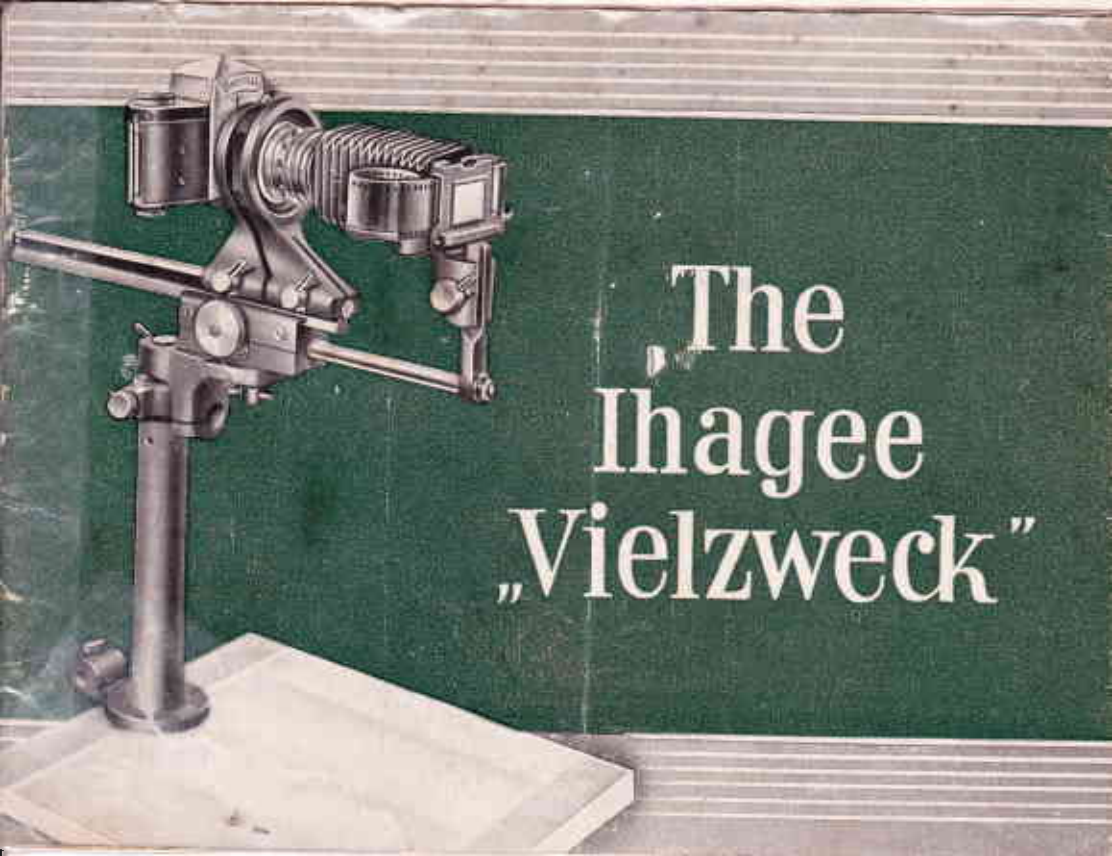
The
Ihagee
„Vielzweck"

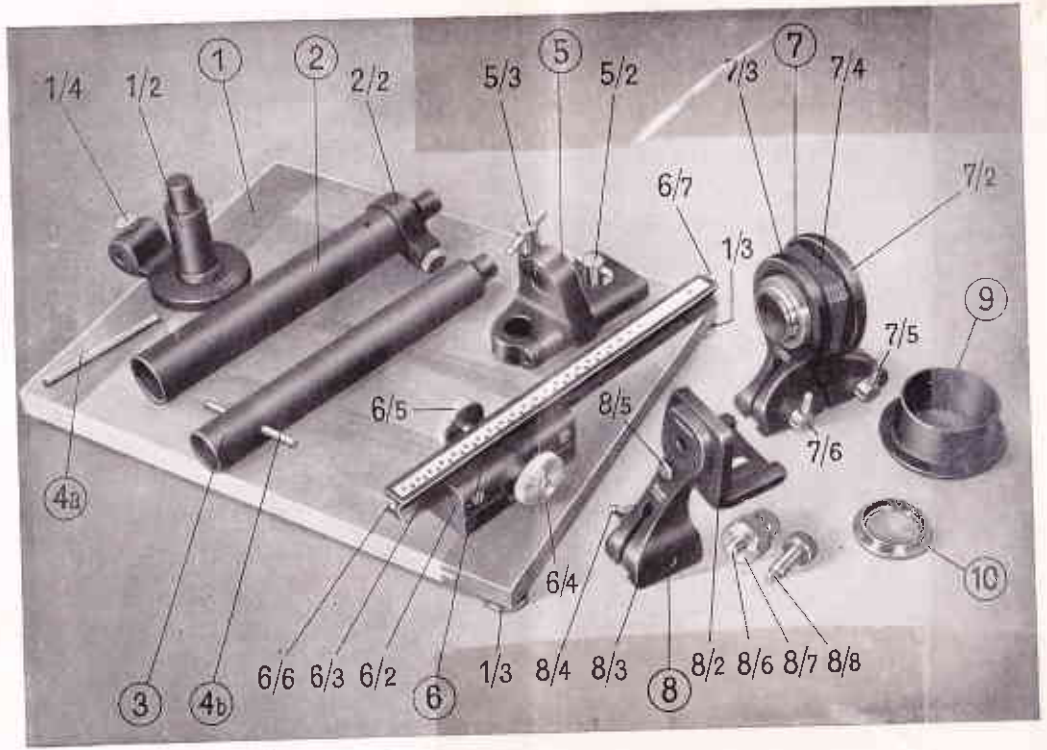

Fig. 1: Single parts of the copying stand and their supplements

Single parts and part groups of the Ihagee Vielzweck-Equipment

1 Baseboard
1/2 Column foot
1/3 Adjusting screws
1/4 Holder for lighting system
2 Lower column
2/2 Stop ring (Photomicrography)
3 Upper column
4a Levers for screwing
4b and unscrewing the columns
5 Headpiece
5/2 screw bolt
5/3 Fastening screw
6 Focusing slide
6/2 Sliding track
6/3 Gliding rail
6/4 Right-hand rack-and-pinion knob (also fastening knob)
6/5 Left-hand rack-and-pinion knob
6/6 Locking screw unilaterally frased
6/7 Locking screw
6/8 Fixing knob for transparency copy equipment (Figs. 12 and 13)
7 Bellows attachment
7/2 Lens holder
7/3 Camera holder
7/4 Bellows
7/5 Locking lever on lens holder
7/6 Locking lever on camera holder
7/7 Screw on lens holder (Fig. 2)
7/8 Blocking lever on bayonet (Fig. 6)
8 Swing angle
8/2 Angular piece
8/3 Support
8/4 Lever
8/5 Fastening knob for angular piece
8/6 Tripod bushing with continental thread
8/7 Counter nut
8/8 Tripod bushing with English thread
9 Light-protection tube
10 Microscope ring II
11 Tripod plate (Fig. 20)
11/2 Gliding rail of tripod plate (Fig. 20)
12 Transparency copy equipment (Figs. 24 to 26)
12/2 Bellows for transparency copy equipment (Fig. 23)
12/3 Coupling rod (Fig. 23)
12/4 Bellows'ring 42 mm. (Fig. 23)
12/5 Bellows'ring 32 mm. (Fig. 23)
12/6 Picture gate (Fig. 23)
12/7 Lens ring on bellows (light trap) (Fig. 23)
12/8 Projections on picture gate to hold bellows (Fig. 23)
12/9 Film trays (Fig. 23)
12/10 Lever for raising and lowering the picture gate (Fig. 23)
12/11 Ground glass for focusing (Fig. 23)
12/12 Slit nut for focusing (Fig. 23)
12/13 Zero mark (Fig. 23)
12/14 Holder (Fig. 23)
13 Lens used with Kolpofot (Fig. 33)
14 Central Flash Unit (Fig. 33)

For a better understanding of the text, it is advisable to leave the page showing Fig. 1 unfolded while studying the contents of this booklet.

The Ihagee Vielzweck

The remarkable value of the Ihagee Vielzweck consists in its rendering the EXAKTA Varex, including the previous models, extremely versatile and economical. These cameras, it is true, have, with very simple accessories, proved serviceable in many fields, the Vielzweck however, meets the most exacting requirements of the serious amateur, the professional photographer, scientist, and artist. The Vielzweck, or its individual parts, will there fore always be most suitable where the EXAKTA Varex is continually being assigned to some special purpose.

A decisive factor is that the Vielzweck is composed of standardized parts, or part groups, which can be employed separately or in various combinations as may suit your budget or your particular requirements. Thus, you are in a position gradually to complete your equipment. The object of this booklet is to summarize the uses of the Vielzweck in the following, most important, spheres of work; it is to be noted, however, that the equipment may conveniently be arranged to accomplish any other task as well.

The principle applications of the Ihagee Vielzweck

A: Close-up (macro) exposures, Magnifier exposures, Copying, etc., with the Copying Stand

Equipment:

Complete copying stand, order No. 155.01, consisting of: baseboard (1) with column foot (1/2)* two columns (2 and 3) with stop ring (2/2), two pins (4a and 4b), headpiece (5), and focusing slide (6), order No. of the focusing slide: 155.017

and in addition:

either the bellows attachment (7), order No. 155.02,

or the swing angle (8), order No. 155.03. When ordering the swing angle (8), please mention whether the camera in use has a continental or English tripod socket.

(Light protection tube (9), and microscope ring II (10), Fig. 1, are required for micro and magnifier exposures with the microscope. For details please refer to section E, page 26).

*) The combined reference numbers are to be understood as follows: the number before the stroke indicates the part group to which the apparatus belongs, e. g. column foot (1/2) is situated on baseboard (1).

The versatility of the copying stand

The part group of the Vielzweck required for close-up and magnifier exposures, as well as for copy work, bears the name of "Copying Stand". This denomination, however, does not quite suffice to characterize the manifold possibilities of using this equipment. Of course, this device has, in principle, been constructed for the purpose of making reproductions at a low cost, but the stand can also be used in a variety of combinations as table tripod, for vertical and for horizontal work. Details are shown in Figs. 2 to 10, and 26 to 30.

The baseboard of the copying stand

For copying and close-up work with the apparatus in vertical position, the wooden baseboard (1), having a surface of approx. 30x30 cm., is designed to hold the object (allowing for DIN format A 4 = 21 x 29.7 cm.). To ensure permanent steadiness while working, the baseboard (1) is fitted with two adjusting screws (1/3) for balancing out any unevenness of the table on which the apparatus may be standing. You adjust one of the two screws, or both, until the whole equipment stands firmly. For photographing transparent objects, a lightbox

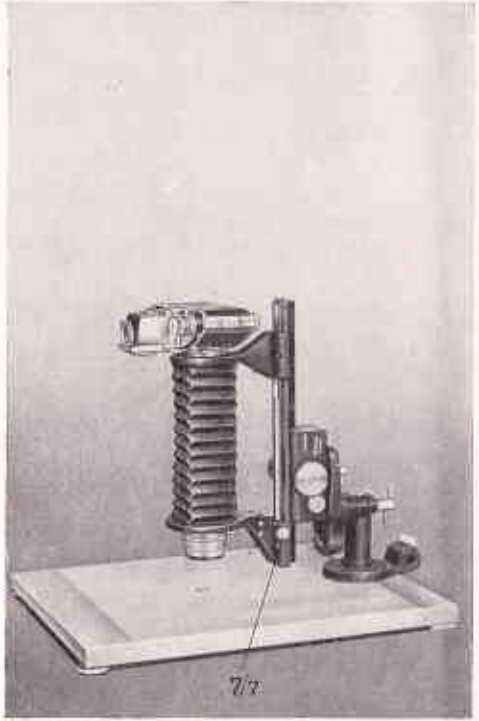

Fig. 2

may be placed on the baseboard (1) — see Fig. 5. This enables you to illuminate your object from below, or if desired, with a combination of upper and lower light. With the aid of the lightbox jou will be able to make small transparencies from larger negatives: The negative is placed on the opaline glass plate of the lightbox, with the light source underneath the glass, and the exposure is made with the EXAKTA Varex, in the same manner as any other reproduction.

The metal columns of the copying stand

The metal column foot (1/2) is securely attached to the baseboard (1). The metal columns (2 and 3) are fixed to the foot, either both together, Figs. 4 and 9, or the lower column (2) alone, Figs. 3, 5, and 8. This lower column (2) is supplied with a stop ring (2/2) the use of which is explained in section E (Photomicro-

Fig. 2: Copying stand with bellows attachment fixed to column foot: vertical position

Fig. 3: Copying stand with bellows attachment fixed to lower column: vertical position

Fig. 4: Copying stand with bellows attachment fixed to upper column: vertical position

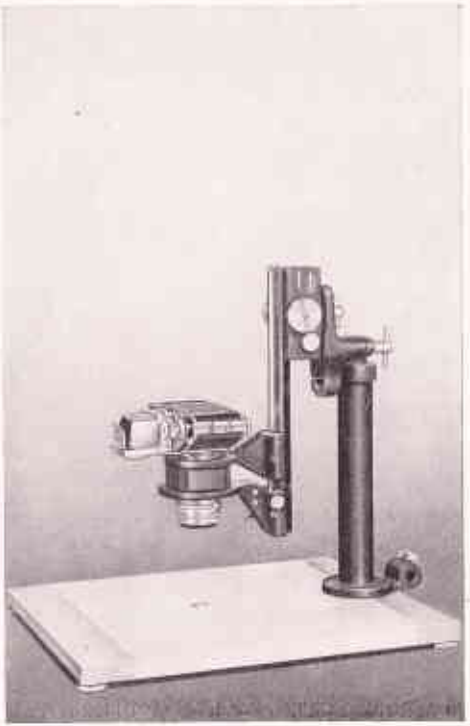

Fig. 3

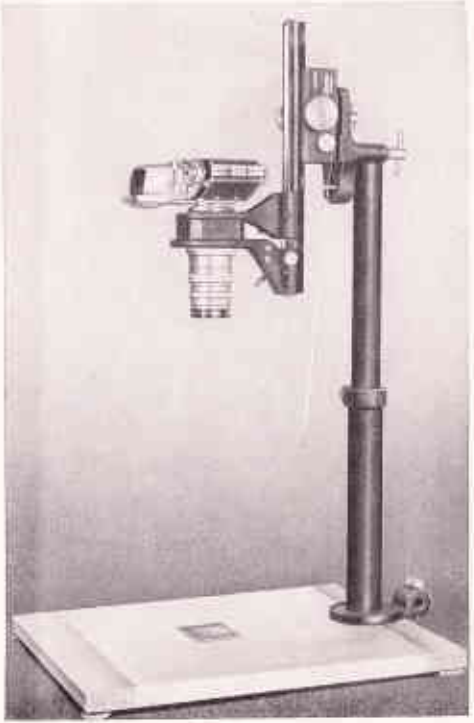

Fig. 4

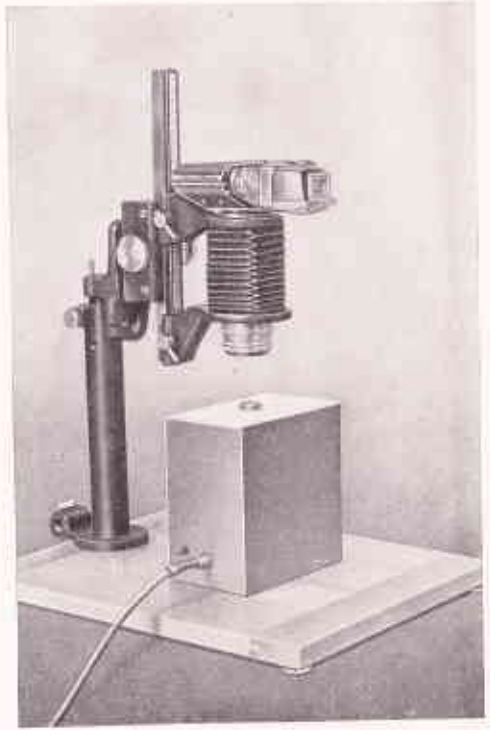

Fig. 5

graphy). Two metal pins (4a and 4b) are added for securing the columns (2 and 3) together and fastening them on to the column foot (1/2), or for loosening them easily. These pins are run through the holes in the columns (2 and 3), forming lever arms which, as just mentioned, serve as an energy-saving device in fastening and disconnecting the columns. The holding device (1/4), with fastening screw, on the column foot (1/2) is designed for fixing the lighting equipment.

The headpiece of the copying stand

Connecting the columns to the focusing slide (6) is the headpiece (5) which, depending on the photographic task, is fixed either to the column foot (1/2) — Figs. 2, 6, and 7 — or to the lower column (2) — Figs. 3, 5, 8, 10, and 26 to 30 — or to the upper column (3) — Figs. 4 and 9. In assembling these parts you must take into account whether the focusing slide (6) is to be positioned vertically or horizontally.

For vertical work the headpiece (5) has to be placed on to the pin of the columns (2 or 3),

Fig. 5: Copying stand with bellows attachment and additional use of lightbox: vertical position

or of the column foot (1/2), so that the fastening plate with the thread bolt (5/2) is mounted in the vertical position — Figs. 2 to 5, 7 to 9, 27 to 30. Turn the fastening screw (5/3) to the right, and the headpiece (5) is fixed. The desired scale of reproduction determines whether the column foot (1/2) alone will suffice or whether you will have to add the columns (2 and 3), for the smaller the distance from lens to baseboard — lens to subject, the larger will be the image in the negative, and the longer is the distance between lens and film plane. — Please refer also to "Focusing" on page 12.

For horizontal work, the headpiece has to be fastened in the horizontal position, whereby the thread of the bolt (5/2) points upwards. The headpiece is provided with an additional hole for horizontal fixing, but not with an extra screw. The fastening screw (5/3), therefore, has to be inserted as required into the threaded hole either of the clamping device for the horizontal or for the vertical arrangement. Figs. 6, 10, 11, and 26 depict the horizontal position as needed for various kinds of ex-

Fig. 6: Copying stand with bellows attachment fixed to column foot: horizontal position. Special/50 mm. lens, f/2.8, with sunk mount

Fig. 6

posures at a longer distance, for copying larger objects fastened to a wall, or for close-ups. Of course it is possible to use the column foot (1/2) alone or, as the case may be, the column foot combined with the columns (2 and 3) or with the lower column only.

The focusing slide

The focusing slide (6), as already mentioned, and as shown in Figs. 2 to 11 and 26 to 30, is screwed to the headpiece (5) by means of the screw bolt (5/2). For this purpose, the block-shaped sliding track is provided with a corresponding thread. The other parts belonging to the focusing slide (6) are: the sliding track (6/2), the rack-and-pinion knobs (6/5 and 6/4) and the gliding rail (6/3). This gliding rail is moveable to and fro in the sliding track by means of a cog-wheel mechanism and is provided with two scales and with the locking screws (6/6 and 6/7). The head of the screw

Fig. 7: Copying stand with swing angle fixed to column foot: vertical position

Fig. 8: Copying stand with swing angle fixed to lowe column: vertical position

Fig. 9: Copying stand with swing angle fixed to upper column: vertical position

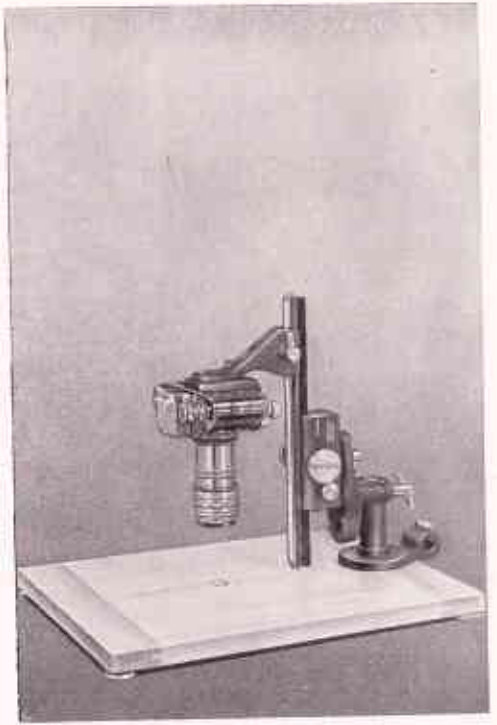

Fig. 7

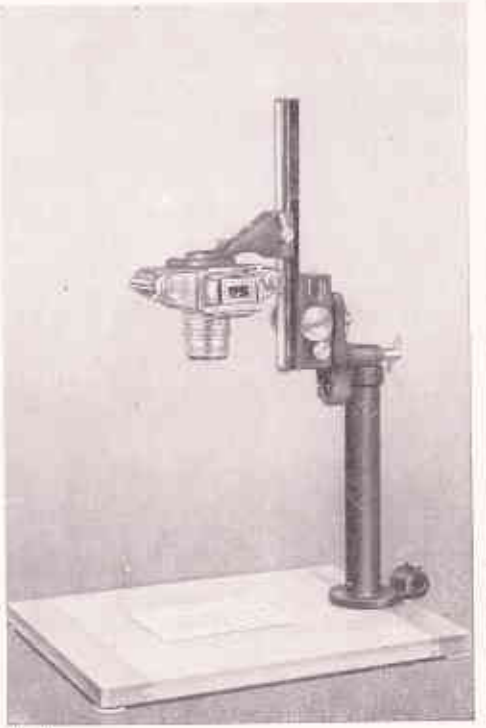

Fig. 8

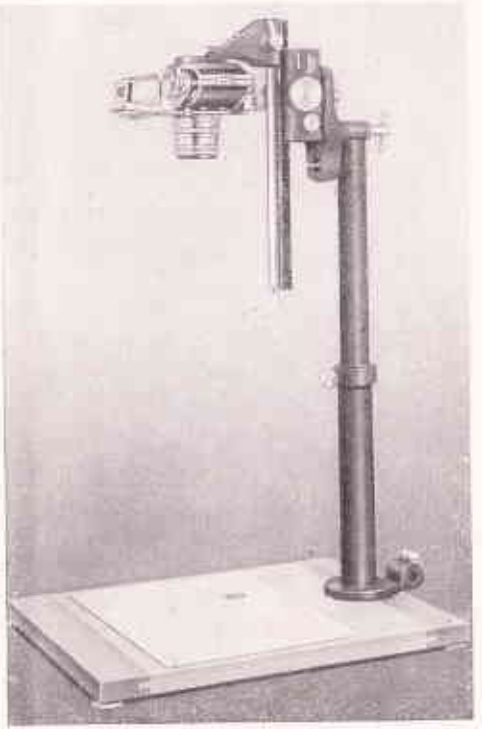

Fig. 9

Fig. 10

(6/6) is unilaterally frased. The rack-and-pinion knobs (6/4 and 6/5) are for the purpose of moving the gliding-rail mechanism when focusing. With the apparatus in vertical working position, the rack-and-pinion knob (6/4) may also be used to fix the gliding rail (6/3) to avoid it being dragged down by the weight of the camera. In this case the knob (6/4) has to be screwed towards the block-shaped sliding track (6/2) by clockwise rotation, whereby the opposite knob (6/5) must be held tight. As soon as the rack-and-pinion knob (6/4) is to act once more as focusing knob it must be turned away from the sliding track (6/2) and fixed in its position, during which performance the knob (6/5) must again be held tight.

Either the bellows attachment (7) or the swing angle (8) will be required to complete the equipment.

The bellows attachment

The component parts of the bellows attachment (7) are the lens holder (7/2), the bellows (7/4), and the camera holder (7/3). Camera holder and lens holder are pushed on to the

Fig. 10: Copying stand with swing angle fixed to lower column: horizontal position

gliding rail (6/3) of the focusing slide (6). Make sure that they stand close together and are connected firmly by fastening the screw (7/7) on the lens holder — Fig. 2 — as shown in Figs. 1 and 12. The levers (7/5 and 7/6) are loosened and standing upright. First the lens holder (7/2) and then the camera holder (7/3) are pushed on to the tail-end of the gliding rail (6/3) (recognizable by the largest values on the scale and by the rotatable locking screw (6/6) with the unilaterally frased head). Before pushing on the bellows attachment (7), this locking screw (6/6) must be set so that the frased section of the screw lies on a level with the upper surface of the gliding rail (6/3). Having pushed the holders on, tighten the locking screw (6/6) slightly, causing the round part of the screw head to project above the surface of the gliding rail and preventing an inadvertent slipping off of the bellows attachment. It is advisable to place the bellows attachment (7) towards the front of the gliding rail (6/3) as far as the stop of the locking screw (6/7) and to lock the lens holder (7/2) in this position by turning down the lever (7/5) to the right. The screw (7/7) on the lens holder

Fig. 11: Copying stand with swing angle: horizontal position, swung around for vertical exposures

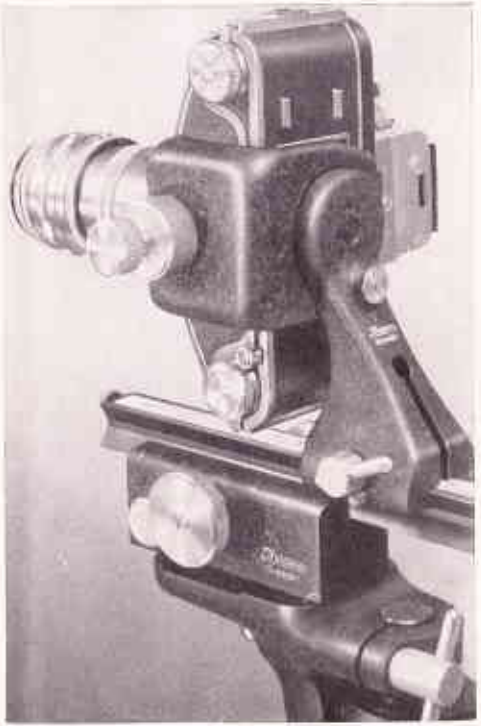

Fig. 11

can now be released, permitting the camera holder to be moved to and fro on the gliding rail (6/3), as required, for focusing. The camera holder, too, can be locked in position by turning down the lever (7/6) to the right. Of course, the lens holder (7/2) can also be moved.

When attaching the EXAKTA Varex to the camera holder (7/3), pay attention that the red dots on the two bayonet rings are exactly opposite each other. Then turn the camera to the right (in viewing direction) until the locking lever clicks into the bayonet fitting. The camera is now ready for upright exposures. If you intend working in the horizontal position, turn the camera back again by 90 degrees up to the stop. You are at liberty to use any standard or special supplementary lens to fit the EXAKTA Varex. Also when fixing the lens into the lens holder (7/2) the red dots on the bayonet fittings must meet. Insert the lens into the bayonet mount and turn it clockwise until the locking lever (7/8) - Fig. 6 - clicks in.

The smallest increase in extension obtainable with the aid of the bellows attachment (7) is 35 mm., the greatest, approximately 210 mm. The 35 mm. extension increase, when using 50 or 58 mm. standard lenses, means focusing on relatively small objects. However, a 50 mm. special lens, f/2.8 with sunk mount, order No. 128, see Fig. 6, is now available, allowing also for focusing at longer distances (up to infinity) with the bellows attachment, and for photographing larger objects on a smaller ratio. The black figures on the scale of the focusing slide (6) signify the increase in extension for the usual standard, short or long-focus lenses of the EXAKTA Varex, whereas the red figures refer to the increase in extension when using the 50 mm. special lens, f/2.8 with sunk mount. The scale values hold good only with the lens holder (7/2) at the front stop of the gliding rail (6/3). It is the measurement visible on the upright rear surface of the camera holder that counts. Should it be necessary, in any particular case, to adjust the lens holder (7/2) and to remove it from the front stop, the increase in extension can easily be calculated: the number recognizable on the back of the lens holder (7/2) has to be deducted from the number visible on the back of the camera holder (7/3), and the difference between these two figures is the increase in extension. If the bellows attachment (7) is to be removed from the focusing slide (6), it is by all means advisable, for the sake of preserving the bellows, after loosening the levers (7/5 and 7/6), to push the lens holder (7/2) and the camera holder (7/3) together to the point where they can be closely connected by clockwise rotation of the screw (7/7) - see Fig. 2. The locking screw (6/6) having been set with its lateral frased section on a level with the surface of the gliding rail (6/3),

the bellows attachment (7) can be drawn off the gliding rail.

Figs. 2 to 6 and 26 to 30 show the bellows attachment fixed to the copying stand, while Figs. 14, 16, 18, 24, and 33 represent methods of employing the bellows attachment independently, without using the copying stand.

The swing angle

A second possibility of fastening the camera is given by the swing angle (8). This element, too, is pushed on to the gliding rail (6/3) of the focusing slide (6), it does not, however, in itself provide for an increase in extension. Close-ups, in this case, have to be made with the customary extension rings and tubes (please refer to prospectus and instructions on "Macrophotography - Photomicrography with the EXAKTA Varex").

After loosening the lever (8/4), causing it to stand upright, push the swing angle (8) on to the tail-end of the gliding rail (6/3) (recognizable by the larger scale values and by the rotatable locking screw (6/6) with the unilaterally frased head). Before the swing angle (8) is pushed on to the gliding rail, this locking screw (6/6) must be set with the frased part of its head on a level with the gliding rail (6/3). With the swing angle pushed on to the gliding rail, slightly tighten the locking screw (6/6), causing the round part of the screw head to project a little above the gliding rail, which will prevent the swing angle from slipping off.

With the swing angle in use, the scales on the gliding rail (6/3) become invalid. You are able to set the swing angle and lock it in any desired position by turning down the lever (8/4) to the right. As shown in Fig. 11, the EXAKTA Varex is fastened to the angular piece (8/2) by means of the fastening screw (8/6). (The fastening screw (8/8) is designed for cameras with an English tripod socket). Remember that the counter-nut (8/7) has to be screwed in between the angular piece (8/2) and the head of the fastening screw (8/6 or 8/8). As soon as the fastening screw has been driven deep enough into the tripod socket of the camera, the counter-nut must be screwed against the angular piece in order to give the camera a firm hold on the angular piece. To transpose the camera from the horizontal to the vertical position, or vice versa, the angular piece (8/2) is moveable in both directions on pulling out the fastening knob (8/5) on the support (8/3). The knob clicks in automatically when the angular piece (8/2) has completed a 90° rotation.

Figs. 7 to 11 show the swing angle in connection with the copying stand, whereas in Figs. 13, 15, 17, 19, 21, 22, 25, 31, and 32, you see the swing angle as used independently, without the copying stand.

Focusing

The following fundamental rules should be observed in focusing: The image distance (= space between lens and film plane) required for the picture ratio is produced by extending the bellows attachment (7) or, in case you are using the swing angle (8), by inserting extension rings and tubes. In the vertical position, the object distance (space between object and lens), naturally associated with the image distance, is roughly focused by fixing the headpiece (5) either on to the column foot (1/2), or on to the lower or upper column (2 or 3). Critical focusing is then performed by means of the cog-wheel mechanism of the focusing slide (6). With the apparatus horizontally positioned, the object must first be arranged at the approximate distance required, whereupon it is focused by moving the cog-wheel mechanism of the focusing slide (6). Where the object distance in relation to the bellows attachment remains unchangeable, adjustment of the image distance, and subsequent absolutely sharp focusing, is possible by backward or forward movement of the camera holder (7/3) on the gliding rail (6/3). This is an extraordinary advantage of the bellows attachment.

Focusing, and control of depth of focus are, as usual, performed on the reflex image of the EXAKTA Varex. Working with increased camera extension requires longer exposure time. Details concerning this subject, also with regard to scales of reproduction, object distance, image distance, etc., will be found in the instructions on "Macrophotography and Photomicrography with the EXAKTA Varex" as well as in the special literature mentioned at the close of this booklet.

To facilitate focusing, we recommend a number of available accessories, especially for close-up and micro-work with the EXAKTA Varex, upon which particulars will be given on request: The Lens Magnifier permits using a highly corrected standard or special lens in place of the simpler magnifiers for focusing, revealing a perfectly corner-sharp, powerfully magnified reflex image free from distortion.

The Distance Meter for the EXAKTA Varex Penta Prism works on the principle of the split-image rangefinder, rendering it possible to get the image into sharp focus, also under unfavorable lighting conditions.

With a long camera extension, and perhaps additional small lens aperture, a darkening down of the reflex image becomes unavoidable, so that it will seem desirable to focus through a clear spot in the ground glass straight on the bright image. Close-ups from a 1:1 ratio upwards can be made in this way with one of the special magnifiers in the finder hood, the Penta Prism, or the Lens Magnifier. These magnifiers have a hairline cross in the clear spot; they are available, too, completely of clear glass, also with hairline cross. Individual types of magnifiers, with etched lines, squares, millimeter or centimeter divisions, etc., can be delivered on special order. Finally, a few remarks have to be made regarding optical conditions in magnifier photography with standard lenses. These standard lenses are highly corrected for ordinary exposures based on long object distance and short image distance. But whenever the negative picture already appears enlarged — and this is the case with magnifier exposures, the image distance is greater than the object distance. Therefore, in order to maintain the full working capacity of the lens, it is advisable, for magnifier exposures (especialy those with more than twofold enlargement), to reverse the lens, turning the rear element in the direction of the object. This is possible with the aid of special "lens reverse rings". On one side, these rings have the thread for the extension tubes or for the rear bayonet of the EXAKTA Varex, and on the other side is the thread to accept the front section of the lens mount. When ordering, please do not forget to mention name of lens, focal length and aperture, and whether the sens has diaphragm pre-setting device or not. To fasten the "lens revers ring" to the lens carrier of the bellows attachment, the rear bayonet ring of the double-bayonet must first be screwed into the mount on the lens carrier.

B: Close-up (macro) work, Magnifier exposures, Copying, etc., without the copying stand

Equipment:

Complete bellows attachment (black), order No. 155.10, consisting of focusing slide (6) with sliding track (6/2), gliding rail (6/3), rack-and-pinion knobs (6/4 and 6/5), locking screws (6/6 and 6/7) and knob (6/8) for connecting the transparency copying device and bellows attachment (7) with lens carrier (7/2), camera holder (7/3), bellows (7/4) and levers (7/5 and 7/6). Extension by means of the bellows of the bellows attachment.

Or:

Focusing slide with swing angle complete, order No. 155.03, consisting of focusing slide (6), as described above, and swing angle (8) with angular piece (8/2), support (8/3), lever (8/4), fastening knob (8/5) fastening screw with continental tripod bushing (8/6) or with English tripod bushing (8/8) and counter nut (8/7). Extension increase is achieved by means of the familiar adapter rings and extension tubes, which, we presume, belong to your outfit. When ordering, please mention whether your camera has English or continental tripod socket.

Bellows attachment and swing angle, independent of the copying stand

The use of the above-mentioned parts of the Ihagee "Vielzweck" is by no means confined to the copying stand. Exactly this is the great advantage of the "Vielzweck", that its individual part groups may be employed altogether independently of one another as well as in a variety of combinations with other part groups. The customer having made up his mind to purchase one of the afore-mentioned devices need not buy an extra focusing slide (6) if, at a later date, he intends adding the copying stand to his outfit.
In horizontal working position, the "complete bellows attachment" as well as the "focusing

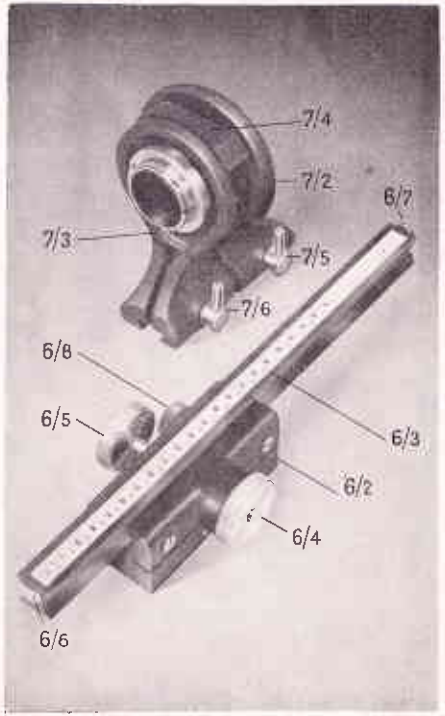

Fig 12

Fig. 12: Separate parts of the "complete bellows attachment" (focusing slide and bellows attachment)

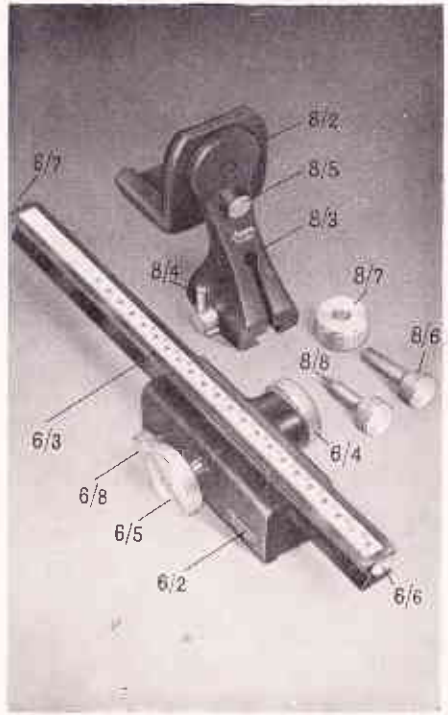

Fig. 13

Fig. 13: Separate parts of "focusing slide and swing angle, complete"

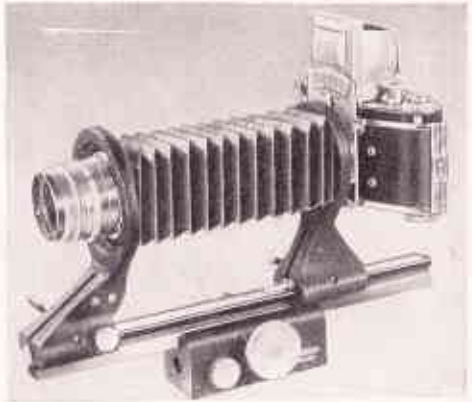

Fig. 14

Fig. 15

slide with swing angle" may, if necessary, simply be placed on a table, as shown in Figs. 14 and 15. But we advise using these devices fixed to a sturdy tripod, as shown in Figs. 16 to 19. A large tripod head (as e. g. the "Gigant" of Messrs. Berlebach, Mulda, Saxony) will be found very convenient, allowing the camera to be tilted or swung into any position within range of the object. The working parts can thus be arranged horizontally, obliquely, or vertically (Figs. 16 to 19).

Fig. 14: Complete bellows attachment standing on a table: horizontal position

Fig. 15: Focusing slide and swing angle, complete, standing on a table: horizontal position

Fig. 16: Complete bellows attachment fixed to tripod: horizontal position

Fig. 17: Focusing slide and swing angle, complete, fixed to tripod: horizontal position

Fig. 16

Fig. 17

Fig. 18

Fig. 19

Setting up and control of the individual parts have been described closely in section A on pages 8 to 12. The basic difference between the "complete bellows attachment" shown in Figs. 12, 14, 16, and 18 and the "focusing slide with swing angle" shown in Figs. 13, 15, 17, and 19 lies in the fact that the swing angle requires bayonet rings and extension tubes to increase the extension for close-up work, whereas in the bellows attachment this is effected by the bellows. Any scale of reproduction, and the corresponding object and image distances within the range of its extension can be continuously adjusted by means of the bellows, saving considerable time where the equipment is in constant use with frequent change of ratio.

Fig. 18: Complete bellows attachment fixed to tripod: vertical position

Fig. 19: Focusing slide and swing angle, complete, fixed to tripod: vertical position

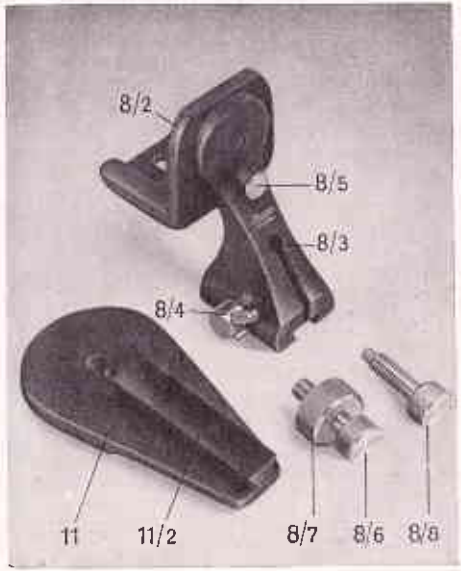

Fig. 20

Fig. 20: Tripod plateand swing angle: single parts

C: The use of the tripod in connection with long-focus or heavy lenses

Equipment:

Tripod plate (11), order No. 155.03-10, Fig. 20, and swing angle (8), order No. 155.03.

Should you not yet be in possession of the swing angle (8) and intend ordering it for the purpose of working as described below, we request you to state whether your camera has an English or continental tripod socket.

Tripod plate with swing angle

An extra simple supplementary part, the tripod plate (11), equipped with continental and English thread, has been designed for special work with the swing angle. It can be screwed to any tripod. On the tripod plate is a short gliding rail (11/2) to accept the swing angle (8), on which particulars have been given on pages (11/12). The tripod plate will be found most convenient where the EXAKTA Varex is being used with long-focus or very heavy lenses (without a tripod socket of their own), perhaps, too, with an extra extension increase by means of adapter rings and tubes - see Fig. 21. In order to balance out the weight in such cases and to ensure tripod steadiness and vibrationless working of the camera, the swing angle (8) with the camera on the gliding rail (11/2) has to be pushed away from the vertical axis of the tripod until the whole apparatus is equally balanced - as in Fig. 21. Also, the movements of the swing angle (8) on the gliding rail (11/2) of the tripod plate prove very practical in close-up work. Tripod with camera can be set up firmly in front of the object, nevertheless there is still sufficient play for focusing, due to the fact that the swing angle (8a) can be moved to and fro on the gliding rail (11/2).

Fig. 21

Fig. 22

Fig. 21: Tripod plate and swing angle balancing long-focus lens on tripod

Fig. 22: Tripod plate and swing angle: Focusing by movement of swing angle on gliding rail of tripod plate

D: Transparencies, negative copies of color transparencies, etc.

Equipment:

Transparency copy equipment (12) with light trap (12/2), order No. 155.04, Fig. 23. Possibly, one of the lens rings (12/4 or 12/5) will also be required. When ordering, please give details regarding camera lens: name, aperture, focal length and if with diaphragm presetting device or not.

Optional extras:

Complete bellows attachment (black), order No. 155.10, Figs. 24 and 26, also 12, 14, 16, and 18, extension increase by bellows of bellows attachment.

Or:

Focusing slide with swing angle complete, order No. 155.08, Figs. 25, also 13, 15, 17, and 19. Extension increase by adapter rings and tubes, which, we presume, are in your possession. When ordering the focusing slide with swing angle please mention whether the camera to be used has continental or English thread.

The transparency copy equipment

The desire to make transparencies from 35 mm. black-and-white and color negatives, and 35 mm. duplicate negatives from reversible transparencies, led to the designing of the Transparency Copy Equipment (12). This equipment is fixed to the repeatedly mentioned focusing slide (6) and screwed tight. Copying is an optical performance based on EXAKTA Varex close-up photography, necessitating the use of the bellows attachment (7), or the swing angle (8) with adapter rings and tubes. You work either with the "complete bellows attachment" (Figs. 12, 14, 16, and 18) or with "focusing slide and swing angle" with the corresponding adapter rings and tubes for extension increase (Figs. 13, 15, 17, and 19).

For exposures at a ratio of 1:1 the extension increase must be equal to the focal length of the lens in use. When working with the swing angle (8) and a 50 mm. lens you will need the pair of bayonet rings, the two-in-one bayonet ring, one 5 mm. and one 30 mm. tube. A 58 mm. lens goes together with the pair of bayonet rings, one 15 mm. tube and one 30 mm. tube, and a 3 mm. stroke of the helical mount. If you

are using the bellows attachment (7), its scale has to be set to an extension increase equal to the focal lenght of the lens.

No matter which part group you are using, the transparency copy equipment has in any case to be fixed to the focusing slide (6) by means of the coupling rod (12/3), as shown in Figs. 24 to 26. For this purpose, you will find a round hole on the front surface of the sliding track, into which you will be able to push the coupling rod (12/3). Tighten the little knob (6/8), and the transparency copy equipment is fastened securely to the focusing slide.

As already mentioned, the single negatives, or negative strips, are inserted into the unfolded picture gate (12/6). Film trays (12/9) on both sides hold the ends of the strips. It is advisable to use a folded paper mask to push in the negative strips. Such a mask may be cut out of black paper: approx. 70 mm. wide, 150 mm. long, folded to 35 x 150 mm., with an opening of exactly 24 x 36 mm. The mask projects from the sides of the picture gate and can be moved sideways in both directions for critical adjustment of the picture outline in the 1:1 ratio and also when reproducing smaller singled-out parts of films. (See next section.) To make negative copies of 5 x 5 cm. ready mounted transparencies, the latter are inserted into the frame behind the projections (12/8). Exposure takes place by means of the EXAKTA Varex shutter.

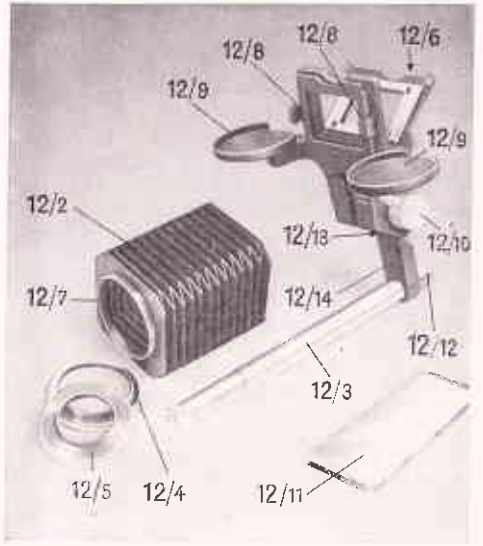

Fig. 23: Transparency copy equipment: single parts

Before first use, the transparency copy equipment (12) has to be adjusted, so that the aperture of the picture gate (12/6) will always fit precisely into the film window of the camera

in horizontal position. After the transparency copy equipment (12) has been fixed to the focusing slide (6), you place any negative strip into the folding picture gate (12/6), making sure that one of the negative frames lies exactly in the aperture of the picture gate. You illuminate your object either with normal bulbs (possibly not less than 60 watts), or with photolamps. Depending on the amount of heat radiating from the light soucre, the lamp is put up about 30 to 50 cm. behind the picture gate (12/6), the opal glass of which yields an even distribution of light. Open the back of the camera which has been fixed as shown in Figs. 24 to 26 (Caution: Catch hold of the receiving spool!), place the little ground glass (12/11) on the film window of the camera and with your camera prepared for a reproduction scale of 1:1 - as described before - you focus, by means of the rack-and-pinion knobs (6/4 and 6/5), on the image visible in the ground glass (12/11). Set the shutter to T and open it. Loosen the nut (12/12) with the aid of a coin, the back of a penknife or a similar thin tool: the holder (12/14) can now either turned around the axis of the coupling rod (12/3) or moved slightly in a horizontal direction until the image in the ground glass comes to lie exactly between the short margins of the film window in the camera. The nut (12/12) can now be screwed tight, as it will not be loosened again. Focusing in vertical direction is performed by rise or fall movement of the picture gate (12/6) on the holder (12/14), for which purpose the lever (12/10) has to be loosened. Having been thus adjusted, the image in the ground glass (12/11) must lie precisely between the long edges of the film window in the camera. After final adjustment, the lever (12/10) must be tightened again. To mark the correct adjustment we advise making a pencil stroke on the holder (12/14) at the point designated by the arrow (12/13) in Fig. 23. This adjustment always has to be observed when making duplicate negatives and transparencies on a reproduction scale of 1:1: The object need only to be placed accurately into the picture gate (12/6) and upon focusing either in the finderhood or in the Penta Prism of the EXAKTA Varex with the aid of the rack-and-pinion knobs (6/4 and 6/5) you have exactly the 1:1 image. After this adjustment it is no longer necessary to watch the reflex image as long as your exposures are being made on the 1:1 ratio. It is advisable to stop down the diaphragm to f/8.
To avoid penetration of outside light, a little bellows (12/2) belonging to the equipment has to be inserted between lens and picture gate (12/6). The lens ring (12/7) of the light trap fits the mount of the 58 mm. night lenses, f/2, and f/1.9 (both with diaphragm presetting device). Adapter rings are available

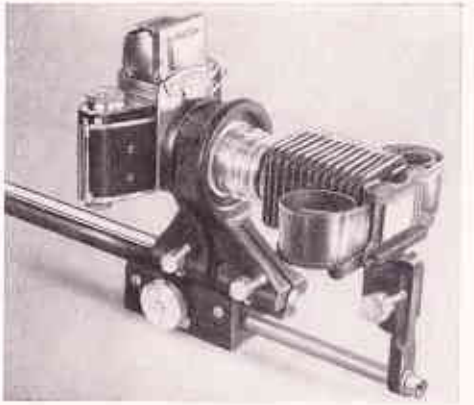

Fig. 24: Transparency copy equipment with complete bellows attachment

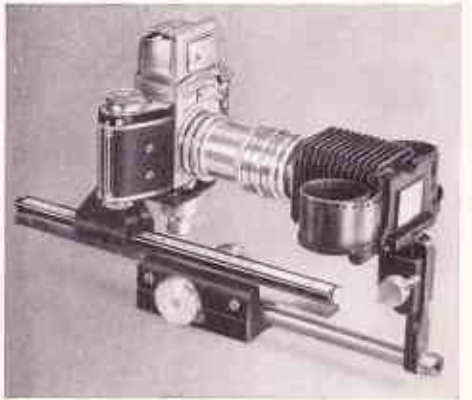

Fig. 25: Transparency copy equipment with focusing slide and swing angle complete

for the 50 mm. standard lenses, f/2.8, and f/3.5, (both with diaphragm presetting device) as well as for previous types of lenses without the diaphragm pre-setting device (Fig. 23 - 12/4 and 12/5). When ordering, please give details concerning lens! The light trap (12/2) is first connected to the lens by means of its own lens ring (12/7) or one of the two adapter rings (12/4 or 12/5), whereupon the metal frame on its other end is fixed into the projections (12/8) on the picture gate (12/6).
As a rule, the scale of reproduction will be 1:1. It is also possible, however, to select smaller parts of a negative for the copy. This, of course, requires a somewhat longer camera extension, attainable, e. g., in the distance between camera holder and lens holder (7/3 and 7/2) in the bellows attachment, and by

Fig. 26

inserting extra tubes when using the swing angle. The negative is laterally adjustable in the picture gate (12/6), and the whole picture gate itself is arranged for vertical adjustment. The latter is achieved as before mentioned by loosening the lever (12/10) and moving the picture gate slightly up or down. The picture gate is fastened in position by turning down the lever. Focusing is accomplished optically, based on the reflex image of the EXAKTA Varex, and mechanically by actuating the cog wheel mechanism of the focusing slide (6). Fig. 24 shows the working position of the bellows attachment, and Fig. 25 the use of the swing angle.

For the optical production of 35 mm. transparencies from larger negatives it is best to work with the apparatus in vertical position, using the copying stand and some kind of lightbox, as in Fig. 5. (See also note on page 2.) Also the transparency copy equipment is often chosen in connection with the copying stand for 35 mm. objects, hence in the normal horizontal position (Fig. 26). You will find it most convenient to do this kind of work sitting down and looking straight into the penta prism of the EXAKTA Varex in viewing direction.

Fig. 26: Copying stand with bellows attachment and transparencycopy equipment: suitable horizontal position

Attention!

(Supplement to page 24–26 of the instruction for use: The Ihagee Vielzweck)

Recently, a Transparency Copying Screen (Fig. 26a page 26) as shown in Figs. 23 – 26 is being supplied for the transparency copying device in place of the light-protection bellows (12/2). The screen is fixed to the projections (12/8) on the picture gate (12/6) and protects the camera from the rays emanating from the light source, thus sheltering the eyes while focusing. We advise setting up the Transparency Copying Equipment in a somewhat darkened room in order to keep any stray light away from the picture gate. Figs. 24–26 apply also to the new Transparency Copying Screen.

Fig. 26a:
Copying stand with bellows attachment and transparency copy equipment: suitable horizontal position

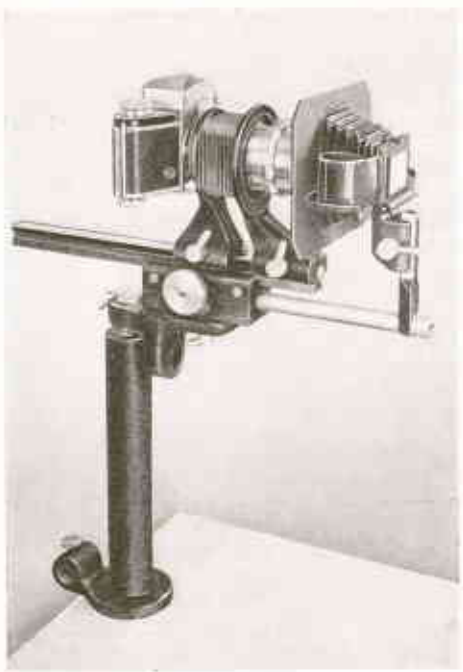

Fig. 26a

Form 391/5/5506 TRPT-Nr. 965/53 III/21/6 IL 1694/55 2052

E: Micro exposures

Equipment:

Complete copying stand, Order No. 155.01, as described in section A, including focusing slide (6), also bellows attachment (7), order No. 155.02, and light protection tube (9) to screw into the lens holder (7/2), as in Fig. 1, order No. 156.

For magnifier exposures with a microscope Lg, an additional microscopes ring II (10) — Fig. 1 — Order No. 157, is available.

We take it for granted that your equipment includes the microscope with lighting arrangement, and light-protection tube to be slipped on to the ocular mount.

The copying stand with bellows attachment

You know, of course, that it is possible to connect the EXAKTA Varex to any usual type of microscope with the aid of one of the microscope attachments. Many experts, however, avoid bringing the camera into direct contact with the microscope. This is possible with the Vielzweck too. EXAKTA Varex and microscope can be used in one without being mechanically fixed together. For this purpose you need the copying stand with bellows attachment (Figs. 27 and 28, and section A., pages 9 to 11). Screw the light-protection tube (9) into the threaded mount of the lens holder which, in this case, has no lens in it. You are sure to possess a second light-protection tube with your microscope, otherwise it will be necessary to procure one from the manufacturer. This tube is slipped on to the ocular fitting of the microscope and, in order to avoid penetration of outside light, the two tubes are pushed into each other without, however, coming into close touch. The whole equipment stands in the vertical position. Extension increase, which influences the scale of reproduction on the film, is obtained by means of the focusing slide (6) and bellows attachment (7).

Details on this subject will be found in special publications on photomicrography. See references at the close of this booklet.

The photographic equipment is centered over the microscope so that the EXAKTA Varex, in this case without its own lens, is precisely above the optical axis of the microscope. Thus, the

Fig. 27

Fig. 28

image produced by the lens and ocular of the microscope is projected into the camera. Having centered the camera, you fasten the stop ring (2/2) on the lower column (2) - Fig. 1 - causing the headpiece (5) to touch the screw knob of the stop ring (2/2) - Fig. 27 -. If at any time you wish to interrupt your photographic work on the microscope, you push the lens holder (7/2) a little way up the gliding rail (6/3), disconnecting the light-protection tubes, loosen the fastening screw (5/3) of the headpiece, and you will be able to swing the complete equipment to one side, as shown in Fig. 28. On resuming your photographic work, you need not to repeat the centering performance, for you simply swing the equipment back to the stop marked by the stop ring (2/2). The height of microscopes generally in use usually requires only the lower column (2) of the copying stand. It might happen - owing to the height of the microscope - that the camera holder (7/2) is not quite near

Fig. 27/28: Copying stand with bellows attachment: vertical arrangement for micro-exposures. Left: working position, right: photographic equipment swung aside when not in use

Fig. 29: Copying stand with bellows attachment: vertical arrangement for magnifier exposures with the microscope, using microscope ring II

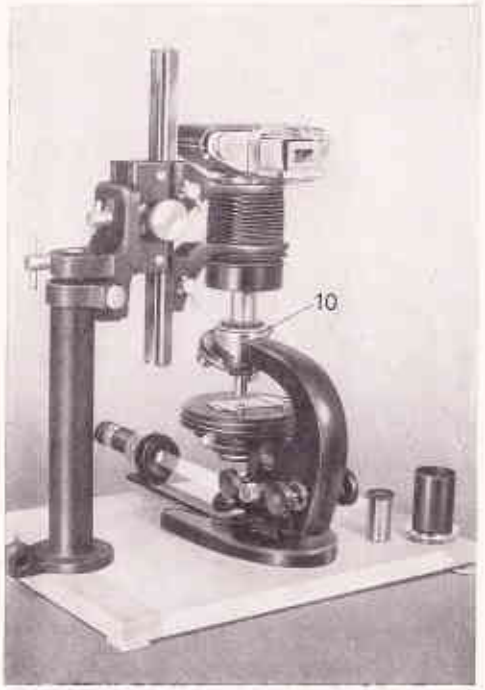

Fig. 29

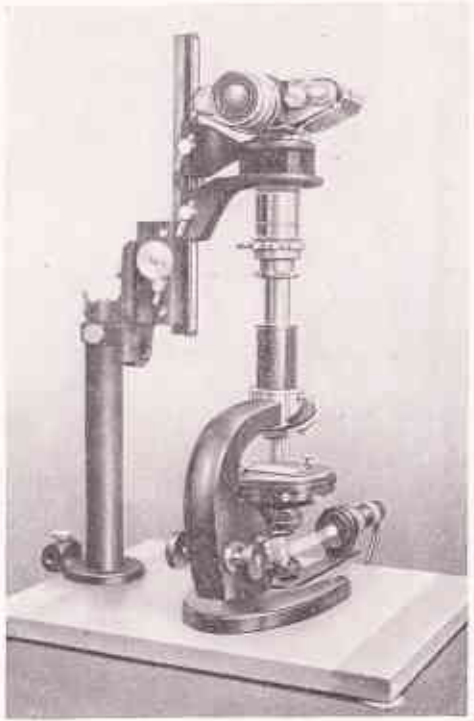

Fig. 30

to the front locking screw (6/7). In case you interrupt your work, you push the lens holder (7/2) a little way up, as described before, and the whole equipment can easily be swing aside. Should you intend making magnifier exposures on a smaller scale with Lg microscopes and with a similar arrangement as afore-mentioned, you may replace the ocular by a suitable lens for the microscope, e.g. the Mikrotar. The black tube of the microscope has to be removed and the spezial microscope ring II (10) - Fig. 1 - inserted into the rapid-exchange mount on the tube bearer of the Lg stand. At the top of the ring is the thread to take the ocular mount of the microscope. This mount has to be screwed out of the black microscope tube and screwed into the mount of the microscope ring II (10). The distance between lens and film plane now becomes smaller, corresponding to the smaller enlargement; the method of working, however, remains the same as described before. Fig. 29 shows how to arrange the equipment for microscope exposures of this kind with the aid of the microscope ring II (10).

Fig. 30: Copying stand with bellows attachment and microscope adapter No. 2: vertical arrangement for micro exposures, lifting ocular for focusing

Copying stand, bellows attachment, and microscope adapter No. 2

In photomicrography, lenses yielding up to 10 fold enlargements sometimes reveal optical under-correction, which can be decreased simply by lifting the ocular for focusing the reflex image in the camera. The equipment required consists of the copying stand, the bellows attachment and the microscope adapter No. 2 (order No. 153), as available for the EXAKTA Varex.

It is most convenient to place the microscope, as shown in Fig. 30, on the baseboard of the copying stand. Remove the ocular of the microscope, separate the lower part of the microscope adapter from the upper part by loosening the milled screw, and fix the lower part on to the ocular mount; replace the ocular and fasten the lower part by turning the notched ring, at the same time catching hold of the rim. Rejoin upper and lower part of the microscope adapter, but without fastening the milled screw. Place the microscope underneath the bellows attachment (with the EXAKTA Varex on top), forming a straight line from the axis of the microscope to the axis of the microscope adapter. By turning the cog-wheel of focusing slide (6), you are now able to lower the whole equipment until the bayonet ring at the top of the microscope adapter joins the bayonet mount of the lens holder (7/2). The red dots on bayonet ring and lens holder must meet. The bayonet ring having slipped into the mount, the upper part of the microscope adapter must be rotated until it snaps in. Tighten the milled screw on the rapid-exchange mount of the microscope adapter and loosen the clamp ring which, when working without the copying stand, normally fastens the microscope adapter to the microscope. On turning the rack-and-pinion knob of the focusing slide, the whole equipment, including the microscope adapter, will move and you are able to lift the ocular separately without the microscope lens.

F: Stereo Photography

Equipment:

Focusing slide with swing angle complete, see Section B, order No. 155 08.

Focusing slide with swing angle

In stereo - 3 dimensional - photography you are not absolutely bound to make both exposures simultaneously, using two lenses or two prisms (Stereo Attachments). The two stereoscopic pictures can be taken in succession. The camera, in this case, has two different standpoints, and the distance between these two points is called the "base". The object must, of course, be motionless. The stereoscopic effect is considerably enhanced by "wide-base" exposures, in which the distance between the two pictures is not the usual 6.5 cm., as derived from the distance between the eyes, but where a greater lateral movement of the camera is possible. The focusing slide (6), supplemented by the swing angle (8) and connected to a sturdy tripod, permits making stereo exposures with a base of almost 50 cm. The focusing slide (6) is fixed to the tripod at a right angle to the viewing line (Figs. 31 and 32). While pulling the knob (8/5), turn the angular piece (8/2) upwards, bringing the plate with the hole for the fastening screw to the top, ready to accept the EXAKTA Varex at a right angle to the focusing slide for horizontal exposures. The camera is fastened by means of the screw (8/6 or 8/8) and the counter nut (8/7) is again screwed in between the head of the fastening screw and the angular piece (8/2). (Fig. 11). The stereo base is obtained either by adjusting the swing angle (8) on the gliding rail (6/3) or by additional adjustment of the gliding rail itself, by means of the cogwheel, on the sliding track (6/2).

Fig. 31/32: Focusing slide and swing angle complete fixed to tripod: horizontal arrangement for stereo exposures. Left camera on extreme left of wide-base, right: camera on extreme right of wide-base

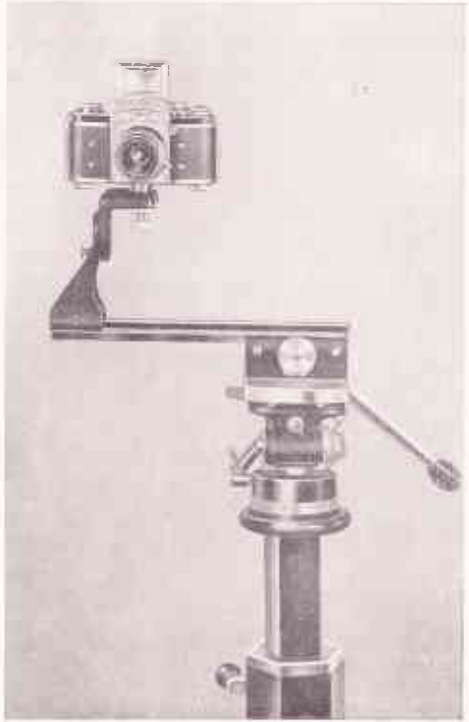

Fig. 31

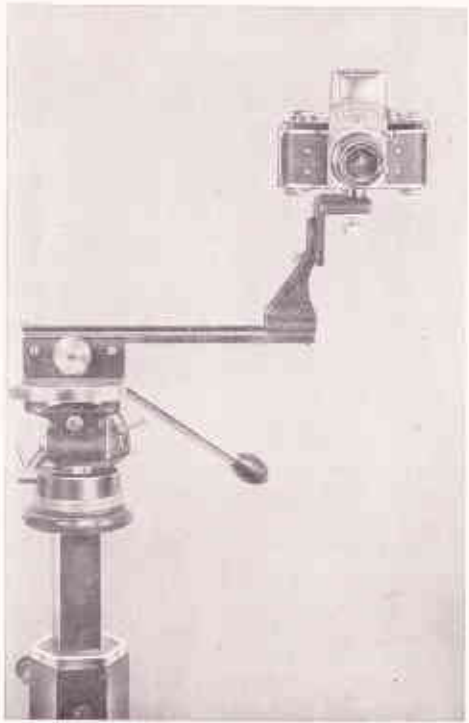

Fig. 32

G: Medical Photography: Cavities of the human and animal body

Equipment:

"Kolpofot" complete, order No. 155.11, consisting "of complete bellows attachment (7) with focusing slide (6)" ivory-color varnish, bright parts in chrome finish (mechanical execution as in section B, Fig. 12), "special lens f/4,135 mm.", with diaphragm stops down to f/45, Central Flash Unit ZB 3, complete with ring flash tube, pilot light and 3 flexible cables (14), and carrier for a Reflector rod.

Special Lens: 135 mm. f/4, with especially small diaphragm, adjustable down to f/45, order No. 127.

Central Flash Unit ZB 3, complete with ring flash tube, pilot light and 3 flexible cables (14), order No. 155.09.

Carrier for Reflector rod, separate, order No. 155.12.

Further requirements for practical work with the "Kolpofot" will be:
a sturdy tripod with universal swing-and-tilt head, e. g. the "Gigant" tripod with the "Gigant" swing head, manifactured by Berlebach, of Mulda (Saxony),

an electronic flash unit (500 to 1000 volts) and a 6 volt, 15 watt transformer, or accumulator, for the pilot light.

(Flash unit and transformer are supplied in one, as Electronic Unit, for connection to the house circuit, by Elektronik, Plauen/Vogtland).

The Kolpofot

The Kolpofot, too, is part of the Vielzweck equipment, which, however, considering its use in the medical field, has a light-colored varnish or chrome finish. The Kolpofot permits making anykind of magnifierexposures,especially where objects in motion are concerned.

Fig. 33: Kolpofot — complete bellows attachment with long-focus lens and Central Flash Unit for medical photography (cavities of the human and animal body): horizontal position on tripod

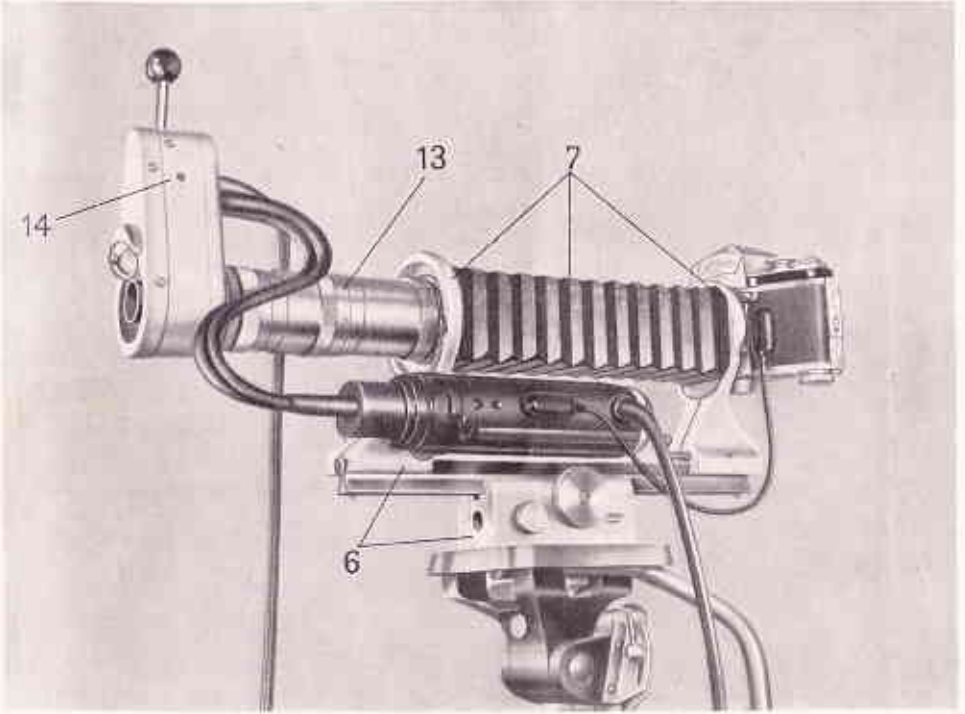

Fig. 33

This apparatus, which may also be used in other spheres of science, has proved most beneficial in photographing the eyes, the skin, the teeth, etc. But it is chiefly used for taking photographs of cavities of the human and animal body (vagina, mouth, throat, etc.). Experience has taught in a most convincing manner that the Kolpofot plays an extremely important part in the struggle against uterine cancer, for, in spite of astonishingly simple operation, it yields intravaginal exposures of such clarity, even in the finest structures, that these documents suffice for the diagnosis. The Kolpofot has made it possible to carry out organized examinations similar to the pulmonary X-ray examinations.
The bellows attachment used in this case permits extreme-sharp focusing. You work with the Penta Prism in the EXAKTA Varex, fitted with a hairlined clear glass magnifier, which reveals a relatively bright reflex image, even at a very small diaphragm stop. For focusing, the object is illuminated by a pilot light, but the exposure is made with a synchronized flash tube whose short ignition period almost completely eliminates any distortion which may be caused by the patient. Due to the long-focus lens, the 135 mm. special lens f/4, you have the convenient object distance of approximately 20 cm. and also, in combination with the long bellows extension, up to about 1,6 fold enlargement in the negative. The viewing system in the EXAKTA Varex Penta Prism riveals this image approx. 7 times larger for focusing, so that even in critical cases every structural detail is perfectly recognizable. For obtaining extraordinary depth of focus, this special lens may be stopped down to f/45.
Detailed instructions for using the Kolpofot are available on request.

The contents of this booklet require, to some extent, definite knowledge regarding the application of the EXAKTA Varex and its accessories as well as general skill in the photographic field, for which reason we would refer to some brochures, instruction booklets and special literature.

Brochures and Instruction Booklets:

Brochure "Macrophotography — Photomicrography"
Brochure "The Distance Meter"
Brochure "The Lens Magnifier"
Brochure "Flash Technique"

Complete Instruktions EXAKTA Varex
Instruktions: Macrophotography and Photomicrography with the EXAKTA Varex

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Special Literature:

"EXAKTA Kleinbild Fotografie" by Werner Wurst. The authoritative, complete instruction book (Published by W. Knapp, Halle/Saale).

"EXAKTA Makro- und Mikro-Fotografie" by Georg Fiedler. An indispensable guide for two of the most important spheres of EXAKTA Varex photography (Published by W. Knapp, Halle/Saale).

"Kleinbild-Stereo-Nahaufnahmen" by Dr. W. Pietsch. A brochure full of information on three-dimensional photography with the EXAKTA Varex (Published by W. Knapp, Halle/Saale).

"Kolpofotogramme", Volumes 1 and 2, by Robert Ganse M. D. An introduction to colpophotography with the EXAKTA Varex (Published by Akademie-Verlag, Berlin NW 7).

Further publications:

"EXAKTA Tips" by Werner Wurst. A short preliminary study dealing with the main points in EXAKTA Varex photography (Published by Heering-Verlag, Seebruck/Chiemsee).

"Liebe zur EXAKTA" by Heinz Müller-Brunke. A picture book with 128 first-class photos by the distinguished photographer (Published by Verlag Bruckmann, Munich).

These books are available only at special book stores.

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