. At the other end, the arm is furnished with a dovetail fitting, so that the stereoscopic device may at any time be readily detached when the lens-diaphragm is to be altered.

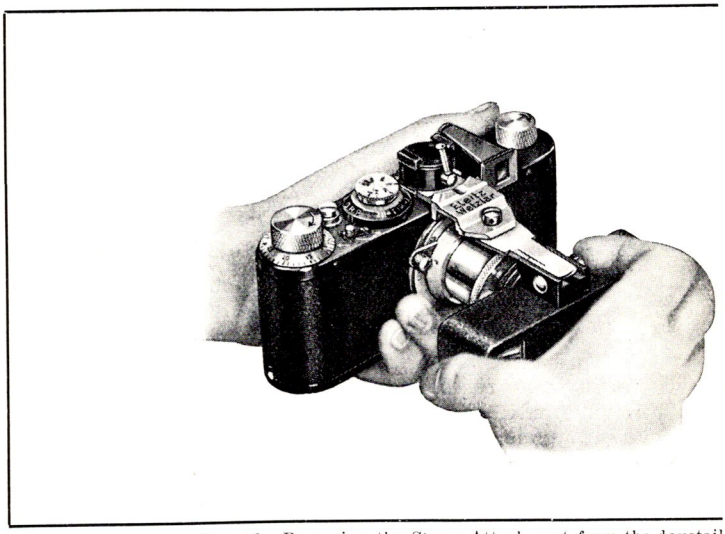


Fig. 12. Removing the Stereo Attachment from the dovetail fitting of the supporting arm

Size of Negative. The stereo attachment divides the standard Leica picture measuring 36 × 24 mm into two stereoscopic components, either component picture measuring accordingly 24 × 18 mm. The exact field of view covered by the individual pictures in conjunction with the stereo attachment is given by a square stop fixed to the supporting arm. When the arm is slipped into position this stop takes up its position in front of the view-finder and reduces the field of view by one half its standard size.

The "Stereoly" Leica attachment is a notable improvement upon similar devices, in that it is the first successful means whereby the lens aperture may be adjusted without interfering with the

thin dividing line between the two pictures. This is obtained by twice applying the principle of total reflection at two pairs of prism surfaces. The "Stereoly" Leica attachment permits of the full use of the optical resources of the camera lens, which point is particularly important when taking snapshots or photographing in a poor light.

Time of Exposure. The introduction of the attachment does not materially lengthen the time of exposure as compared with the ordinary mode of exposure at the same relative aperture. It is therefore as a rule practicable to photograph with small stops so as to enhance the depth of definition, which is a particularly desirable quality in stereoscopic pictures. With higher lens apertures of about F/6.3 the normal exposures should be lengthened by about $50^0/_0$. With low apertures from F/12.5 the exposure only needs an increase of about $10^0/_0$. Filters in screw mount can be used with the stereo attachment.

Application. All who have not made up their minds to confine themselves to the ordinary flat picture will recognize in the attachment a welcome supplement to their Leica equipment, which cannot fail to become a source of new delight. There can be no doubt that in many cases a picture representing objects in solid relief differs so entirely from the flat picture in the impressions which it produces as to open up a wholly new range of interests. It is not only the amateur, however, who will derive new pleasure from the pursuit of stereoscopic photography; it is equally of value in furnishing documentary material of an enhanced value, especially to nature students, engineers, industrial and other professional workers. And in all these cases there is the advantage that no separate camera is to be added to the requisite equipment.

Printing. A further feature of the Stereo Leica front attachment is that it is not even necessary to interchange the position of the two component stereo negatives when printing, as is invariably the case with stereoscopic cameras. A simple print on a positive film when placed in the viewing apparatus without any special mount will furnish pictures in true natural relief.

Lenses. Although the stereo attachment has been computed specially for the 5 cm "Elmar" lens F/3.5, it may also be used with the 5 cm "Hektor" lens F/2.5.
For **prices** see p. 26.

Stereoscope for viewing Leica Stereo Pictures

Photographs taken with the Leica stereo attachment require to be viewed in a Stereoscope specially designed for the purpose (see fig. 13). The stereo negatives are best printed with the aid of the "Eldia" printing apparatus on positive film and the resulting positive prints introduced into the stereoscope cut or as a whole film strip.

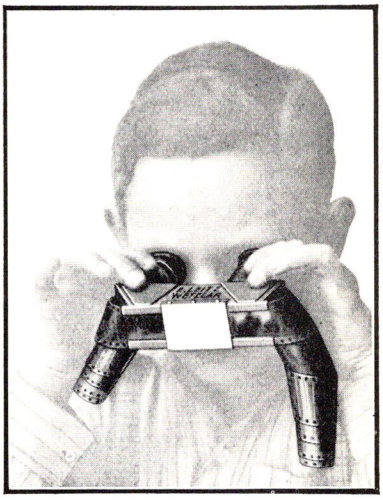
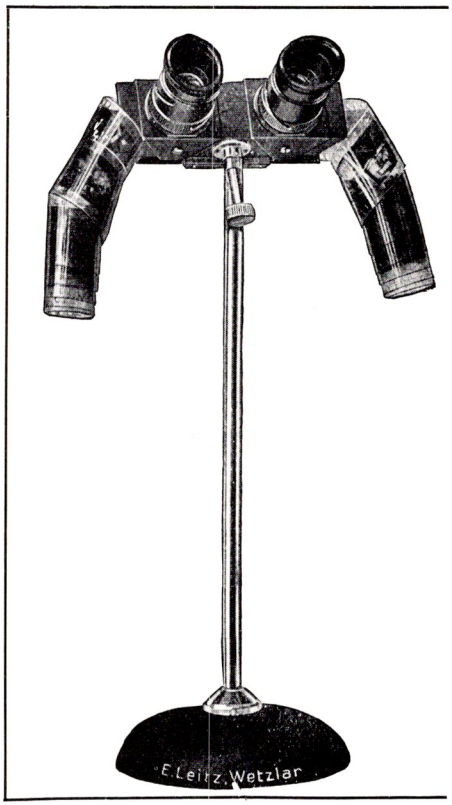


Fig. 13. Leica Stereoscope

This viewing apparatus, which has a magnification of about $\times 5$, is provided with means of adjusting the eyepieces according to the varying distances between individual users' eyes. Both eyepieces have independent focusing mounts so that each eye can be focussed separately. For convenience in using the stereoscope a special holding stand (see fig. 14) can be supplied.

Needless to say, the stereo negatives may be enlarged and mounted for viewing in one of the usual stereoscopes.

Fig. 14. Leica Stereoscope on Stand, "Votiv"



Prices

	Codeword
Leica "Stereoly" front attachment, in leather case, exclusive of stereoscope . . .	**Vorsa**
Leica Stereoscope for positives taken with the stereo attachment, in case	**Votra**
Stand for supporting the stereoscope . . .	**Votiv**
100 Glass plates 35 × 120 mm. for mounting 3 pairs of stereo pictures	**Uglyr**
Gummed binding paper, black, for binding diapositive slides, roll of 110 yards length	**Umkle**

Leitz Range-Finders

The range-finder No. 1 F, as described under the codeword "Fofer" and used with the Leica camera, is supplied with a large scale with sub-divisions up to 300 feet, the smallest measurable distance being $3^1/_2$ feet. It is intended for use with all Leica lenses from 3.5 to 13.5 cm focus.

Special range-finders are also available for photographic apparatus of other makes and for cine cameras. They are all built on the coincidence principle and provide a means of rapidly and accurately focusing the object. They are particularly indispensable with cameras not having ground glass focusing screens, as well as for motion-picture cameras, and the necessity for their use increases with the relative aperture of the lens used and its consequent smaller depth of focus. In use, the range-finder shows a duplicated image of the object within a bright central circle. By rotation of a graduated disc the two images are made to coincide or fuse one into the other, when the exact distance will be indicated on the scale. The range-finder is attached by a clip screwed to the rear edge of the camera. Since with the majority of cameras of other makes the distances are reckoned on the distance scales up to the principal point of the lens, whereas the Leica range-finder measures from the back of the camera, it follows that there is a difference to be taken into account when using the Leica range-finder on other cameras. This difference is roughly equal to the focal length of the camera

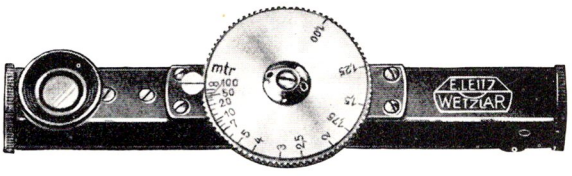


Fig. 15. Leitz No. 1 F "Fofer" range-finder ($^2/_3$ actual size)

lens. To allow for this difference special models of the range-finder have been made which are appropriately calibrated at the outset. Model 1 M (**"Fonor"**), among these, is inscribed "+ $^3/_8$ foot" or "+ 12 cm" on the graduated disc, to indicate that $^3/_8$ foot or 12 cm require to be added to the distance read off where the true distance is required. The focusing scale to the lens of 5 inches or 12 cm focus, however, should be correctly set to the reading of the disc.

The cinematograph cameras as a rule have a length of about 25 cm or 9 inches (that being the distance of the lens from the back of the camera). For such cameras we supply the range-finder No. 1 K (**"Fokin"**), which bears the inscription "+ $^1/_4$ m" or "+ $^3/_4$ foot" (see fig. 16).

For mounting the "Fokin" range-finder on a cinematograph camera we recommend the use of a holder No. 1 H (**"Fokal"** as shown in fig.16), which allows of the range-finder being folded down. — (For **prices** see p. 37.)

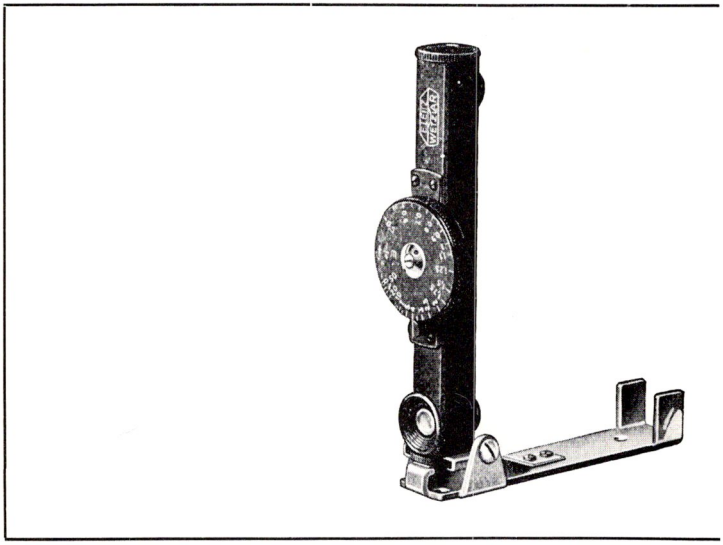


Fig. 16. The "Fokin" range-finder with holder ("Fokal" pattern) ($^1/_2$ actual size)

Leitz Supplementary Front Lenses for the Leica Camera

These front lenses are achromatic converging lenses, and their purpose is to enable photographs of small animals, plants, "objets d'Art", etc. to be taken at distances of less than $3^1/_2$ feet; and to enable reproductions to be made of writing, illustrations, docu-

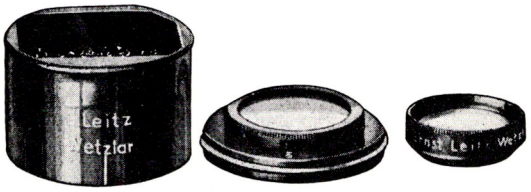


Fig. 17. Lens Hood, Yellow Filter and Supplementary Lens (2/3 actual size)

ments, etc. They are lightly screwed in the front lens mount of the "Elmar" and "Hektor" lenses of 5 cm focal length.

We supply them in three powers, namely:

No. 1 For distances from $39^1/_2$ to $21^3/_4$ inches.
For objects of sizes $17 \times 25^1/_2$ inches, to $8^1/_2 \times 12^3/_4$ inches.
For reducing from 18.2 to 9.0 times.

No. 2 For distances from $21^1/_2$ to $15^1/_2$ inches.
For objects of sizes $8^3/_4 \times 13^1/_8$ inches to $5^5/_8 \times 8^1/_2$ inches.
For reducing from 9.3 to 6.0 times.

No. 3 For distances from $12^3/_{16}$ to $10^1/_2$ inches.
For objects of sizes $4^3/_8 \times 6^9/_{16}$ inches to $3^7/_{16} \times 5^1/_8$ inches.
For reducing from 4.7 to 3.6 times.

The distances are measured from the rear wall of the camera (plane of the film) up to the object.

For the sake of completeness, it should be mentioned that the 5 cm "Elmar" lens as well as the "Hektor" lens of the Leica camera, without a supplementary lens, can be focussed to a distance of $3^1/_2$ feet. It will then cover an object of a size $17^1/_4$ by 26 inches,

giving a reduction of 18 times. By enlarging the negative obtained with the supplementary lens it is possible to obtain a picture in the original size, and, particularly if the No. 3 lens is used, in a size even beyond this.
Exact data concerning the adjustment of the focusing mount of the lens, the distance and the admissable expanse of the object, as well as the reduction and definition is given in special tables issued by us. The supplementary front lenses Nos. 1 and 2 may even be used for taking instantaneous exposures by full aperture. When making reproductions it is advisable to reduce the aperture. It is particularly advisable that the front lens No. 3 should always be stopped down to 6.3 on account of its lesser definition.
The supplementary front lenses for the "Hektor" lens demand a certain limitation in the use of the iris diaphragm, and particulars on this will be found in the special Tables for the Leica camera.
We would point out that the addition of the front lens neither affects the focal length nor the effective aperture, so that the light intensity remains the same. All that happens is that the parallel or slightly convergent path of the rays on the object side, is converted into a strongly convergent one, which results in the object being brought closer and thus the reproduction is larger (see fig. 18).

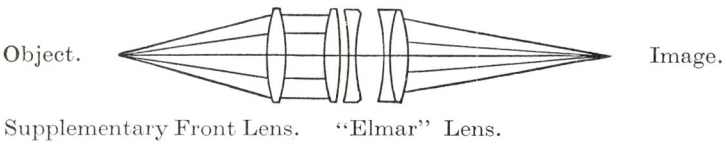


Fig. 18. Path of rays in the "Elmar" lens with supplementary front lens.

The time of exposure is consequently the same, whether, for example, the same object is photographed with the "Elmar" lens alone at $3^1/_2$ feet distance, or with front lens No. 1 at $21^3/_4$ inches distance, or with front lens No. 2 at $15^1/_2$ inches, or with front lens No. 3 at $10^1/_2$ inches. (The focusing mount in these cases always remains set at $3^1/_2$ feet.) An intermediate collar ("Firgi" and "Firco") is supplied for enabling the yellow filter to be used in conjunction with the front lenses.
The mode of operation for obtaining photographic reproductions, for which the supplementary front lenses are particularly suitable, is dealt with under Copying Apparatus p. 58. For **prices** see p. 38.

Leitz Yellow Filters for the Leica Camera

The Yellow Filters are for use in conjunction with orthochromatic films for obtaining true rendering of the colour tone values. Further, they provide a means of photographing clouds in landscape pictures. The retardation factors of the filters diminish with increasing orthochromacy of the film. Detailed information will be found in our booklet entitled "Hints on the Use of the Leitz Leica Camera" and in the "Directions for using the Leitz Leica Camera".

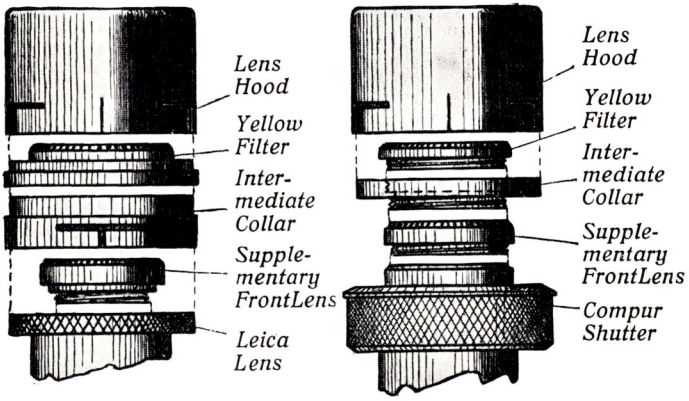


Fig. 19 and 20. Use of the Supplementary Front Lenses with filters (2/3 actual size)

The Yellow Filters are generally supplied in slip-on mounts for use with the Leica camera with focal plane shutter, or with screw-in mount for use with the Compur shutter. Fig. 19 and 20 show how they are employed separately and in conjunction with supplementary front lenses or with the lens hood. For the joint use of a supplementary front lens and a yellow filter, it is necessary to employ an intermediate collar ("Firgi" and "Firco" respectively).

If specially required, the yellow filters can also be supplied in screw-in mounts for use with the focal plane camera. Thus the iris diaphragm can easily be operated, but the joint use of supplementary front lens and screw-in yellow filter is not practicable.

For use with the "Elmar" F/4.5, 13.5 cm focus and "Hektor" F/2.5, 5 cm focus lenses the filters are supplied in slip-on mounts only.

U. V. Protective Filter. As the customary yellow filters are not suitable for photographing at great heights, say above 6500 feet, we recommend in their place the **U. V. protective filter.** The use of this filter doubles the time of exposure. (For **prices** see p. 40.)

Graduated Yellow Filters (sky filters). In order to avoid over-exposure of a very bright distant view, with the foreground comparatively dark, we recommend the graduated yellow filters, which only dim the upper portion of the picture. These filters are supplied in slip-on mounts, and can be used with any of the lenses fitted to the Leica camera with focal plane shutter. They may also be used in conjunction with the Compur shutter camera, by slipping them on to the intermediate collar "Firco". The division line of this filter lies just in the middle. It should be noticed, after fitting the filter to the lens and setting the distance, that the arrow engraved on the mount is on top.

The Lens Hood (fig. 17) is useful when taking photographs with the camera directed obliquely against the sun, as it prevents the direct sunlight from entering the lens, thereby obviating the risk of flares.

When fitting the lens hood to the lens, notice should be taken that the cut-out of the lens hood frame corresponds approximately to the position of the film picture. A white line marked on the lens hood indicates the top.

(For **prices** see pp. 39—41.)

Panoramic Tripod Head to the Leica Camera

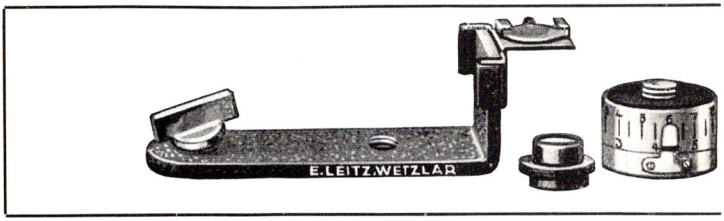


Fig. 21. Angular Bracket, case-level, and panoramic tripod head (about 1/2 actual size)

The Panoramic Tripod Head and the bracket to it makes it possible for the Leica camera to take composite exposures of a panorama to include a complete circle, and with the camera either horizontal or upright.

A complete panorama comprises nine transverse pictures (lower scale on the panoramic head), it being assumed that a 5 cm lens is used. Any rigid tripod stand can be used. The arrangement can be seen from figs. 22 and 23. Further particulars are given in the book of Directions.

(For **price** see p. 41.)

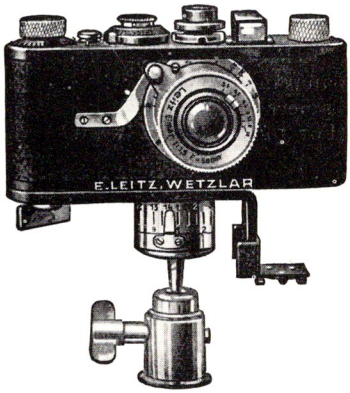


Fig. 22. Camera set up for transverse pictures (1/2 actual size)

The Case-Level (fig. 21) is required for adjusting the camera when taking panoramic views and is also to be recommended for taking architectural pictures. It slips into the clip for the range-finder. (For **price** see p. 41.)

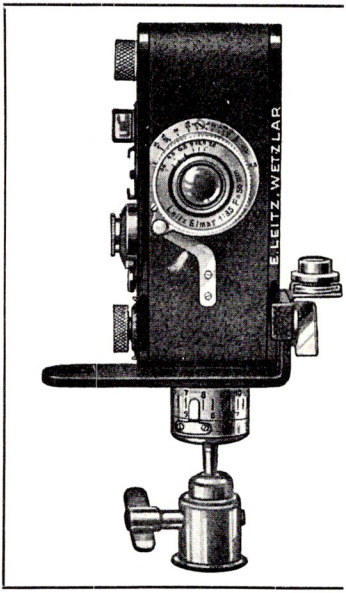


Fig. 23. Camera set up for upright pictures (1/2 actual size)

The Ball-jointed Tripod Head (fig. 24) is also used when taking panoramic views and upright pictures from a tripod, since the Leica Camera is furnished with a screw for transverse pictures only. (For **price** see p. 41.)

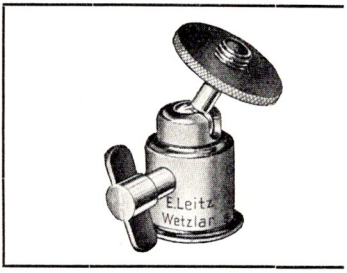


Fig. 24. Ball-jointed Tripod Head (about 1/2 actual size)

The Stereo Slide (fig. 25) screws to the tripod and serves for laterally displacing the camera for taking the component stereo pictures one after the other in immediate succession. Of course, in this way, stereoscopic pictures can be taken of stationary objects only. The slide which carries the camera can be clamped in any required position. As a rule, the lateral displacement ranges from 65 to 75 mm ($2^5/_8$ to 3 inches). At 75 mm the slide bar has a gauge line. For distant views without a foreground the displacement can be extended to 150 mm (6 inches) in order to obtain a satisfying stereoscopic effect.

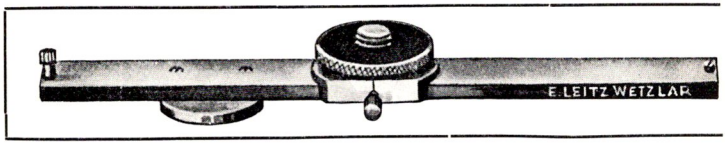


Fig. 25. Stereo Slide (about $^1/_2$ actual size) For **price** see p. 41

Trimming Template for Leica Films

The proper trimming of the film (apart from its correct insertion in the film-chamber) plays an important part in the good working of the Leica camera. For this we supply a special metal template which greatly facilitates the process (fig. 26), when film bought in long lengths has to be trimmed and prepared for Leica spools. For **price** see p. 41.

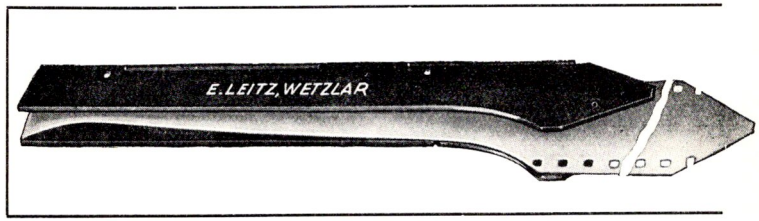


Fig. 26. Trimming Template "Ablon"

Winding Implements for Leica Films

For conveniently holding the centre-spool when winding on the film we supply a **Hand Film Winder** as illustrated in fig. 27.
For **price** see p. 41.

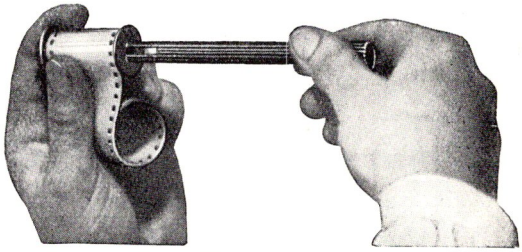


Fig. 27. Hand Film Winder "Agrif"

The Mechanical Film Winder (fig. 28) serves the same purpose. This small implement is best affixed to the edge of the table in the dark room. A slit pin receives the film-spool, while the cross-pin of the spool engages in the slit. After its attachment the film can be readily wound upon the spool with the aid of the crank. The film in every case should be wound firmly at the outset, as subsequent tightening is liable to produce small scratches.
For **price** see p. 41.

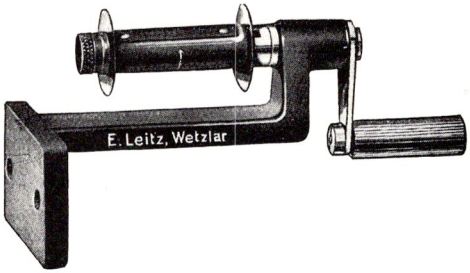


Fig. 28. Mechanical Film Winder "Aspul"

Prices for Leica Accessories

Universal View-Finder

	Codeword
Universal view-finder suitable for Leica lenses of 3.5, 5 and 13.5 cm focus, without case	**Visor**
Solid leather case for above	**Eusor**
	Visus

Angular View-Finder

Angular view-finder, for setting the camera at a right angle to direction of vision, fitting into the clamp for the range-finder, without case	**Winko**
Solid leather case for above	**Witui**
	Winek

Leitz Range-Finder

Leitz range-finder No. 1F, with **large** scale and sub-divisions, up to 300 feet (or 100 meters), with fixing clamp, without case	**Fofer**
Solid leather case for the above	**Euver**
	Foern
Leitz range-finder No. 1M, for hand cameras of medium size ($3^1/_2 \times 2^1/_4$ and 6×4 inches) with fixing clamp, **in leather case**	**Fonor**
Leitz range-finder No. 1K for Cinematograph Cameras, **in leather case** . . .	**Fokin**
Holder No. 1H, for range-finder "Fokin" as shown in fig. 16	**Fokal**

All prices are ex our London warehouse, and are subject to change without notice. — Packing is charged for at cost price.

Supplementary Front Lenses

	Codeword
Front Lens No. 1 to the Leica focal plane shutter camera*) with "Elmar" lens F/3.5, 5 cm focus (giving minifications down to 1:9), for distances ranging from $39^1/_2$ to $21^3/_4$ inches	**Elpro**
Ditto No. 2*) (minifications down to 1:6), for distances ranging from $21^1/_2$ to $15^1/_2$ inches	**Elpik**
Ditto No. 3*) (minifications down to 1:3.6), for distances ranging from $12^3/_{16}$ to $10^1/_2$ inches	**Elpet**
Front Lens No. 1 for Leica Camera with "Hektor" lens F/2.5, 5 cm focus (minifications down to 1:9) for distances ranging from $39^1/_2$ to $21^3/_4$ inches	**Hepro**
Ditto No. 2 for "Hektor" lens (minifications down to 1:6) for distances ranging from $21^1/_2$ to $15^1/_2$ inches	**Hepik**
Ditto No. 3 for "Hektor" lens (minifications down to 1:3.6) for distances ranging from $12^3/_{16}$ to $10^1/_2$ inches	**Hepet**
Front Lens No. 1 to the Compur Leica Camera*) with "Elmar" F/3.5, 5 cm focus (giving minifications down to 1:9), for distances ranging from $39^1/_2$ to $21^3/_4$ inches	**Elcat**
Ditto No. 2*), as above (minifications down to 1:6), for distances ranging from $21^1/_2$ to $15^1/_2$ inches	**Elcom**
Ditto No. 3*) as above (minifications down to 1:3.6), for distances ranging from $12^3/_{16}$ to $10^1/_2$ inches	**Elcur**

*) In the event of the supplementary front lenses or screw-in filters being intended for use with Leica focal plane cameras below No. 9500 or the Compur shutter cameras below No. 13200, this should be expressly stated.

All prices are ex our London warehouse and are subject to change without notice. Packing is charged for at cost price.

When ordering, please quote the respective codewords, in order to obviate errors.

Yellow Filters

	Codeword
Yellow Filter No. 1, light, to slip upon the lenses ("Elmar" 5 and 3.5 cm focus) of the focal plane shutter camera (increasing the exposure about twice)	**Filby**
Yellow Filter No. 2, medium, as before (increasing the exposure about 3 times)	**Filge**
Intermediate Collar for using a slip-on yellow filter in conjunction with front lenses to the focal plane shutter camera	**Firgi**
Yellow Filter No. 1, light, to screw into the lenses "Elmar" F/3.5, 5 cm focus and 3.5 cm of the **focal plane camera***) (time of exposure approximately doubled) . .	**Firhe**
Ditto No. 2 medium*), as above (approximately trebles the time of exposure) . .	**Firmy**
Yellow Filter No. 1, light, to screw into the lens-mount of the **camera with Compur shutter***) (approximately doubles the time of exposure)	**Ficat**
Ditto No. 2 medium*) as above (approximately trebles the time of exposure) . .	**Ficom**
Intermediate Collar for using a yellow filter in conjunction with a front-lens or lens hood on the **camera with Compur shutter***)	**Firco**
Yellow Filter No. 1, light, to slip upon the lenses "Elmar" F/4.5, 13.5 cm focus (as well as 5 cm and 3.5 cm) and "Hektor" F/2.5, 5 cm focus of the **focal plane camera** (approximately doubling the time of exposure)	**Figro**

*) In the event of the supplementary front lenses or screw-in filters being intended for use with the Leica focal plane cameras below No. 9500 or the Compur shutter cameras below No. 13200 this should be expressly stated.

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When ordering, please quote the respective codewords, in order to obviate errors.

	Codeword
Ditto No. 2 medium, as above (approximately trebling the time of exposure) . .	**Figam**
Graduated Yellow Filter (sky filter) in circular mount to slip on any of the lenses supplied with the focal plane shutter camera (in conjunction with intermediate collar "Firco" also suitable for use with the Compur shutter camera)	**Firad**
U. V. Protective Filter, to slip on any of the lenses to the focal plane Leica camera (doubling the time of exposure on high mountains)	**Fiola**
U. V. Protective Filter, to screw into either "Elmar" F/3.5, 5 cm and 3.5 cm focus to the focal plane Leica camera*) (doubling the time of exposure on high mountains)	**Fiore**
U. V. Protective Filter, to screw into the lens-mount of the Compur camera*) (doubling the time of exposure on high mountains)	**Fioko**
Morocco leather bag for supplementary lens or filter	**Euvil**

Various Accessories to the Leica Camera

Roll film chamber for renewal	**Filca**
Centre spool (c^3) to the spool-chamber of the Leica camera	**Spuca**
Take-up spool (m) to the Leica camera .	**Spulm**
Short Wire Release, to screw to the focal plane Leica camera**) with fixing screw for prolonged time exposures as well as instantaneous exposures	**Finot**

*) In the event of the supplementary front lenses and screw-in filters being required for a focal plane Leica camera below No. 9500 or a Leica Compur camera below No. 13200 this should be expressly stated.

**) In the event of the release being required for a Leica camera with the older release button without screw thread, this should be expressly stated.

All prices are ex our London warehouse and are subject to change without notice. Packing is charged for at cost price.

When ordering, please quote the respective codewords, in order to obviate errors.

	Codeword
Wire Release, 3 yds. long, to screw to the focal plane Leica camera for releasing the shutter from a distance	**Fidri**
Wire Release, 6 yds. long, to screw to the focal plane Leica camera, for releasing the shutter from a distance	**Fisex**
Lens Hood	**Fison**
Panoramic Tripod Head	**Fiama**
Angular Bracket for above	**Fiavi**
Case-level, fitting into the clip for the range-finder; for architectural and panoramic photographs	**Fibla**
Ball-jointed Tripod Head	**Fiaku**
Stereo Slide 150 mm (6 inches) long, with mark at 75 mm	**Fiate**
Trimming Template of metal for easily and correctly trimming the two film ends (fig. 26)	**Ablon**
Hand Film Winder of metal for conveniently holding the film-chamber spool when winding on the film (see fig. 27) .	**Agrif**
Mechanical Film Winder of metal for conveniently winding the film on the film chamber spool (to be fitted in the darkroom) (see fig. 28)	**Aspul**

All prices are ex our London warehouse, and are subject to change without notice. — Packing is charged for at cost price.

Leitz developing apparatus for Leica Films

We supply two different kinds of apparatus for developing Leica films: the Leica Developing Drum and the Leica-Correx Tank.

In the Leica Developing Drum (fig. 29) the film (with the sensitized surface on the outside) is wound on a glass drum and the ends of the film are each clamped at the edge by means of metal clips.

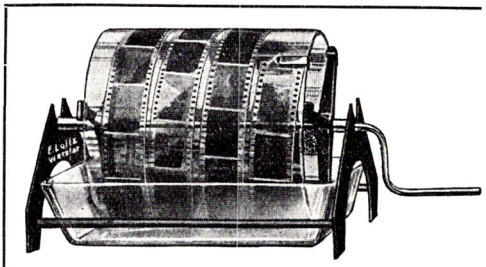


Fig. 29. Developing Drum (about 1/8 actual size)

The glass drum has its spindle resting on an enamelled metal frame, which is placed over the dish filled with developing solution, etc. By means of the crank handle the glass drum, with the film on it, is slowly moved through the liquid and the progress of the developing may be observed with ease. This apparatus is specially suited for rapid developing.

The Leica-Correx Tank (fig. 30) is preferred chiefly by those who wish to develop by the slow or standing method or wish to do developing whilst travelling. It is, of course, also suited for rapid developing.

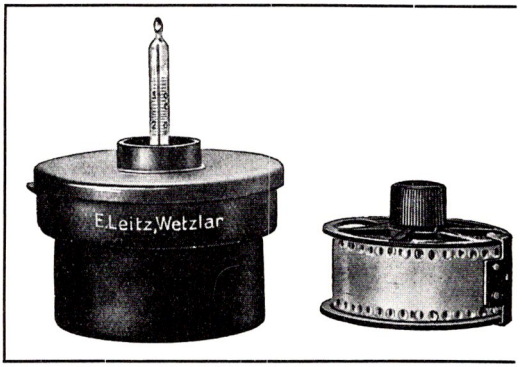


Fig. 30. Leica-Correx Tank (1/8 actual size)

The tank is made of Tenacit, a new non-corrosive material. It has an inlet by means of which it can be filled with developer and fixing solution and also emptied **in daylight.** The only process that is necessary in the darkroom is the introduction of the film into the correx tank. The developing, rinsing,

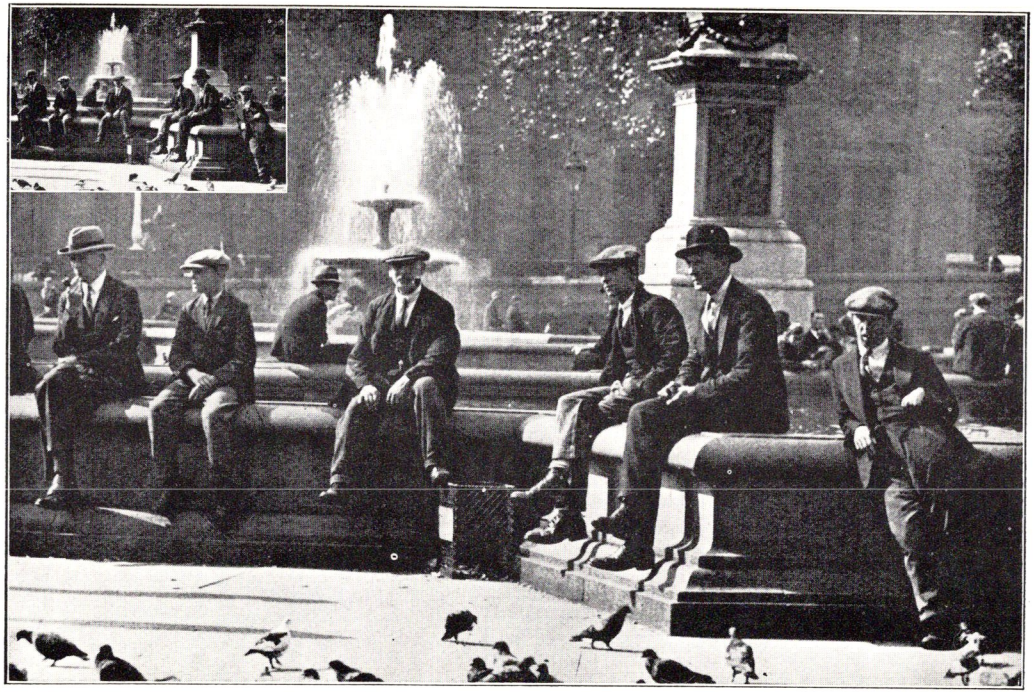
fixing and final rinsing can all be carried out in daylight. Owing to the special shape of the tank spool, an excellent flow of water is provided when rinsing the film from a running tap. Since films are often provided with a black or brown backing, we now supply a correx band **with double sided notches.** With this arrangement all possibility of the emulsion coming into contact with the flat side of the band is avoided. A small thermometer for controlling the temperature of the developer in the closed tank can also be supplied on request. The tank has a diameter of $14^1/_2$ cm ($5^3/_4$ inches) and a height of $9^1/_2$ cm ($3^3/_4$ inches) so that it is very compact and handy. The inner spool enables a kinefilm strip up to 1.8 m (6 ft.) to be wound upon it, together with a celluloid strip having projections along the edges (Correx band).
It is advisable to procure several Correx bands (obtainable separately), so that when developing a number of films there is always a dry Correx band available.

Price List

	Codeword
1 Leica-Developing drum consisting of spindle, rotatable glass cylinder, metal frame, two glass dishes 13×18 cm (5″×7″) and two clips	**Fiman**
1 Metal frame alone without glass cylinder, spindle and glass dish	**Fimor**
1 Spindle with handle and spokes (without glass cylinder)	**Fidax**
1 Glass cylinder as spare	**Ficyl**
1 Glass dish 13×18 cm (5″×7″)	**Fisul**
1 Film clip for drum as spare	**Fixam**
1 Leica-Correx Tank, complete with Inner Spool and Correx Band notched on both sides, but without thermometer	**Corun**
1 Small Thermometer for the Correx Tank, in cardboard container	**Coret**
1 Empty Leica-Correx Tank	**Corol**
1 Inner Spool for Leica-Correx Tank . .	**Corid**
1 Leica Celluloid Correx Band with clip and notched on both sides	**Coryb**

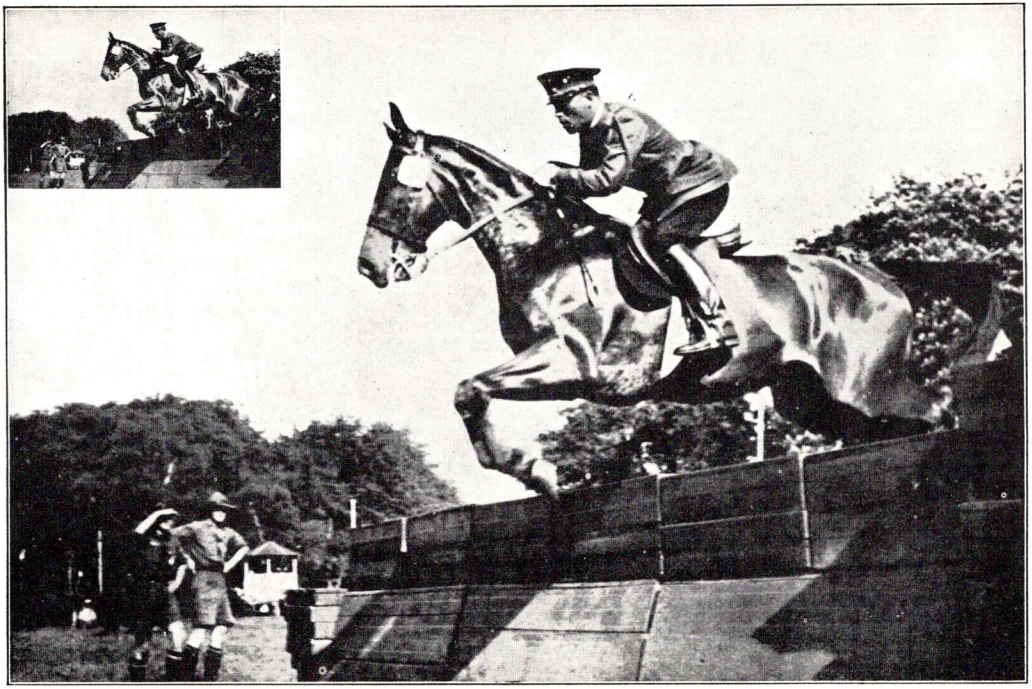
All prices are ex our London warehouse and are subject to change without notice. Packing is charged for at cost price.

When ordering, please quote the respective codewords, in order to obviate errors.



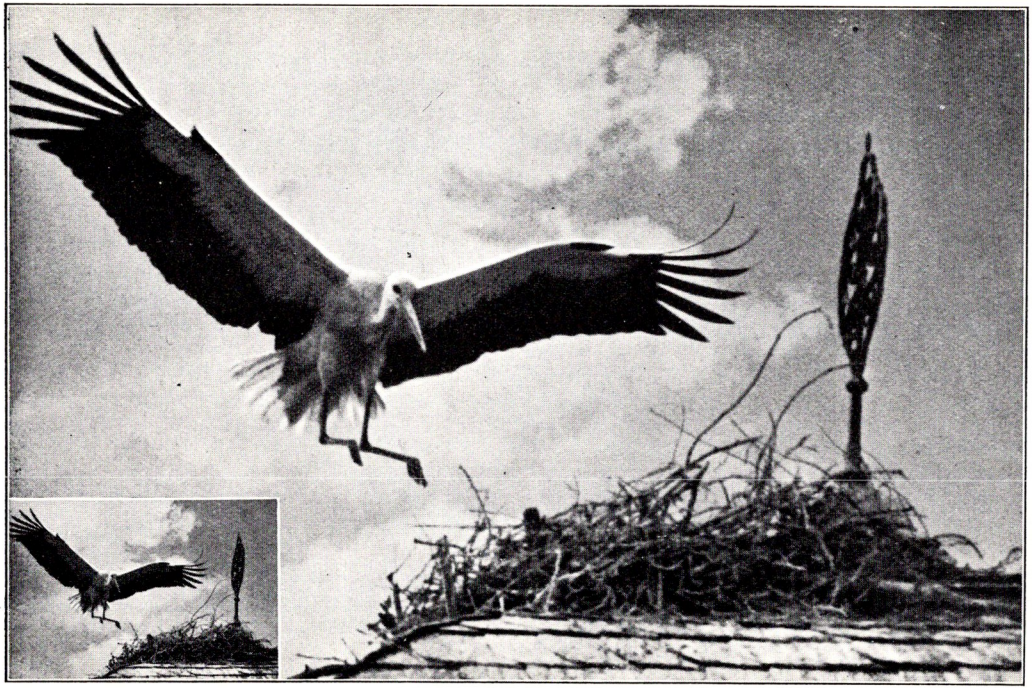
Trafalgar Square, London (Lunch hour)

Taken with „Elmar" lens 13.5 cm focus



45 Steeplechase

Photo by L. Rübelt, Vienna ("Elmar" 5 cm focus)



Stork's return to nest

Taken with "Elmar" lens 13.5 cm focus

LEITZ

ENLARGING APPARATUS

The Leica Photographic Process

may be characterised by the slogan

Small Negatives — Large Pictures

which means

Minimum consumption of material — Maximum freedom of treatment with greatly increased pictorial value of the enlargements.

No one who has tried the Leica method of Photography will return to the old process.

A few of the many advantages of the Leica Camera are:

Light Weight.
Compactness.
Ease in manipulation.
Camera ready for use in an instant.
Cheapness in consumption of material.
Unlimited freedom of enlarging.
Choice of portions enlarged from negative.
Smallness of space in storing negatives.

In connection with the Leica Process of Enlarging, the requisite enlarging apparatus have passed through many stages of development, and meet the most simple needs as well as the more exacting. Simplicity of construction and ease of manipulation have been taken into consideration in striving to obtain the best results.

In all our enlarging apparatus we have applied the **principle of illumination by diffused light,** as distinct from apparatus which make use of light passed through a condenser. The chief advantage of the diffused light is that it yields harmoniously soft enlargements and reproduces no markings on the negative—a defect so often noticed in the case of highly magnified enlargements, necessitating the tedious process of retouching. In the apparatus for medium enlargements ("Flein", "Fleos", "Filar",

"Filix") an electric opal bulb of suitable size is sufficient to give an even illumination of the negative. In the case of the apparatus for enlargements of higher magnification one or two auxiliary lenses are used ("Files", "Filoy", "Filyt", "Vitox"), the method of diffused lighting being maintained.

If highly sensitive gas-light papers or bromide papers only are used in this enlarging apparatus, the time of exposure is comparatively short, and enlarging by the Leica method does not take appreciably more time than printing direct contact copies from negatives. Even when the time of exposure is fairly long, as is necessary for enlargements of considerable dimensions, the film does not become too hot or warped.

Care should be taken that the paper is not exposed too long during the enlargement, as in this case **developing** must be discontinued after a very short time, in order to prevent the copies being too dark. If too dark, the half tones are not reproduced satisfactorily, and the result is a flat enlargement. It should be taken as a general rule that the paper should be developed $1^1/_2$ to 2 minutes. If the picture is too dark, the time of exposure must be curtailed, but if too light, prolonged. It is only by giving the proper exposure and the proper developing time (as mentioned in the directions supplied with each particular paper) that copies reproducing all gradations of the original negative can be obtained.

Further, we would advise the photographer not to adhere always to the postcard size, but to enlarge at least up to a size of $6^1/_2'' \times 4^3/_4''$ (half plate). The enhanced pictorial effect is well worth the very small additional cost.

In the following we give descriptions of the various types of apparatus, together with some brief information concerning the manipulation of the same.

Simple Enlarging Apparatus
in Box Form

Those amateurs who wish to confine their attention to making pictures of one size only, may use to advantage the simple apparatus in box form, which is provided with a fixed lens.

"Flein" and **"Fleos"** for enlarging to size $3^1/_2'' \times 2^1/_2''$.
"Filar" and **"Filix"** for enlarging to postcard size $5^1/_2'' \times 3^1/_2''$.

The lens of this apparatus has a focal length of 65 mm. At one end of the box is a film gate, in front of which the film strip (with the emulsion side inwards) is clamped under a glass plate. In drawing the film strip along from picture to picture the clamping clips must be released each time. At the opposite end of the casing there is a hinged lid. When this has been opened, the enlarging paper is placed in the recessed frame and the lid is again closed. The apparatus "Flein" $3^1/_2'' \times 2^1/_2''$ and "Filar" $5^1/_2'' \times 3^1/_2''$ are intended for daylight enlarging. They may be completed to form the apparatus "Fleos" and "Filix" (see fig. 31) for enlarging by means of artificial light by the addition of a metal casing, open at the sides, and fitted with opal bulb, switch, flexible wire and plug.

The time of exposure, using artificial light, and a size of $5^1/_2'' \times 3^1/_2''$ with highly sensitive gas-light paper, is about 15—30 seconds, this assuming a normal negative. When the apparatus is used in

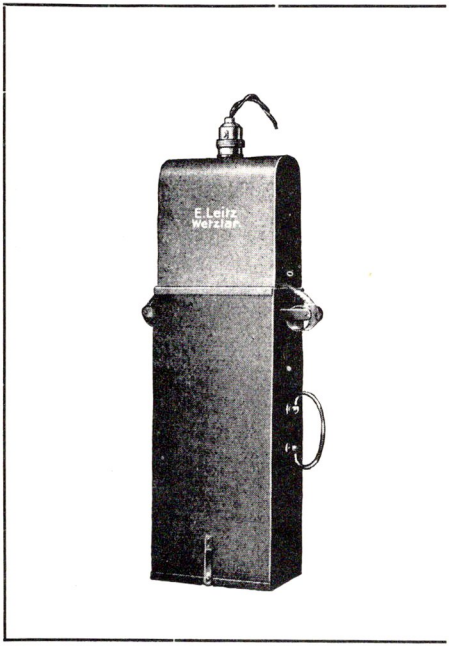


Fig. 31. "Filix" Enlarging Apparatus ($^1/_{10}$ actual size)

daylight (in summer with a clear sky) the time is about 3—6 seconds. For a size of $3^1/_2'' \times 2^1/_2''$ the time of exposure is about half this value. The film gate of the apparatus should not be exposed to the direct rays of the sun. (For **prices** see p. 65.)

Variable Enlarging Apparatus

We recommend the following apparatus to those who wish to make enlargements of varying sizes. These variable models allow the negative material to be used to the very best advantage, both with regard to the size of enlarging as well as to the pictorial composition of the enlargement, and are therefore ideal for the Leica photographer working upon pictorial lines.

The variable models "**Files**" and "**Filoy**" (fig. 32) which take negatives up to the Leica picture size of 36 × 24 mm., including the cinematograph size pictures of dimensions 24×18 mm., are of the same shape.

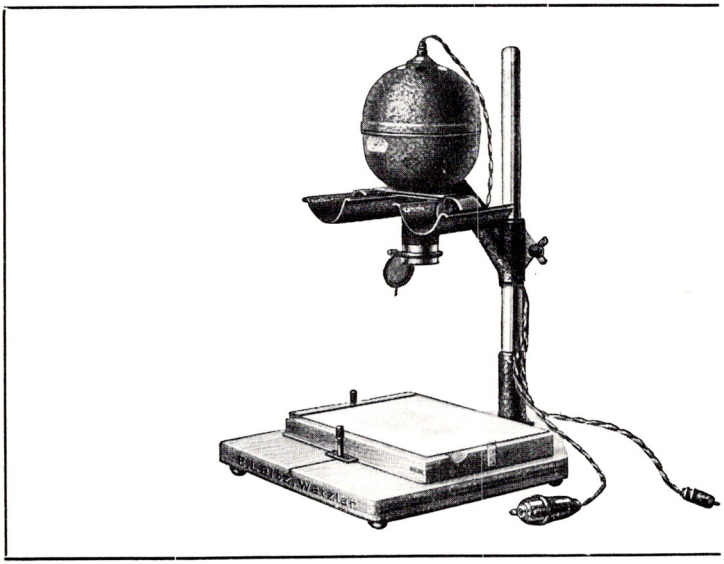


Fig. 32. Variable Enlarging Apparatus "Filoy" with Orange Filter "Flara". (About $^1/_{10}$ actual size)

A Base Board with a column about 50 cm. (20 inches) high carries an adjustable arm, to which is fitted the spherical metal housing with a 60 watt Opal bulb, collecting lens, film support and lens. The metal casing allows for free ventilation. A wall plug and flex establishes a direct connection with the lighting mains.

The lens, which gives crisp definition at full aperture, has a focal length of 50 mm. (2 inches) and a high relative aperture of F/3.5, so that the exposure times are short (e. g. 5—10 seconds using highly sensitive gas light papers of a size $5^1/_2 \times 3^1/_2$ inches).

The "Files" model is supplied with a fixed aperture of F/3.5. **The model "Filoy",** however, is fitted with an iris diaphragm calibrated to control the time of exposure by stopping down the aperture, this being particularly useful when highly sensitive papers are used and only small size enlargements are required. We therefore recommend the latter model.

Further, the ring of the iris diaphragm is provided with numbers which indicate the exposure factors for various apertures.

To keep the negative film quite flat, it is placed between two hinged glass plates with the emulsion side downwards and slipped into the film carrier where it is held in position by two springs. For the accommodation of long film strips, two lateral trough-shaped holders are arranged to take the two ends of the film. The base is provided with **a displacable printing board** for carrying the enlarging paper. This board is made to slide in any direction required, and when in position is fixed by two clamping screws, the paper being held flat and in the proper position by a hinged glass plate. When the glass plate is raised a number of small pins spring up at two sides, serving as a guide for the enlarging paper. When the glass plate is lowered the pins are pressed down into their sockets.

The various enlargement sizes from $3^1/_2 \times 2^1/_2$ up to 10×8 inches, are easily obtained by raising and lowering the illumination housing, which is secured on the vertical column in any position by means of a clamping screw. The **sharp focusing** is then adjusted by the helical screw fitting of the lens. The image is focussed on the white cardboard on which the various sizes of paper are marked by lines. The picture is first focussed with the lens at full aperture, the reading glass No. 244d being of convenience for this purpose. Then the lens is stopped down until the most favourable time of exposure is obtained, whereupon the card is changed for the enlarging paper. The exposure is made by means of the press switch.

In order that the exact position of the picture may be verified direct on the photographic paper, we supply on request an **Orange filter** ("Flara") to fit in front of the lens. The sharp focusing, however, should be done on the white focusing card without the orange filter, for which purpose the latter is made to swing out.

In cases of necessity it is possible with the apparatus "Files" and "Filoy" to make enlargements beyond the size of 10″ × 8″ by turning the lamp casing backwards around the column and enlarging on the paper arranged at any desired distance on some provisional base. (For **prices** see p. 65.)

The "Filyt" Enlarging Apparatus

(fig. 33) has a column 80 cm. (32 inches) long, a larger lamp housing (with 75 watt Opal bulb), a larger collecting lens, and a lens of longer focal length. It is designed to take film and plate negatives up to 4.5 × 6 cm (Vest Pocket) size. Also, any portions from a negative $4^1/_4$″ × $3^1/_4$″ can be enlarged, as sufficient freedom of movement is provided for the negative. The collecting lens through which diffused light is passed has a free effective diameter of 76 mm. This fixes the limit for the size of negative which can be enlarged. The negative, with the emulsion side downwards, is put between the hinged glass plates, these latter then being placed in the carrier slot and kept in position by two springs. For Leica films a special metal holder is provided with an aperture of 36 × 24 mm. which should be placed in the support under the collecting lens. The Leica film, in a pair of smaller hinged glass plates, is then pushed over this metal holder up to the guide fence.

The printing board for the enlarging paper measures 10″ × 8″, as in the apparatus "Files" and "Filoy" (see page 51). The magnification can be increased to 10″ × 8″ for the Leica as well as the 4.5 × 6 cm. negatives. If desired, still larger magnifications can be obtained by swinging the lamp casing round, as explained above under "Filoy".

The lens, which has a focal length of 70 mm. and a relative aperture of F/3.5, is provided with an iris diaphragm and factorial numbers for the exposure times.

A suitable **Orange filter** ("Flaty") can also be supplied for the "Filyt" enlarging apparatus. As to its use, see above under "Filoy".

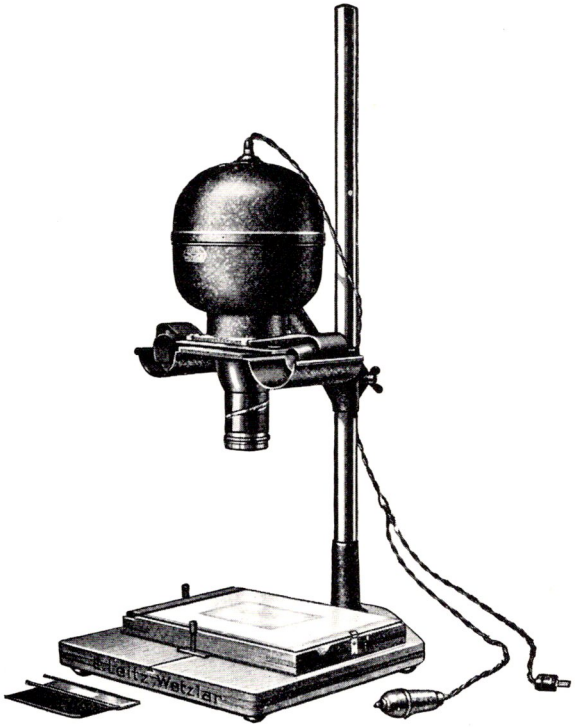


Fig. 33. Variable Enlarging Apparatus "Filyt". (About 1/10 actual size)
(For **prices** see p. 66)

The Enlarging Apparatus "Vitoy"

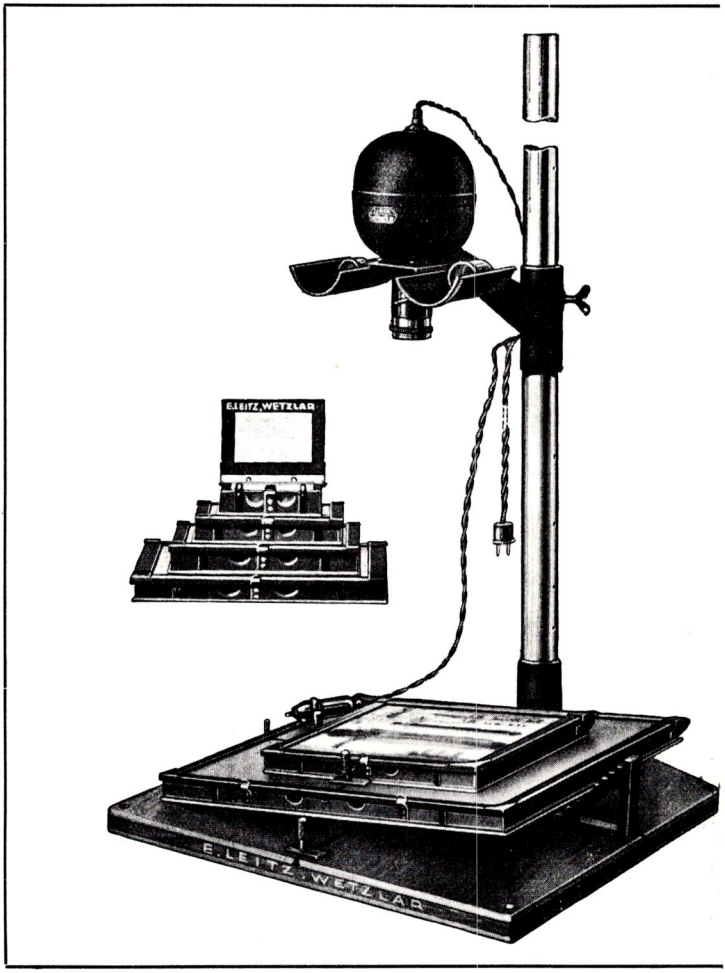


Fig. 34. Variable Enlarging Apparatus "Vitoy". (About $^1/_{10}$ actual size)

The "Vitoy" (fig. 34) is the largest of the variable models and is intended chiefly for professional photographers and photographic dealers, who wish to be able to make pictures up to a size of 18″ × 15″ in a quick and convenient manner.

The base plate measures 20″×24″, and the vertical column is 4 feet high. The illuminating head is the same as in the "Filoy" apparatus, but is fixed to an extra long arm with muff to fit the thicker column. It is provided with a 60 watt bulb and is arranged to take negatives up to a Leica picture size 36×24mm. The lens has a focal length of 50 mm. and a relative aperture of F/3.5. There is also an iris diaphragm with factorial numbers for the exposure. With this apparatus it is possible to obtain enlargements from $3^1/_2$″ × $2^1/_2$″ up to 18″ × 15″ from Leica pictures.

If desired, this apparatus can be fitted with the illuminating head of the "Filyt" apparatus which takes negatives up to a size of 4.5 × 6 cm. (Vest Pocket size) instead of the illuminating head for Leica negatives. In this case the lens has a longer focal length (70 mm.), and though it is possible to make enlargements up to 18″ × 15″ from Leica negatives as well as plates 4.5 × 6 cm., there is no freedom in height to allow of enlarging portions of the Leica negative to these dimensions, as is possible with the above mentioned illuminating head with 50 mm. lens.

The sharp focusing is carried out in the usual way by means of the helical slide fitting of the lens. By means of the clamping screw on the sliding arm, the illuminating head can be fixed at any desired height, as is necessary, for instance, when selected portions of negatives are to be enlarged.

With the "Vitox" apparatus we supply a series of **attachable printing boards with hinged metal frames (masks)** without glass, by means of which the enlargement can be provided with a white border. Each copying board has protruding leaf s prings at all sides, between which the enlarging paper is placed. As the different papers sometimes vary in size, these leaf springs are made adjustable by regulating screws, thereby ensuring a uniform white border. When the metal frame is closed, by means of a special snap clip, the leaf springs are forced down, and automatically rise when the frame is opened.

The base board and the largest **printing board** are provided with movable clamping screws for fixing smaller printing boards in position, without the possibility of displacement.

Further, **a stepped metal angle piece (tilting device)** is supplied which enables each board to be given any inclination desired. This arrangement enables pictures with converging or "falling" lines to be corrected. Pictures of this kind occur when the camera is held inclined either upwards or downwards. It is not always possible to avoid this difficulty when extreme points in the picture are to be included (e. g. in exposures of architecture), but with this tilting device it is easy to make the necessary correction. According to the angle at which the copying board is sloped, the lens aperture is reduced by means of the iris diaphragm, so that uniform sharpness is still obtained. (In using the enlarging apparatus "Filoy" and "Filyt", the picture may also be corrected by tilting the printing board.)

The Printing Boards with border masks are supplied in different sizes, from $3^1/_2'' \times 2^1/_2''$ up to $20'' \times 16''$, as listed at the end of the catalogue. They can also be used up to the size $10'' \times 8''$ for the smaller variable enlarging apparatus "Files", "Filoy" and "Filyt", and are supplied separately.

The most suitable negatives for enlarging with our apparatus are those which are clear and not too dense. As to enlarging paper, we recommend highly sensitive gas-light paper for the smaller sizes up to $6^1/_2'' \times 4^3/_4''$, but beyond this we recommend bromide paper. Soft negatives require hard or extra-contrasty bromide papers.

The time of exposure for the size $6^1/_2'' \times 4^3/_4''$ is about 4—8 seconds with bromide paper, but for highly sensitive gas-light paper it is about four times longer.

Developing of enlargements should be done in accordance with the instructions given with the particular paper. As a rule, the developing is done in the case of Kodak, Agfa or Perutz with Metol-Hydroquinone developer, according to the following directions:

Normal negative	Normal paper	Strength 1 : 4
Hard negative	Normal paper	Strength 1 : 8
Soft negative	Normal paper	Strength 1 : 2—1 : 3
Soft negative	Hard paper	Strength 1 : 4

For **prices** see page 67—68.

Printing Frame with Adjustable Mask Bands

The printing frame is made of wood and has overall dimensions of 32 × 26 cm. ($12^3/_4 \times 10^3/_8$ inches). It is available for paper sizes up to 24 × 18 cm. ($9^1/_2 \times 7^1/_4$ inches) and is fitted with two longitudinal

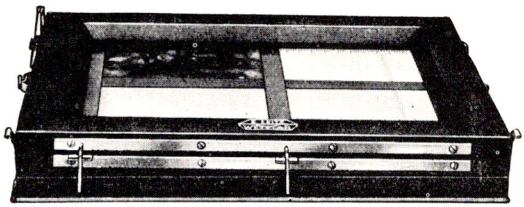


Fig. 35. Printing Frame with adjustable mask bands (about $^1/_5$ actual size)

and two transverse steel bands. These can be tightened and fixed as desired by the aid of eccentric handles, for which purpose the baseboard is furnished with division lines. When pressure is applied to the two spring catches at the sides, the upper hinged part of the frame springs open. The enlarging paper can then be slipped into one of the corners against the projecting location pins, the latter receding when the frame is closed. With this printing frame a uniformly white margin of a width up to $^5/_8$″ can be obtained around the enlarged prints. At the lower edges it is fitted with two metal strips for clamping it in position when in use with our variable enlargers.

For **prices** see page 69.

LEITZ

PHOTOGRAPHIC COPYING APPARATUS

in conjunction with the Leica Camera

Our variable enlarging apparatus are also very suitable for making reproductions by means of the Leica camera and supplementary front lenses. For this purpose the illuminating head is replaced by a **special arm** ("Filum" for the "Filoy" apparatus; "Fearm" for the "Filyt"

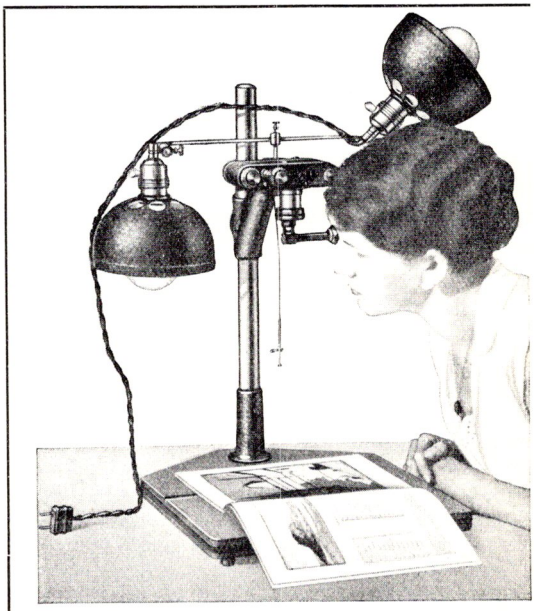


Fig. 36. Copying Apparatus consisting of base board and column belonging to the "Filoy" Enlarging Apparatus and the "Filum" arm, together with the Leica camera and angular finder, as well as the "Stali" illuminating equipment (about $^1/_{10}$ actual size)

apparatus; "Velum" for the "Vitoy" apparatus) to which the Leica camera is fixed parallel to the base board (see fig. 36).

The object to be reproduced, provided it is flat, (models, pictures, drawings, handwriting, patent specifications and other printed documents, beetles, butterflies, etc.), is placed upon the base board. In order that the centre of the object be placed absolutely vertically underneath the lens, a **plumb line** ("Floth") adjustable in length, is attached to the lens for the purpose of positioning the object: and the base board must of course be horizontal when this is being done. The supplementary front lenses alter the angle of the Leica lens so that the view-finder cannot be used for verifying the expanse of the picture. It is therefore necessary to make use of the tables published by us. These tables give the largest admissable expanse of the object for the various front lenses, as well as data concerning the necessary distance of the object from the plane of the film (rear wall of the camera) and the depth of definition for each particular case. **Sharp focusing** is obtained by measuring the distance from the object to the rear wall of the camera and fixing the sliding arm to the column in the particular position required, by means of the clamping screw.

Instead of the plumb line, our **angular finder** ("Winko") may be used to advantage. This is fixed to the lens by means of a holder ("Wicap") and allows of an easy verification of the size of the picture and a correct positioning of the object to be taken (see fig. 36). Sharp focusing, however, must be carried out in this case also by measurement, as explained above. Before making the exposure, which is accomplished by means of a wire release, the angular finder must naturally be removed.

Where it is desired to obtain a uniform **illumination of the object,** artificial light may be used instead of daylight. For this purpose we supply two adjustable electric lamps of opal glass provided with round shades and attached to a metal rod ("Stali"), which are fixed by means of a plug in the supporting arm for the Leica camera (see fig. 36).

For copying purposes, the most suitable film is the Perutz Leica special film, owing to its fine grain and the high contrast effects it gives. In the case of documents being copied, the film is not developed in Perinal, but in Metol-Hydroquinone at a strength of 1 : 2 to 1 : 4 with an addition of potassium bromide. In the case of half tone illustrations or prints in colour, the same film is used, but it should be developed in Perinal at a strength 1 : 15 up to 1 : 25.

For reproductions of line drawings and letter press printing, the Cine diapositive film is to be recommended, but of course this requires 8—10 times longer exposure than the Leica special film. However, it gives rich contrast effects and works with clear outline. It is developed in Metol-Hydroquinone at a strength of 1: 2 with an addition of potassium bromide. It should be mentioned that in photographing objects which cannot be laid flat or photographed from above, but must be set up and taken from the side, the Leica camera equipped with supplementary front lens must be used on a special stand. For the purpose of trueing up the apparatus in a horizontal direction, the **case level** ("Fibla") is inserted in the clip for the range-finder. The distance, and consequently the focusing, is determined in the manner already described, whilst the field of the picture is verified by means of the angular finder attached to the front of the lens (holder "Wicap"). The exposure is always made by a wire release. **The time of exposure,** of course, varies considerably and no general rule can be given. The use of one of the well-known exposure meters is to be recommended. — For **prices** see page 70.

Collapsible Copying Stand

When travelling, it is often desirable to take a **collapsible copying apparatus of the smallest possible dimensions.** Such an apparatus is shown in the following illustration.

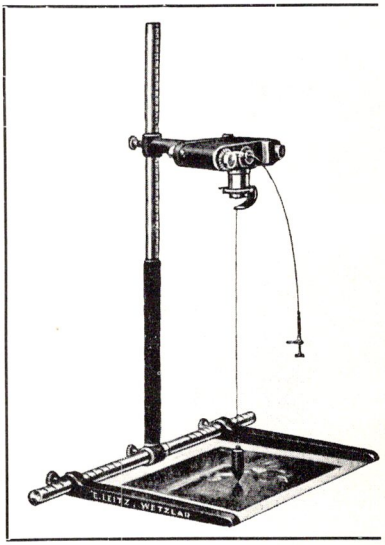


Fig. 37. Photographic Copying Stand ("Stare") with Leica camera and Plumb Line ($^1/_{10}$ actual size)

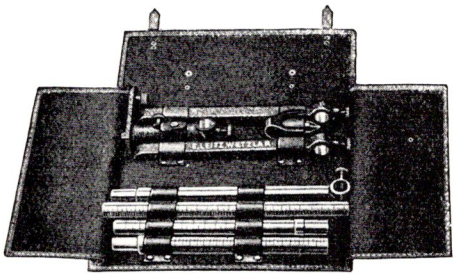


Fig. 38. Photographic Copying Stand ("Stare") dismantled, complete with Plumb Line, in canvas bag ($^1/_{10}$ actual size)

This stand consists of dismountable tubes, two foot rests, and an attachable arm for the camera. The vertical pillar is about $21^1/_2$" high and permits the use of front lenses Nos. 2 and 3. Both the vertical and horizontal tubes are divided with a centimetre (or inch) scale, the vertical one being sub-divided into $^1/_2$ cm. ($^1/_8$ inches).

As the apparatus is merely an auxiliary equipment for travelling purposes, the vertical column cannot be extended to such a length as to allow of the front lens No. 1 being used, that is if the necessary stability is to be maintained.

When taken apart, the copying stand is accommodated in a canvas bag, size $6 \times 12^1/_2$ inches, with handle for carrying. The weight is $3^1/_4$ lbs.

For artificially illuminating the object, the above described additional equipment, consisting of a rod with two adjustable lamps ("Stali"), is also applicable here (see fig. 36).

For prices see page 71.

REPRODUCING APPARATUS
for X-ray Plates and Film Sheets

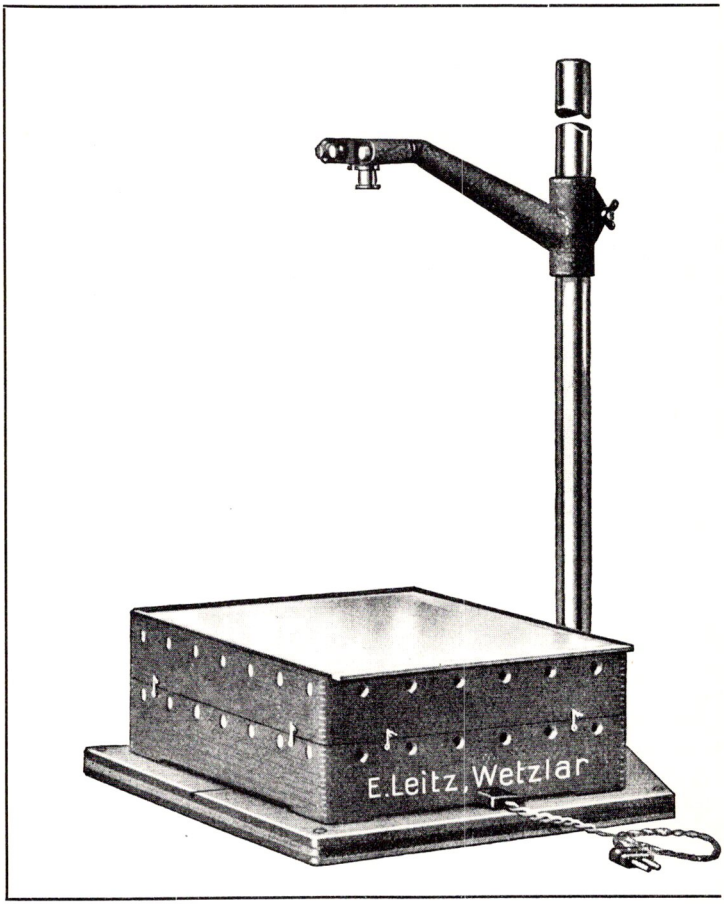


Fig. 39. (About $^1/_{10}$ actual size)

The projection of large X-ray plates and film sheets presents difficulties, in that there is scarcely an apparatus which is capable of projecting plate and sheet sizes up to 50 × 40 cm. (20 × 16 inches) in their entirety. Such X-ray photographs therefore require to be shown on the screen in successive portions. Special apparatus devised for the direct projection of X-ray plates is, moreover, disproportionately costly, owing to the unusually large diameters of the optical components, and has the further disadvantage that it occupies a great deal of space.

The difficulty is overcome by the Leica process. With the aid of the Leica camera and the Reproducing Apparatus shown in fig. 39, the original X-ray photographs are reduced on a standard cinematograph film to the Leica size of 36 × 24mm., and the resulting positives projected by means of the small film projectors described in a separate booklet. Owing to their extraordinary sharpness, these Leica film positives can be enlarged to the full screen size of about 10 × 8 feet, and the resulting screen pictures are bright enough to be clearly seen on the screen by fairly large audiences, such as attend clinical lectures.

The projection apparatus and its accessories are conveniently portable, and the pictures themselves are projected and changed without difficulty. The method has the further advantage that the original plate is not exposed to the risk of wear and damage, and the cost of producing the small lantern films is insignificant.

The Reproducing Apparatus (fig. 39), consists of a baseboard and upright from the "Vitoy" enlarging apparatus (fig. 34), a sliding bracket with Leica camera attached thereto, and an illuminating box serving for uniformly lighting up the original X-ray plate or film sheet. The baseboard measures about 24 × 20 inches, while the upright is 4 feet high, and the illuminating box measures 20 × 16 inches. This box is hinged to open and contains six 25 watt cornice lamps approximately 28 cm. ($11^1/_2$ inches) in length and above these a ground glass plate for uniformly diffusing the light. At a short distance above the ground glass plate there is an additional opal glass plate upon which the negative X-ray plate or film sheet is placed. The film sheet should be covered with the loose plain glass plate furnished with the apparatus, so as to keep it flat. The lamp-box connects directly to the electric light circuit by a plug.

According to the size of the X-ray photographs which are to be reproduced, the Leica camera should be used with the "Elmar"

lens by itself or in conjunction with one of the three supplementary front lenses (page 20) so that the Leica film of 36 × 24 mm. is completely covered.

Focusing is done in the way explained on page 15 with reference to the copying apparatus, i. e. with the aid of the angular finder or the plumb-line and the focusing tables.

Small X-ray photographs should be placed upon the middle of the illuminating box. The light shining through around the boundary of the photograph is best screened off by a black paper mask.

The time of exposure for an X-ray plate or film measuring 20 × 16 inches ranges from 10 to 15 seconds, according to its density, when using the front lens No. 1 and a stop f/6.3.

Film Material. We recommend the standard positive cinematograph film, in that it gives rich contrasts and clear pictures. It should be developed with Metol-Hydroquinone at a strength of 1 : 2.

The resulting film positives should preferably be mounted singly or in sets of three between glass plates held together with edging paper. They are then directly available for projection on the screen (respecting these lantern positives see page 82).

The lantern positives can be projected according to the desired size of the screen picture or the screen distance with the aid of one of our small projection lanterns. One of the most suitable of these is No. IV b/L, not only on account of its great intensity of illumination but also because, owing to the interchangeability of the front attachment, it is available for the projection of $3^1/_4 \times 3^1/_4$, $4 \times 3^1/_4$ and $4^1/_4 \times 3^1/_4$ inch lantern slides. Detailed particulars, together with illustration, will be found on page 75, while the prices of the complete reproducing apparatus will be found on page 72.

The Leica camera is, of course, also available for all other kinds of photographic work.

PRICE LIST

Box Type Enlarging Apparatus

	Codeword
1 **Plain Enlarger for daylight** with lens of 65 mm. focal length, fixed focus for enlarging Leica film negatives 36×24mm. to a size 9×6cm. ($3^1/_2'' \times 2^1/_2''$) . . .	**Flein**
1 **Enlarger** as above, for a size of picture 9×6cm. ($3^1/_2'' \times 2^1/_2''$), **but with 75 watt opal bulb*) in detachable metal casing,** including switch, flexible wire, and plug	**Fleos**
1 **Plain daylight enlarger** with lens of 65mm. focal length, fixed focus for enlarging Leica film negatives 36×24mm. to post card size 14×9cm. ($5^1/_2'' \times 3^1/_2''$).	**Filar**
1 **Enlarger** as above, for post card size 14×9cm. ($5^1/_2'' \times 3^1/_2''$), **but with 100 watt opal bulb*) in detachable metal casing,** including switch, flexible wire, and plug	**Filix**

Variable Enlarging Apparatus

1 **Variable Enlarger** with 60 watt opal bulb*), pair of hinged glass plates for Leica film, press-switch with short length of flexible wire and plug, Leitz lens focal length 50mm. and F/3.5 aperture, movable printing board, with hinged glass plate without border mask. (Enlargements ranging from $3^1/_2'' \times 2^1/_2''$ to $10'' \times 8''$) . .	**Files**
1 **Variable Enlarger,** as before, but **with iris diaphragm** in the lens, and diaphragm ring with factorial numbers for the time of exposure	**Filoy**
1 **Pair of hinged glass plates** $1^3/_8'' \times 4^3/_4''$ (3.5×12 cm.) for holding the negative film	**Glazo**

*) When ordering, please state voltage of mains.

When ordering, please quote the respective codewords, in order to obviate errors.

	Codeword
1 **Orange Filter** in mount, attachable to the lens of the variable enlarging apparatus "Files" and "Filoy" and capable of being swung out of action (for verifying the position of the picture direct on the enlarging paper)	**Flara**
1 **Variable Enlarging Apparatus with 75 watt opal bulb*),** press switch, flexible wire, and plug, Leitz lens focal length 70mm., F/3.5 with iris diaphragm and factorial numbers for the exposures, and also with hinged glass plates **for films and glass negatives up to $4^1/_2 \times 6$ cm.** and metal holder for the Leica size, including movable printing board with hinged glass plate without border mask. (Enlargements up to $10'' \times 8''$)	**Filyt**
1 **Pair of hinged glass plates** $1^3/_8'' \times 6^3/_4''$ (3.5 × 17cm.) for holding the negative film	**Glasi**
1 **Pair of hinged glass plates** $4'' \times 7^1/_2''$ (10 × 19cm.) for holding films and glass negatives up to $1^3/_4'' \times 2^3/_8''$	**Glanu**
1 **Orange Filter** in mount, attachable to lens in enlarging apparatus "Filyt" and swinging away as desired, for verifying the position of the picture direct on the enlarging paper	**Flaty**
1 **Arm** to the variable enlarging apparatus "Files" and "Filoy", for attaching the Leica camera for copying purposes . . .	**Filum**
1 **Extra long Arm** for the variable enlarging apparatus "Filyt", for attaching the Leica camera for copying purposes . . .	**Fearm**
1 **Printing Board** size $10'' \times 8''$ with hinged glass plate, without border mask, as belonging to the apparatus "Files", "Filoy", and "Filyt". (Spare board)	**Fetra**
1 **Glass plate** $7^1/_2'' \times 11''$ for the printing board "Fetra" (Spare plate)	**Glapa**

(For printing boards with border masks see below.)

*) When ordering, kindly state voltage of mains.

When ordering, please quote the respective codewords, in order to obviate errors.

	Codeword
1 Illuminating head of the "Filoy" apparatus with supporting arm, consisting of lamp housing with opal bulb*), switch, flexible wire and plug, film carrier with lateral film holders, pair of hinged glass plates, $1^3/_8'' \times 4^3/_4''$ for the Leica film, tube with lens and iris diaphragm. (This illuminating head may also be used on the apparatus "Filyt")	**Fitop**
1 Illuminating head of the "Filyt" apparatus with supporting arm, consisting of lamp housing with opal bulb*), switch, flexible wire and plug, negative carrier with lateral film holders, pair each of hinged glass plates $4'' \times 7^1/_2''$ and $1^3/_8'' \times 4^3/_4''$, metal holder for Leica size, tube with lens and iris diaphragm	**Fibyl**
1 Large variable enlarging apparatus with column 4 ft (1.20 m.) high and base board $20'' \times 24''$, lamp casing with 60 watt opal bulb*), pair of hinged glass plates for the Leica film, press switch with short length of flexible wire and plug, Leitz lens 50 mm. focal length and aperture F/3.5 with iris diaphragm, without printing boards	**Vitas**
We supply with the above:—(English sizes)	
1 Printing board with hinged border mask for size $3^1/_2'' \times 2^1/_2''$	**Vetwo**
1 do. ,, ,, $4^1/_4'' \times 3^1/_4''$ ($^1/_4$ Plate) . . .	**Vefor**
1 do. ,, ,, $5^1/_2'' \times 3^1/_2''$ (Post Card) . .	**Vefiv**
1 do. ,, ,, $6^1/_2'' \times 4^3/_4''$ (Half plate) . .	**Veder**
1 do. ,, ,, $8^1/_2'' \times 6^1/_2''$ (Whole plate) .	**Vegit**
1 do. ,, ,, $10'' \times 8''$	**Vetin**
1 do. ,, ,, $15'' \times 12''$	**Velve**
1 do. ,, ,, $20'' \times 16''$	**Vegur**
1 Tilting angle of metal	**Vekip**
	Viren

*) When ordering, kindly state voltage of mains.

When ordering, please quote the respective codewords, in order to obviate errors.

	Codeword
We can also supply this apparatus with printing boards in American sizes: —	
1 Large variable enlarging apparatus as before	**Vitas**
1 Printing board with hinged border mask for size $4^1/_4'' \times 3^1/_4''$ ($^1/_4$ Plate) . . .	**Vefor**
1 do. ,, ,, $5^1/_2'' \times 3^1/_2''$	**Velan**
1 do. ,, ,, $7'' \times 5''$	**Vesir**
1 do. ,, ,, $10'' \times 8''$	**Vetin**
1 do. ,, ,, $14'' \times 11''$	**Vebol**
1 do. ,, ,, $20'' \times 16''$	**Vegur**
1 Tilting angle of metal	**Vekip**
	Visam
The same apparatus with printing boards in Continental sizes: —	
1 Large variable enlarging apparatus as before	**Vitas**
1 Printing board with hinged border mask for size $6^1/_2 \times 9$ cm.	**Vesex**
1 do. ,, ,, 9×14 cm.	**Vecar**
1 do. ,, ,, 13×18 cm.	**Vedri**
1 do. ,, ,, 18×24 cm.	**Velok**
1 do. ,, ,, 24×30 cm.	**Venty**
1 do. ,, ,, 40×50 cm.	**Vegro**
1 Tilting angle of metal	**Vekip**
	Vitoy
1 do. ,, ,, 9×12 cm.	**Venun**
1 do. ,, ,, 10×15 cm.	**Vezen**
1 do. ,, ,, 30×40 cm.	**Vetru**
	Vidal
The printing boards with hinged border masks up to size $10'' \times 8''$ can be used with all other of our variable enlarging apparatus	
1 Pair hinged glass plates $1^3/_8'' \times 4^3/_4$ for holding the negative film	**Glazo**

When ordering, please quote the respective codewords, in order to obviate errors.

	Codeword
1 **Orange Filter** in mount, attachable to the lens of the enlarging apparatus "Vitoy" ("Vitas") which can be swung out of action as desired	**Flara**
1 **Arm** for the enlarging apparatus "Vitoy", for fixing the Leica camera for copying	**Velum**
1 **Illuminating head for the enlarger "Vitoy" ("Vitas") only, with supporting arm,** consisting of lamp casing with opal bulb*), flexible wire, press switch, film carrier with lateral film holders, hinged glass plate $1^3/_8'' \times 4^3/_4''$ for the Leica film, tube with lens and iris diaphragm . . .	**Vetop**
1 **Illuminating head from the "Filyt" but with longer supporting arm and muff to fit the thicker column,** comprising lamp casing with opal bulb*), flexible wire and plug, press switch, negative carrier with lateral film holders, 1 pair of hinged glass plates, each measuring $4'' \times 7^1/_2''$ and $1^3/_8'' \times 6^3/_4''$, as well as metal holder for the Leica size, tube with lens and iris diaphragm. (This illuminating head may be used for the apparatus "Vitoy" ("Vitas") instead of "Vetop")	**Vebyl**
1 **Printing Frame with adjustable mask bands,** available for use with plate and film sizes up to 24×18 cm. ($9^1/_2 \times 7^1/_4$ inches) adapted for use with all variable enlarging apparatus (fig. 35)	**Femas**

*) When ordering, please state voltage of mains.

When ordering, please quote the respective codewords, in order to obviate errors.

Photographic Copying Apparatus

	Codeword
1 **Base board with column 20 inches high** from the "Files" or "Filoy" apparatus**)	**Feffu**
1 **Arm for above,** for fixing the Leica camera for copying purposes***)	**Filum**
1 **Illuminating equipment** for same, comprising rod with two adjustable opal bulbs 40 watt*) with reflectors, short flexible wire and plug (also suiting the copying stand "Stare")	**Stali**
	Fepro
1 **Base board with column 32 inches high** from the "Filyt" apparatus	**Fessa**
1 **Column 40 inches high** in place of the 32 inches high column (for use with all three front lenses) . . . **Additional Cost**†)	**Fehun**
1 **Extra long arm** for above, for attaching the Leica camera for copying purposes††)	**Fearm**
1 **Illuminating equipment for same,** comprising rod with two adjustable opal bulbs 40 watt*) with reflectors, short flexible wire and plug (also suiting the copying stand "Stare")	**Stali**
	Festo

*) When ordering, kindly state voltage of mains.

) With a column 20" high, only the supplementary front lenses Nos. 2 and 3 may be used. **Extra price for column 100 cm. (40") high enabling all front lenses to be used, (additional codeword: **Cento**).

***) Instead of the arm "Filum", **the extra long arm "Fearm"** is recommended for the 40" column, as by using both these larger parts, all three front lenses may be used for copying.

†) This 40" column may also be used for the enlarging apparatus "Files" and "Filoy" which are generally supplied with the 20" column. There is an **extra price** in this case, however. (See note **.)

††) This arm "Fearm" may be used also with the enlarging apparatus "Files" and "Filoy", when it is provided with the 40" high column.

When ordering, please quote the respective codewords, in order to obviate errors.

	Codeword
1 **Copying stand, collapsible,** for travelling purposes, for photographic copying with the Leica camera, including canvas bag with handle, but without plumb line . .	**Stare**
1 **Plumb line** with attaching clip, adjustable in length, for ascertaining the centre of the picture in photographic copying .	**Floth**
	Staot
1 **Angular finder** for sighting the object at a right angle to the direction of view, also suitable for verifying the size of picture in photographic copying	**Winko**
1 **Leather case** for same	**Witui**
1 **Holder (lens cover with clip)** for fixing the angular finder in front of the lens of the Leica camera when copying	**Wicap**
1 **Supplementary Front Lens No. 1 to the Leica focal plane shutter camera***) with "Elmar" lens F/3.5, 5 cm. focus (giving minifications down to 1 : 9) for distances ranging from $39^1/_2$ to $21^3/_4$ inches	**Elpro**
1 **Ditto No. 2***) (minifications down to 1 : 6), for distances ranging from $21^1/_2$ to $15^1/_2$ inches	**Elpik**
1 **Ditto No. 3***) (minifications down to 1 : 3.6), for distances ranging from $12^3/_{16}$ to $10^1/_2$ inches	**Elpet**
1 **Supplementary Front Lens No. 1 to the Compur Leica Camera***) with "Elmar" F/3.5, 5 cm. focus (giving minifications down to 1 : 9), for distances ranging from $39^1/_2$ to $21^3/_4$ inches	**Elcat**
1 **Ditto No. 2***), as above (minifications down to 1 : 6), for distances ranging from $21^1/_2$ to $15^1/_2$ inches	**Elcom**
1 **Ditto No. 3***) as above (minifications down 1 : 3.6), for distances ranging from $12^3/_{16}$ to $10^1/_2$ inches	**Elcur**
1 **Supplementary Front Lens No. 1 for Leica Camera** with "Hektor" lens F/2.5, 5 cm. (minifications down to 1 : 9), for distances ranging from $39^1/_2$ to $21^3/_4$ inches	**Hepro**
1 **Ditto No. 2** (minifications down to 1 : 6), for distances ranging from $21^1/_2$ to $15^1/_2$ inches	**Hepik**

*) In the event of the supplementary front lenses or screw-in filters being intended for use with Leica focal plane cameras below No. 9500 or the Compur shutter cameras below No. 13200, this should be expressly stated.

	Codeword
1 Supplementary Front Lens No. 3 (minifications down to 1 : 3.6) for distances ranging from $12^{3}/_{16}$ to $10^{1}/_{2}$ inches . . .	**Hepet**
1 Intermediate ring for using the yellow filters with front lens on the focal plane shutter camera	**Firgi**
1 Intermediate ring for the Compur camera	**Firco**
1 Magnifying glass No. 222c, × 6 magnification, for examining the negative as to its suitability for enlarging	**Nagmi**
1 Reading glass No. 224d, 54 mm. diameter for sharply focussing the image	**Nahne**

Yellow filters, see page 39.

REPRODUCING APPARATUS for X-ray Plates and Film Sheets

Baseboard measuring 24 × 20 inches, together with upright 4 feet high (being part of the "Vitoy" Enlarging Apparatus)	**Vesta**
Arm for the attachment of the Leica camera	**Velum**
Illuminating Box, 20 × 16 inches, with six frosted cornice lamps*), ground glass plate, opal glass plate, and loose glass plate	**Vekas**
Flexible Twin Wire, 10 feet long, with plug and coupling and press switch	**Veduk**
	Veron

For use with the above:

Leica Camera with focal plane shutter and one film chamber (see Leica catalogue) . .	**Leane**
Short Wire Release with fixing screw .	**Finot**
Angular Finder for adjusting the field of the picture	**Winko**
Holder for the attachment of the Angular Finder in front of the lens	**Wicap**
Supplementary Front Lens No. 1 (see p. 29)	**Elpro**
Supplementary Front Lens No. 2 (see p. 29)	**Elpik**
Supplementary Front Lens No. 3 (see p. 29)	**Elpet**
	Virot

*) Please state the voltage of supply circuit.

When ordering, please quote the respective codewords, in order to obviate errors.

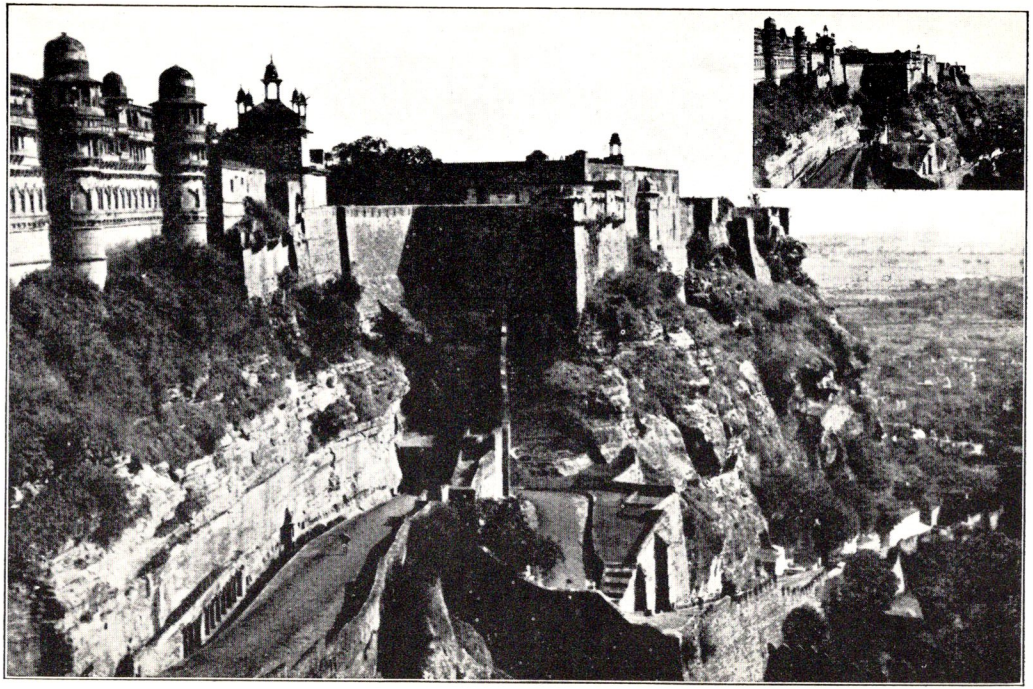
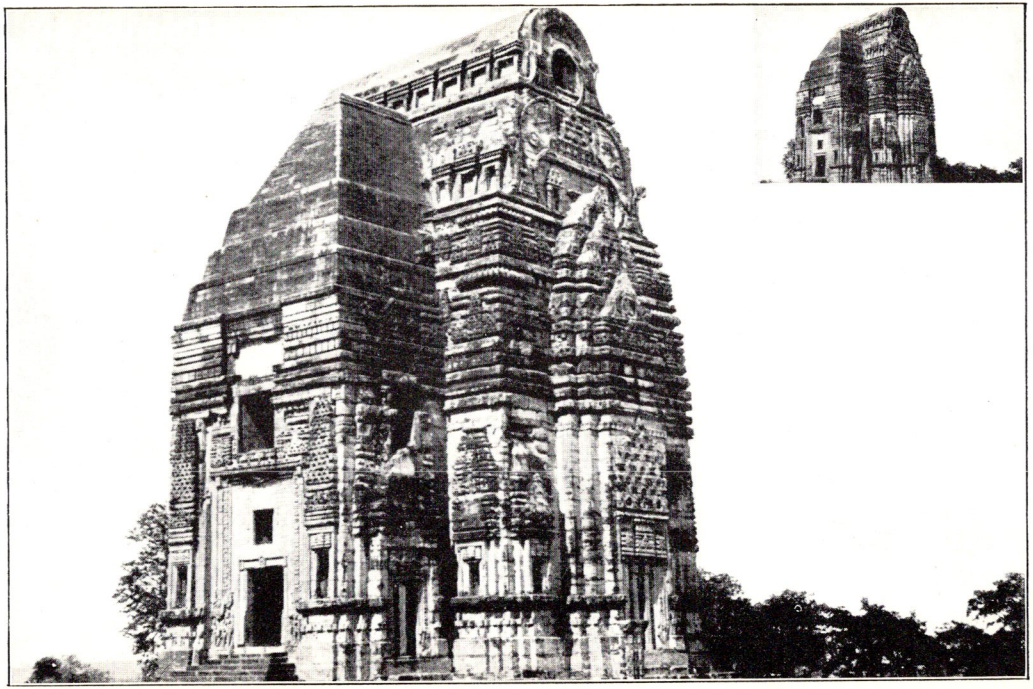


Fig. 21 Fort Gwalior, India

Photo by M. Kurz, Neuchâtel ("Elmar" 5 cm focus)



Teli Mandir, Vischnu Temple, Gwalior, India

Photo by M. Kurz, Neuchâtel ("Elmar" 5 cm focus)

LEITZ

PROJECTION APPARATUS

For Roll Film and Lantern Slides

A further field for the use of pictures taken with the Leica camera has been opened by their projection on the screen. This provides a delightful form of entertainment in family and private circles, since pictures recalling important events, festivals, holiday experiences, walking tours, sports contests and so forth acquire a peculiar charm when seen on the screen. They are also of valuable assistance in educational efforts as a means of showing in a most impressive manner the results of expeditions undertaken in the service of research and discovery. For these purposes we have elaborated a number of projector models for showing Leica pictures and serving the varying needs of small and large audiences. These appliances are primarily intended for the projection of diapositives of the original Leica size, but by the introduction of an appropriate film-gate they can be rendered available for projecting pictures of the standard cinematograph size, i. e. of half the Leica size. All our projection lanterns are substantially made and are easy to manipulate.

Projection Lantern IVb/L

of great intensity, for Leica pictures

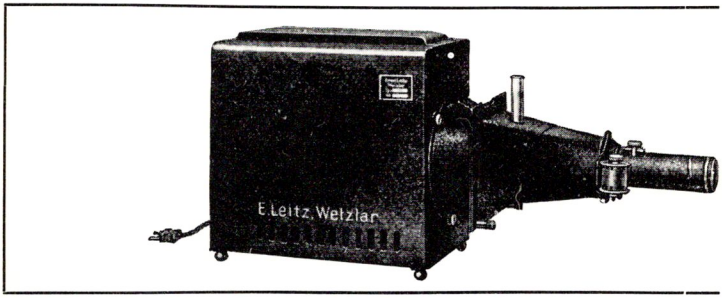


Fig. 40. Projection lantern IVb/L with Leica front attachment (1/10 actual size)

This apparatus is particularly adapted for the projection of Leica pictures (film strips and lantern slides measuring 120 × 35 mm with three Leica pictures) in fairly large rooms.

The metal body is rectangular and contains a special partly silvered 500-watt filament bulb which is capable of displacement within its fitting. The lamphouse is furnished in front with a three-lens condenser having a diameter of 155 mm ($6^1/_2$ in.).

The 500 watt reflecting filament bulb is available for supply circuits of 110—130 volts in intervals of 5 volts. Where the supply voltage is within this range the lamp can be connected directly to any A. C. or D. C. circuit containing a fuse blowing at 6 amperes. Higher supply voltages necessitate the introduction of a suitable resistance to enable the 110 volt lamp to be operated in series with it.

The Leica film front attachment is detachable and hooks on in front of the condenser, where it is secured in position by two screws. It contains a cooling cell of 10 cm (4 in.) diameter, to be filled with water, a smaller collecting lens, a revolving front portion with a projection gate of 36 × 24 mm on slide fitting, two film spools, and a tube socket with the projection lens. The latter has a focal length of 80 or 120 mm to suit the screen distance.

The film strip, with its coated side facing the lamp, is conveyed on a slide fitting between the film-gate and the glass plate attached to the lens socket. This glass plate under spring tension presses lightly against the film and keeps the latter perfectly flat. The resilient glass plate can be put in and out of action by a handle on the lens socket. Its release will be required when putting in the film strip, while for the transition from one picture to another it is sufficient to ease the tension of the spring. The film strip can be turned from picture to picture with the aid of the knobs to the film spools, operating in either direction. For showing transverse pictures the entire front portion should be given a quarter turn. The lantern slides measuring 120 × 35 mm and containing three Leica pictures are inserted after replacing the standard film-gate by another having a guide fence ("Ulfix").

A film-gate measuring 24 × 18 mm. on a slide fitting ("Ulfen") can be supplied to order. By its means film-strips made up of pictures of standard cinematograph size 24 × 18 mm (i. e. half Leica size) can be projected.

An additional Leica front attachment which will only take lantern slides measuring 50 × 50 mm (2 × 2 in.) overall with Leica pictures can be supplied to order. In this case the rollers for winding the film-strip are not necessary.

The projection lens is a high-grade one of three components, 80 mm focus. For exceptionally long screen distances a lens of 120 mm focus can be supplied.

The sizes of the projected pictures obtainable with the Leica films are as follows:

Focal Length of Lens	Screen Distance				
	18 ft.	21 ft.	24 ft.	27 ft.	30 ft.
F= 80 mm	8.1×5.4 ft.	9.5×6.3 ft.	10.8×7.2 ft.	12×8 ft.	
F=120 mm	5.4×3.6 ft.	6.3×4.2 ft.	7.2×4.8 ft.	8.1×5.4 ft.	9×6 ft.

The overall dimensions of the apparatus are:

Rectangular lamphouse: Height $13^1/_2$ inches.
,, ,, Width $8^1/_2$ inches.
,, ,, Length 14 inches.
Total length of the apparatus: 30 inches.
Weight: $24^1/_4$ lbs.

The above apparatus can be supplemented, so as to render it available for the projection of the standard lantern slides measuring $3^1/_4 \times 3^1/_4$, $4 \times 3^1/_4$ and $4^3/_4 \times 3^1/_2$ in. (12 × 9 cm). For this purpose the apparatus is furnished with a **lantern slide front attachment.**

Lantern slide front attachment consisting of a metal funnel, slide bridge, and "Dimar" projection lens of 250 mm (10 in.) focus (see fig. 41). This front attachment is hooked on in place of the Leica front attachment and is fixed in position in like manner.

Fig. 41.
Lantern Slide Front Attachment
($^1/_{10}$ actual size)

The screen picture sizes in this case are as follows:—

Size of Lantern Slide	Screen distances		
	18 ft.	21 ft.	24 ft.
$8^1/_2 \times 8^1/_2$ cm ($3^1/_4 \times 3^1/_4$ in.)	5.25 × 5.25 ft.	6.15 × 6.15 ft.	7.05 × 7.05 ft.
$10 \times 8^1/_2$ cm ($4 \times 3^1/_4$ in.)	6.3 × 5.25 ft.	7.35 × 6.15 ft.	8.4 × 7.05 ft.
12×9 cm ($4^3/_4 \times 3^1/_2$ in.)	7.65 × 5.55 ft.	9 × 6.45 ft.	10.2 × 7.5 ft.

For **prices** see p. 83—84.

The "Uleja" Small-picture Projection Apparatus

is likewise designed for the projection of Leica film-strips and glass lantern slides measuring 120 × 35 mm made up of three Leica pictures.

The Screen picture sizes and the intensity suffice for medium sized rooms, class rooms, etc.

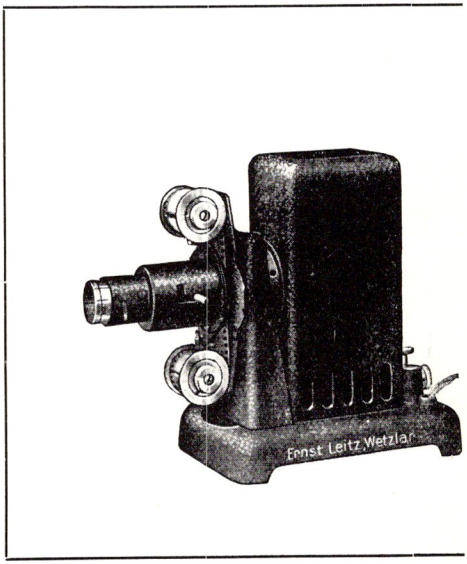


Fig. 42. "Uleja" Apparatus ($^1/_5$ actual size)

Leitz "Uleja" Roll Film Projection Apparatus

(See fig. 42.)

The lamp is contained within a well ventilated rectangular metal casing. The latter is fitted in front with a three-lens condenser. The front is attached to a separate fitting and contains the film window, the two film spools and the lens funnel together with the lens. The fact that the front is mounted independently of the casing obviates heat being transmitted from the casing to the film carrier, so that there is no danger of the film becoming warm. In addition, the film is made to travel between two glass plates, whereby it is kept flat under spring pressure. This pressure acts upon one of the two glass plates, rendering it resilient, and it is put in and out of operation with the aid of a stud on the lens socket. It is necessary to disengage the pressure when putting in a film strip. When changing the picture, all that is necessary is to slightly release the spring tension. The glass plate which faces the lamp is mounted upon a detachable slide, which is interchangeable with another slide having a diaphragm for 24 × 18 mm cinematograph size.*) This additional slide is supplied to order. A further supplementary slide is furnished with ledges, with the aid of which lantern slides 35 mm wide may be introduced. These lantern slides are made in the form of strips comprising preferably three pictures taken with the Leica camera or six pictures of the cinema size.

The film strip is advanced from picture to picture by turning the knobs on the film spools either way, whilst transverse pictures can be shown by giving a quarter turn to the front as a whole.

The Leitz Projection lens of 80 mm focus is of the three-lens type and is highly corrected. It produces a bright picture, free from distortion and colour defects. The three-lens condenser has a diameter of 45 mm and is of the same high quality. The optical quality of this small apparatus accordingly satisfies the most exacting requirements.

The Projection Lamp, as invariably supplied for use with the apparatus, is in the form of a tubular lamp ("Ulani") of the low-voltage type, 30 volts, 3.3 amps. with a resistance.

*) For the projection of pictures of 24×18 mm standard cinematograph size only we make a similar small apparatus named the "Gnome" Projection Apparatus with a lens of a correspondingly shorter focal length for bringing the pictures up to the required screen size.

Where the demands upon the quality of the image are less exacting and especially where a less intense light suffices (for instance for use in the family circle) a 100-watt lamp ("Ulava") may be employed instead. This latter lamp can be fed from the ordinary domestic supply without a resistance being interposed.
In the event of preference being given to the low-voltage lamp, current may be economised by installing a transformer in the place of the resistance, in the case of an alternating current. In deference to widely expressed wishes we make resistances of an exceptionally compact form, which incurs, however, a greater amount of heating than in the former larger models. In all cases, when ordering, please furnish exact particulars respecting the supply voltage, which is important, since the low-voltage lamp in particular is very sensitive with regard to differences and oscillations of the prescribed supply voltage and such deviations shorten the life of the lamp.
The lamp, together with the carrier, is adjustable from the outside (from the back) both in height and transversely so as to ensure a uniform intensity, and, when so adjusted, can be clamped in position.

The size of the projected picture varies as follows with the screen distance:

At a screen distance of					$6^1/_2$	ft. :	3×2 ft.
,,	,,	,,	,,	,,	13	,, :	6×4 ,,
,,	,,	,,	,,	,,	20	,, :	9×6 ,,

The overall dimensions of the apparatus including the soleplate are: Length $10^1/_2$ inches, width $5^1/_2$ inches, height $9^1/_4$ inches. The weight including the lamp is 5 lbs. The apparatus is therefore conveniently portable and may be set up anywhere.
For **prices** see page 85.

Leitz Small "Ulios" Projection Apparatus

(See fig. 43.)

This apparatus is a modification of the preceding "Uleja" model. It is adapted for lantern slides only measuring 50×50 mm (2×2 in.) outside, the latter being slipped in in front of the condenser into a slide bridge. The condenser illuminates a picture size equal to that of the "Leica" pictures, i.e., 36×24 mm (upright and transverse). Needless to say, the apparatus can be used for projecting lantern slides of the 24×18 mm cinematograph size so long as the outside measurement is 50×50 mm.

The "Ulios" Apparatus is to be recommended to those users of our "Leica" camera who prefer to produce slides from their photographs, in view of the greater durability of glass slides as compared with pictures of film material.

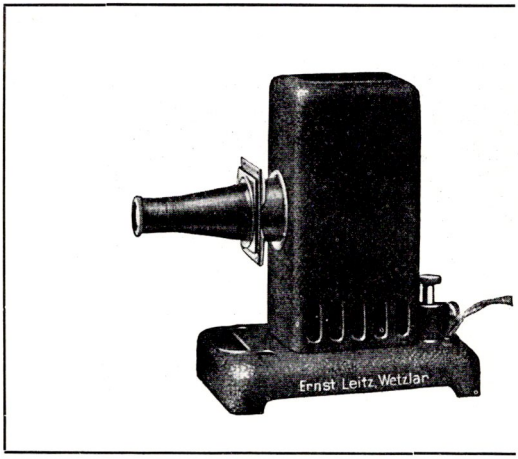


Fig. 43. "Ulios" ($^1/_5$ actual size)

The Lens is the same as that fitted to the "Uleja" apparatus, whilst the condenser consists of 2 plano-convex lenses of 45 mm diameter. The apparatus "Ulios", like the "Uleja", can be supplied with a low voltage lamp or with the ordinary lamp. (See page 79.)

The overall dimensions of the apparatus are the same, whilst the weight is only $4^1/_2$ lbs.

For **prices** see page 85.

The Leitz "Eldia" Printing Apparatus

(see fig. 44)

serves for making contact prints of the original negatives taken with the "Leica" camera on film strips for projection purposes as well as on bromide paper strips. The size of the picture is in this case 36 × 24 mm. The insertion of a special film window plate, which can be supplied to order, renders the apparatus available for taking prints of pictures of the standard cinematograph size

of 24 × 18 mm. The apparatus will accommodate a positive strip of about 10 feet length. The negative film can be inserted and moved independently of the positive film strip, so that the pictures may be printed in any consecutive order desired. The copying film may be obtained from us in tins containing three lengths. Directions are supplied with each apparatus.

For **prices** see page 86.

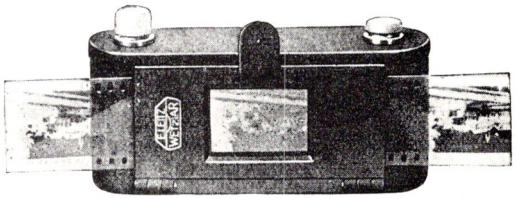


Fig. 44. "Eldia" Printing Apparatus (1/3 actual size)

For the Production of Lantern Slides we supply glass plates of the size 120 × 35 mm (suitable for the "Uleja" apparatus) and 50 × 50 mm (for "Ulios") as well as the appropriate opaque paper masks and gummed binding paper. Use is made of the diapositive film strip, after the pictures have been cut apart, by putting each film picture with the appropriate mask between two glass plates and binding them together. For the slides of 35 mm width no masks are required.

For **prices** see page 86.

Table of Prices

Roll Film and Lantern Slide Projection Apparatus IVb/L

for 36 × 24 mm Leica pictures, consisting of:—	Codeword
Lamphouse with lamp-holder, 500-watt lamp*) partially silvered and three-lens condenser of 155 mm ($6^1/_4$ in.) diameter, in mount	**Uhaus**
Leica Film Front Attachment consisting of a metal cone with round cooling cell of 10 cm diameter, small collecting lens, revolving front portion with film-gate measuring 36 × 24 mm on slide-fitting, two film rollers, lens-socket with projection lens of 80 mm focus for mean screen distances (see page 76)	**Ulvor**
Total	**Uvirl**
Lamphouse, as above	**Uhaus**
Leica Front Attachment for **50 × 50 mm** lantern slides only with 36 × 24 mm Leica pictures, with cooling cell and **projection lens of 80 mm focus** for mean screen distances (see page 77)	**Ulase**
Total	**Uvidi**
Press Switch inserted in the short flexible twin wire to the supply circuit	**Udruk**
Extension Twin Wire 11 ft. long with coupling and plug	**Ulnur**
Special 500-watt filament lamp, partially silvered*) for 100 or 110 volts, for renewal	**Ubirn**
Cooling Chamber, round, 10 cm diameter (spare)	**Ukuhl**

All prices are ex our London warehouse, and are subject to change without notice. Packing is charged for at cost price.

*) When ordering any apparatus required for connection to an electric supply circuit the voltage of the supply circuit should be stated in every case.

	Codeword
Invariable Resistance*) for supply voltages above 110 and up to 250 volts . .	**Reamo**
Transformer for 220 volt A. C.	**Reafu**
Leica Film Front Attachment, similar to "Ulvor", but **with projection lens of 120 mm focus** for longer screen distances (see page 76)	**Ulong**
Film-gate, 36 × 24 mm on slide-fitting with guide-fences **for lantern slides measuring 120 × 35 mm** (with three Leica pictures), adapted for use with the Leica film front attachments "Ulvor" and "Ulong"	**Ulfix**
Film-gate 24 × 18 mm*), on slide fitting with glass plate **for film pictures of cine size** (screen pictures half the size of the Leica pictures), adapted for use with the film front attachment "Ulvor" and "Ulong"	**Ulfen**
Leica Lantern Slide Attachment, for the projection of glass diapositives of Leica size 36 × 24 mm, overall 50 × 50 mm, with cooling chamber, and **projection lens of 120 mm focus** for longer screen distances (see page 77)	**Ulosu**
Lantern Slide Front Attachment (fig. 2) consisting of a metal cone with lantern slide bridge "Dimar" projection lens focus 250 mm (10 in.) and two wooden changing frames each for $8^1/_2 \times 8^1/_2$ cm ($3^1/_4 \times 3^1/_4$ in.), $10 \times 8^1/_2$ cm ($4 \times 3^1/_4$ in.) and 12 × 9 cm ($4^3/_4 \times 3^1/_2$ in.) lantern slides	**Udias**
Wooden Table, folding, table top $31^1/_2 \times 11^1/_4$ in., inclinable in front and at the rear, with intermediate shelf for the accommodation of objects	**Ulsit**

*) For the information of those who propose to project mainly cine film pictures it may be noted that we are prepared to supply special cine picture front attachments furnished with lenses of correspondingly shorter focal lengths, so that, when a change is made from the Leica to the cine front attachment, the screen picture size may remain approximately the same.

All prices are ex our London warehouse, and are subject to change without notice. Packing is charged for at cost price.

When ordering, please quote the respective codewords, in order to obviate errors.

Codeword

Leitz "Uleja" Projection Apparatus

(fig. 42) for 36 × 24 mm "Leica" films, furnished with a three-lens condenser, a projection lens of 80 mm ($3^1/_4$-in.) focus, 100-watt, 30-volt low-voltage lamp ("Ulani")*), flexible conductor $3^1/_2$ yards long, with connector and plug (for resistance see below) . . . . . **Uleja**

Same apparatus, but with ordinary 100-watt lamp ("Ulava")*) for direct connection . . . . . **Uledo**

Additional slide with film-gate 36 × 24 mm and sledges for slides 35 × 120 mm. (for three Leica pictures) . . . . . **Ulfix**

Additional slide with film-gate for standard 24 × 18 mm cinematograph size films . . . . . **Ulfen**

Leitz "Ulios" Projection Apparatus

(fig. 43) for lantern slides 50 × 50 mm, size of picture 36 × 24 mm ("Leica") or 24 × 18 mm (cinema). Lens, condenser and low-voltage lamp ("Ulani")*) as in the "Uleja" apparatus, with flexible conductor $3^1/_2$ yards long, with connector and plug (for resistance see below) . . . . . **Ulios**

Same apparatus, but with ordinary 100-watt lamp ("Ulava")*) for direct connection . . . . . **Ulium**

For the Apparatus "Uleja" and "Ulios":

Resistance for a 110-volt continuous or alternating current circuit . . . . . **Renni**

Resistance for a 220-volt continuous or alternating current circuit . . . . . **Renia**

*) Please state nature of current (alternating or continuous).

All prices are ex our London warehouse, and are subject to change without notice. Packing is charged for at cost price.

When ordering, please quote the respective codewords, so as to obviate errors.

	Codeword
Resistance, combined for 110- and 220-volt continuous or alternating current circuits .	**Renax**
Flexible Conductor with coupling and plug, for resistance	**Ulnur**
Transformer, combined for 110- and 220-volt alternating circuits of 50 cycles .	**Renum**
100-watt, 30-volt low voltage renewal lamp	**Ulani**
100-watt renewal lamp **110- or 220-volt**	**Ulava**
Metal Spool to take $5^1/_4$ ft. of film, as spare, for the apparatus "Uleja", "Ulvor" and "Ulong"	**Ulspu**

Leitz "Eldia" Printing Apparatus,

(fig. 44) for making contact pictures on film strips and bromide paper from original negatives on standard cinematograph film strips for 36 × 24 mm pictures . .	**Eldia**
Film window plate for printing pictures measuring 24 × 18 mm.	**Elkin**
Three printing Agfa film rolls, each 64 inches long, in tin	**Eldos**
Three rolls N.P.G. "Bromaryt" bromide paper, each 64 inches long and $1^1/_4$ inches wide, in cardboard box	**Ebrom**

For the production of Slides:

100 Glass plates 35 × 120 mm (suitable for "Uleja", "Ulvor" and "Ulong")	**Uglas**
100 Glass plates 50 × 50 mm (suitable for "Ulios", "Ulase" and "Ulosu")	**Uglit**
100 Paper masks, opaque, size 50 × 50 mm with opening 36 × 24 mm.	**Umask**
Gummed binding paper, black, for binding diapositive slides, roll of 110 yards length	**Umkle**

All prices are ex our London warehouse, and are subject to change without notice. Packing is charged for at cost price.

When ordering, please quote the respective codewords, in order to obviate errors.

Portrait

Photo by F. Fiedler, Dresden
("Elmar" 5 cm focus)

CRIMINAL INVESTIGATION DEPARTMENT,

New Scotland Yard,

23rd day of April 1926

Dear Mr. Barrett.

I have just arrived back from India where I was engaged for five months on official business.

On your recommendation I took with me a 'Leitz' 'Leica' camera and took a dozen spools of film.

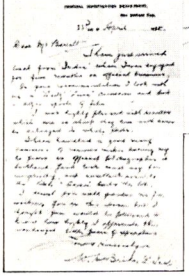
I was highly pleased with results which are so sharp they can with ease be enlarged to whole plate.

I have handled a good many cameras of various makes during my 20 years as official photographer at Scotland Yard but must say for simplicity, and excellent results the little 'Leica' beats the lot.

I trust you will pardon me for writing you in this strain but I thought you would be pleased to know how highly I appreciate this wonderful little piece of apparatus.

Yours sincerely

W. McBride D. Inst.



Reproduction of a letter taken with a Leica camera and Supplementary Front Lens II, stop 12.5, exposure 3 seconds.

SOME OPINIONS CONCERNING
LEITZ LEICA CAMERA
AND ENLARGING APPARATUS

From a Doctor in **Sussex.** — (8th July 1930.)
I enclose a print which you may care to exhibit as demonstrating the versatility of the Leica. Taken with a front lens No. 3, F/3.5, close to the window, $^1/_{20}$th sec.: in other words, a snapshot of a notoriously difficult subject. No other camera could possibly have done it. The amazing depth of focus makes the Leica specially suitable for this kind of work. I take my clinical photography with the minimum expenditure of time.

From **C. H. Stephenson,** B. A., A. M. I. E. E., A. M. I. A. E. F. C. S., **Wolverhampton.** — (31st July 1930.)
I have now been using a standard Leica with F/3.5 lens for nearly a year, and would like to express my very great admiration of this wonderful camera. In my hands it certainly gives a higher percentage of good results than any of the numerous other cameras I have had. The design and construction are right ahead of the average camera work, and the instrument seems to have been the work of an engineer, a scientific instrument maker and a practical photographer.

From the **Principal of a Technical College.** — (28th June 1930.)
I am pleased to say that the Leica camera is giving admirable results in connection with our **scheme of regional survey records.** The pictures, both in lantern slide and "half-plate" enlargement form are of the highest quality.

From Mr. **C. E. Maney,** Estate Agent, **Clapham Common, S. W.** — (June 1930.)
I have pleasure in sending you a sheet of illustrations used as an adjunct to my property register, the whole of the photographs having been taken with your Leica camera. You will appreciate how very much more economical the production by direct photographs is compared with the use of larger sized negatives subsequently reduced. It is a feature of my office much appreciated by potential clients.

From **F. A. Zacharias, Liverpool.** — (October 1930.)

I wish to express my appreciation of the Leica Camera. It is a wonderful little instrument, and I now use it practically for all purposes. Its handy size, and its ability to take an unlimited number of photographs whilst away on holidays, coupled with the advantage of being instantly ready to seize the first opportunity which occurs, makes it an ideal instrument for all purposes. I have exposed over 1500 pictures, during the summer, and I do not know what I should do without it. The advantages of this instrument are not confined to the actual taking of the photographs, because, to a keen amateur photographer, like myself, the various processes of development and enlargement offer just as much fascination as the actual taking of the photographs. Your accessory apparatus is designed in such an able manner that photography becomes one of the most fascinating hobbies.

I experienced little difficulty in the manipulation of the instrument, and my photographic friends have expressed great pleasure when I have given them the opportunity to use my instrument on holiday excursions.

R. O. Pine-Coffin, Sherborne, Dorset. — (13th September 1930.)

I shall shortly be returning to the above address **from India.** I should like to say how awfully pleased I am with the camera, I use it in conjunction with a box form postcard enlarger and artificial light; the results I get from it are better than those obtained by others using postcard size cameras of expensive makes. Finally, I should like to say that I have only had the LEICA Camera for under five months, and I have already taken over three hundred photos, none of which is a failure, which I think speaks very well for the camera.

J. M. L. G., Adelaide, South Australia. — (16th January 1929.)

I have always photographed a good deal. For the past twenty years I have used all the best lenses made with special 1/2000 second shutters costing me £20, £30 and even up to £50 a piece. However, I can honestly say that no camera has given me such real pleasure and satisfaction as the Leica camera has. The "Elmar" lens has something special in speed, and the sharpness of definition is simply marvellous.

From **Dr. L. M. Gould,** Geologist and Second in Command of the Byrd South Pole Expedition. — (Jan. 1931.)

I really welcome the opportunity to tell you my impressions of the Leica Camera. And, as you know, these impressions are based upon its use in every zone of the earth and under as varying conditions as one can possibly imagine.

I have been on two Arctic Expeditions before going into the Antarctic with Byrd and have done much field work in other parts of the Globe. I have tried out about every type of camera that I know of and I can easily say that if I could have but one camera it would be the Leica. It can do more things and do them well than any other camera I know of. The work of my own Leica so recommended itself to the other members of the Byrd Expeditions that many men ordered duplicates of it at once, with the result that there were more Leicas used on the Expedition than any other type of camera. Naturally, more pictures were taken with the Leica than with any other camera.

I am sure the Leica is an excellent camera for any kind of use, but for the kind of work which I so often find myself doing in the field, it is more than excellent. Its lightness and compactness, combined with its adaptability, make it unsurpassed.

Fred Herz, Official Photographer of the University of **Michigan (U. S. A.) Greenland-Expedition.**

A Leica-Camera, which I purchased before starting in April 1927 from your agents, Messrs. Spindler and Sauppe, was my constant companion on the entire trip. It not only gave excellent results both on the inland ice trip and while constructing the observatory, but allowed us to take records of our progress and photographs that would not have been possible with any of the other six cameras we had with us.

CRIMINAL INVESTIGATION DEPARTMENT,
New Scotland Yard, London, S. W.

23. 4. 30.

"I have just arrived back from India, where I was engaged for five months on official business. On your recommendation I took with me a Leitz "Leica" Camera, together with a dozen spools of film. I was highly pleased with results, which are so sharp that they can with ease be enlarged to whole plate.

I have handled a good many cameras of various makes during my 20 years as official photographer at Scotland Yard, but I must say

that for simplicity and excellent results, the little Leica beats the lot. I trust you will pardon me for writing you in this strain, but I thought you would be pleased to know how highly I appreciate this wonderful little piece of apparatus." (See reproduction of this letter on page 88.)

J. S. Chapeltown, Leeds. — (14th March 1931.)

Having purchased one of your Leica cameras, I am delighted to say that the first roll of films turned out every one most magnificently. I enlarged some of them up to $10'' \times 8''$ and the results were amazing.

Dr. M. Eckener, Friedrichshafen. — (17th September 1928.)

This splendid camera of such clever and ingenious design, and so well finished in all parts, ensures precision and sharpness of all pictures taken with it, and it will be a true companion to me on all my voyages.

Dr. M. Miller, of the German Trade Council, Munich, Prinzregentenstrasse 29. — (17th October 1928.)

After long and careful consideration, I purchased the "Leica" camera with the "Files" enlarging apparatus. I have worked and experimented with it for several months and I am obliged to tell you that I am perfectly satisfied . . . I must express my hearty appreciation of this most versatile of miniature cameras, which optically and mechanically is a gem. The claims in your catalogue are very modest. Similarly, I am thoroughly satisfied with the "Files" enlarging apparatus.

Paul Schwalb, Late President of the Photographic Club, Nuremberg. — (4th December 1927.)

Enlarging with it ("Filoy") is really a pleasure. Thanks to its wonderful construction, it is astonishing how little trouble it is to obtain enlargements of amazing sharpness. The exposures are surprisingly short. The universally movable copying board for the enlarging paper facilitates the setting of the picture quite considerably. The advantages of your Leica camera are fully utilised when the negatives are employed in such a perfect enlarging apparatus.

Ed. H. Tropsch, Vienna XVII, Veronikagasse 41. — (28th January 1928.)

I am working on the preparation of a book on the Art of enlarging. In the first portion I am giving a detailed description of the various kinds of enlarging apparatus. I would like to give considerable space to the Leica enlarging apparatus with which I became acquainted at your lectures and which I know to be a most wonderful apparatus.

A. Stern of **Graz.** — (18th November 1929.)

I have been working with many first-class cameras for the past five years, and have recently bought a Leica Camera with focal plane shutter. I can only say that my expectations with regard to this little marvel have been far exceeded. The Leica camera is the ideal implement for the press photographer, and it is also the never-failing camera for the photographic "gourmet".

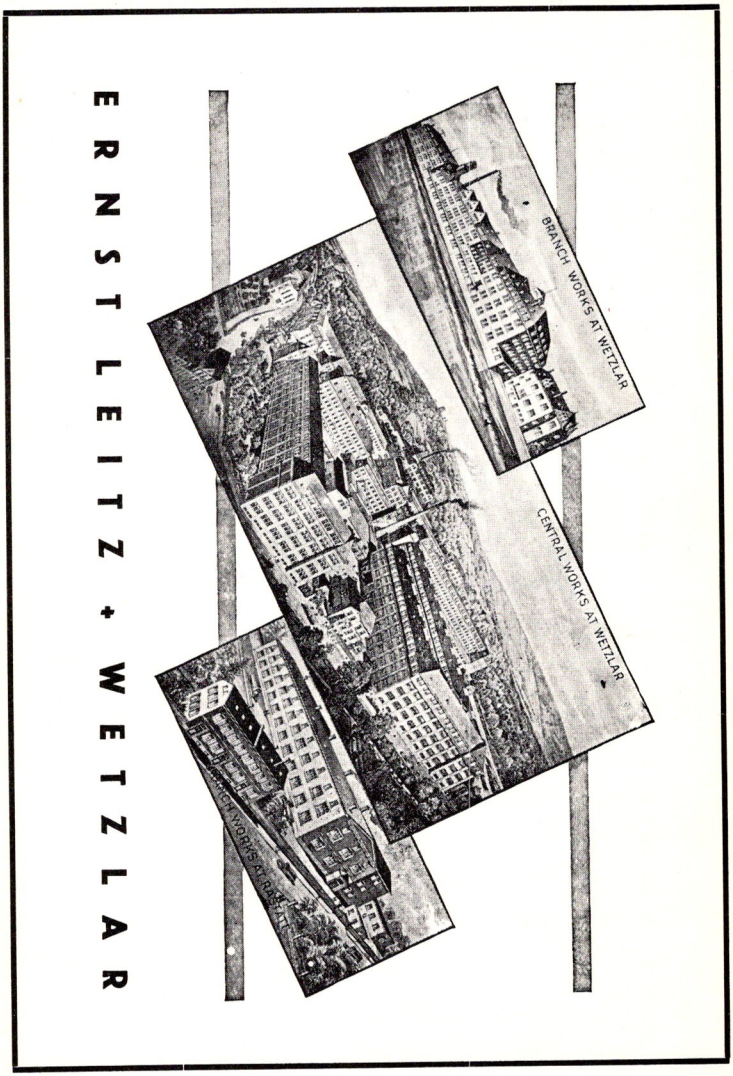
Dr. Borchers, Bremen, from his Expedition in the mountains of Pamir, Central Asia. — (4th August 1928 and 2nd January 1929.)

The apparatus has rendered excellent service. I have had it with me on expeditions to mountains 21,000 to 23,000 feet high, and even in the most intense cold the focal plane shutter was always in good working condition. Working with the Leica is so convenient. One of our fellows of the expedition, Gorbunow, one of the highest Russian officials, had a Leica with him, and was more than satisfied with it.

Extract from **"The Motor"**, April 8th 1930.

A very interesting camera which is being used extensively on the continent is the Leitz LEICA, a most ingenious piece of precision apparatus. It measures only $5^3/_{16} \times 2^1/_2 \times 1^3/_{16}$ inches, weighs but 15 ozs., and takes 36 pictures at one loading only, but small as it is the films can be enlarged to whole-plate size and larger. The winding of the shutter and the film advance are interconnected, so that it is not possible to make two exposures on one piece of film. There is an ingenious range-finder known as the "Fodis", which clips on to the camera and indicates the exact setting of the focusing scale.

CONTENTS



Design & Print, Dolphin Road, Shoreham-by-Sea. Tel. 5555.