Supplement to Instructions 51-26

Polarizing Microscope ORTHOLUX®-Pol

The following sections of the instruction booklet "ORTHOLUX II MICROSCOPE" should first be read:
ORTHOLUX Microscope
Unpacking the microscope
Workroom and workplace
Assembling the microscope
Alternative light sources
These sections apply also, as appropriate, to the microscope.

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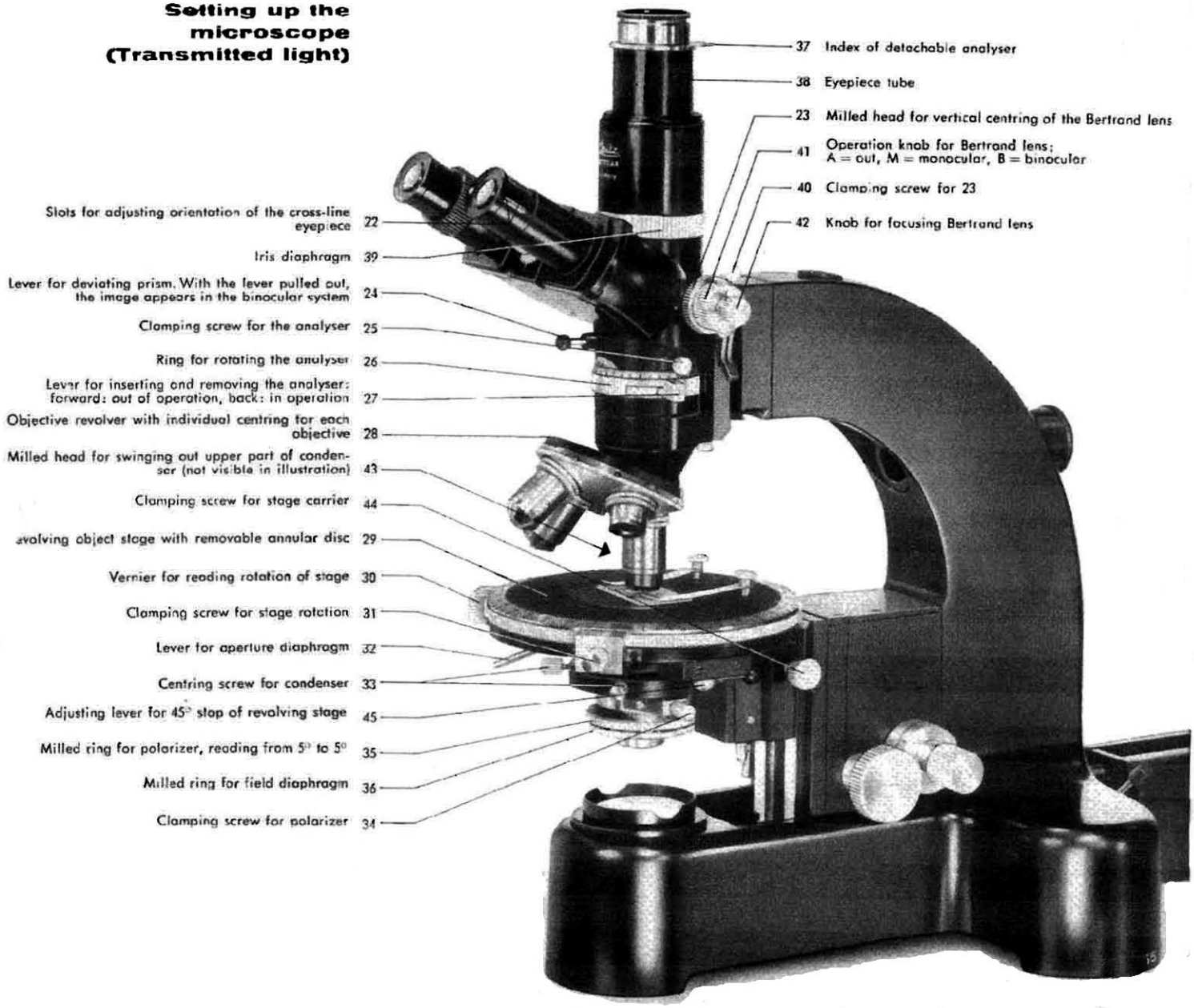
55-25a/Engl.

Setting up the microscope (Transmitted light)



The vertical illuminator contains the Berek compensating prism and a plane glass (the two being interchangeable on slide 49). In general the compensating prism (slide 49 pushed in) will be used, giving a homogeneous plane polarized field. The plane glass is reserved for only occasional observation of very fine detail at high magnification.

3.1 Adjusting the image and centring the objective

The specimen to be examined (polished ore section or the like) *is embedded in Plasticine by means of the hand press on a metal slide.*

Hold the press down for a short time to enable the superfluous Plasticine to exude. The hand press has an adjustable stop to enable all specimens to be standardized to the same height. Serial observations thus call for only slight re-focusing with the fine adjustment with change of specimen.

3.2 Centring the illumination

Close field diaphragm and focus with the collimator.*

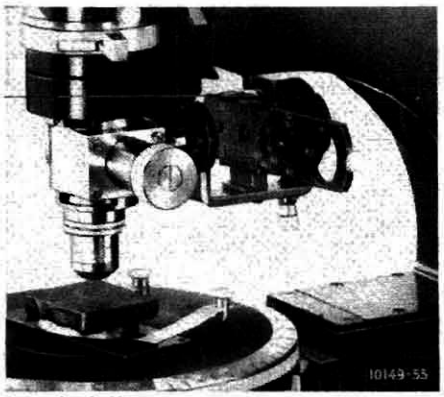
Bring field diaphragm to the centre with slide 49.

The specimen is correctly located when the field diaphragm maintains its position unchanged as the stage is rotated.

Then open up the field diaphragm again until the edge of the diaphragm is no longer visible in the field of view.

Centre the illumination as described in 1.3 in this case holding the ground glass or paper in front of the Opak.

Place specimen on stage.
Open aperture and field diaphragms.
Swing out half stop 56.
Pull out diaphragm slide 54.
Focus the specimen.
Centre objective as described under 1.1.



Lever for half stop

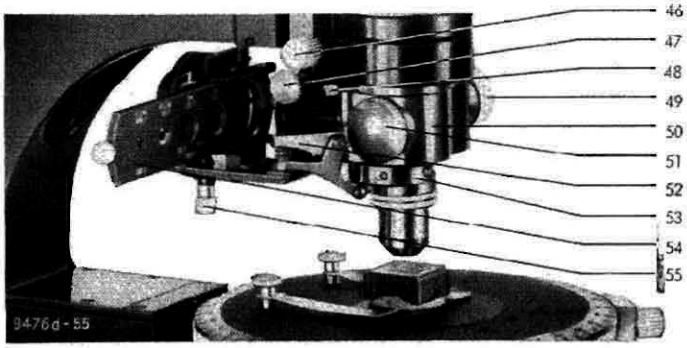
With the vertical adjustment screw 55 bring the lateral index marks into coincidence. In order to avoid troublesome reflections it is advisable when working with the microscope to interpose the half stop in the lower half of the field of view.

(If necessary readjust height with screw 55).

* The lever operating the collimator is covered by the slide 49 in the illustration.

4. Photomicrography

For photomicrography all types of our camera attachments can be used in conjunction with the straight part of the polarizer tube FS 45. Detailed instructions are provided with the apparatus.



46 Clamping screw for the vertical illuminator
47 Screw for clamping the condenser front attachment to the vertical illuminator
48 Lever for closing the compensator slot
49 Slide for alternative choice of compensator prism and plane glass
50 Vertical illuminator housing
51 Closing cap
52 Spring clamp for gripping centring ring with objective
53 Centring ring
54 Slide with 4 central stops
55 Vertical adjustment screw for aperture stop

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Subsidiary: Ernst Leitz (Canada) Ltd., Midland, Ontario

List **55-25a/Engl.** Printed in Germany XI/63/LW/SD

1. Adjusting illumination and the orthoscopic image

1.1. Adjusting the image and centring the objective

Place the specimen on the stage.

Turn revolving nosepiece to a medium power objective (e.g. ×10), or insert objective into objective changing clutch by pressing open the jaws, inserting the objective, and turning it counterclockwise until the locating pin lies beneath the jaw of the clamp. Finally release the clamp.

Insert the cross line eyepiece in the tube. Take care that the locating stud engages in the groove in the tube. (The tube has two grooves for the horizontal and one for the 45° setting of the cross lines. In the horizontal position the vertical line coincides with the vibration direction of the polarizer and the horizontal line with that of the analyser.)

Switch on the microscope illumination and focus the specimen.

With the centring keys provided centre the objectives on the revolver or the objective centring ring:

By rotating the stage find the point in the specimen around which everything revolves (rotating centre of stage).

The objectives are to be centred with the objective centring key in such a way that the midpoint of the stage coincides with the intersection of the cross lines.

1.2 Adjusting and centring the condenser

With the upper component swung in, the condenser has a N.A. of 0.85. When using oil immersions the front lens of the condenser is screwed out and replaced by the N.A. 1.40 condenser cap. For objectives of N.A. less than 0.25 the upper part of the condenser is swung out by means of the milled head 43. In this case the lower iris diaphragm serves as aperture diaphragm. The upper diaphragm remains fully open.

First raise the condenser by means of rack and pinion 6 to its highest position and swing in the upper condenser.

Close down the field stop 36 until with the specimen in focus it is completely visible in the field of view. By vertical adjustment of the field stop by the milled ring 36 it can be brought into sharp focus.

If the field stop does not now lie in the centre of the field the condenser must be centred by means of the two screws 33. The aperture is now opened until its edge just clears the field of view.

1.3 Centring the light source

Place a piece of ground glass or translucent paper on the circular glass plate 17. By displacing the lamp condenser the light spot should increase and diminish in size on the matt surface symmetrically about the centre. This is achieved by the centring screws on the lamp mount.

Open both condenser diaphragms.

Swing out analyser with lever 27 (lever forward). *Insert Bertrand lens by means of knob 41* (position A = out, M = monocular, B = binocular) *and focus on the back focal plane of the objective with knob 42.*

Centre the Bertrand lens; vertically by turning knob 23 and laterally with the milled screw close to knob 23 (not visible in the illustration).

The exit pupil of the objective must now be uniformly illuminated. If need be, adjust the lamp condenser.

1.4 Adjusting the orthoscopic image

Swing out the Bertrand lens.

Slacken screw 34.

Adjust milled ring so that the scale division 0 comes opposite the arrow.

Tighten screw 34.

Slacken clamping screw 25.

Set analyser to 0 by turning ring 26.

Tighten screw 25. Take care that the analyser is swung in. Polarizer and analyser are now crossed at 90°.

2. Adjusting for conoscopic observation

In this method of observation it is not the specimen itself that is observed, but the interference pattern formed in the back focal plane of the objective.

Open the aperture and field diaphragm.

Swing in the Bertrand lens.

Focus the interference pattern by knob 42. It is essential that the Bertrand lens should already have been centred, as described under 1.3. Specially suitable for observation in convergent light are objectives of medium power but high numerical aperture as for instance the P 50/0.85.

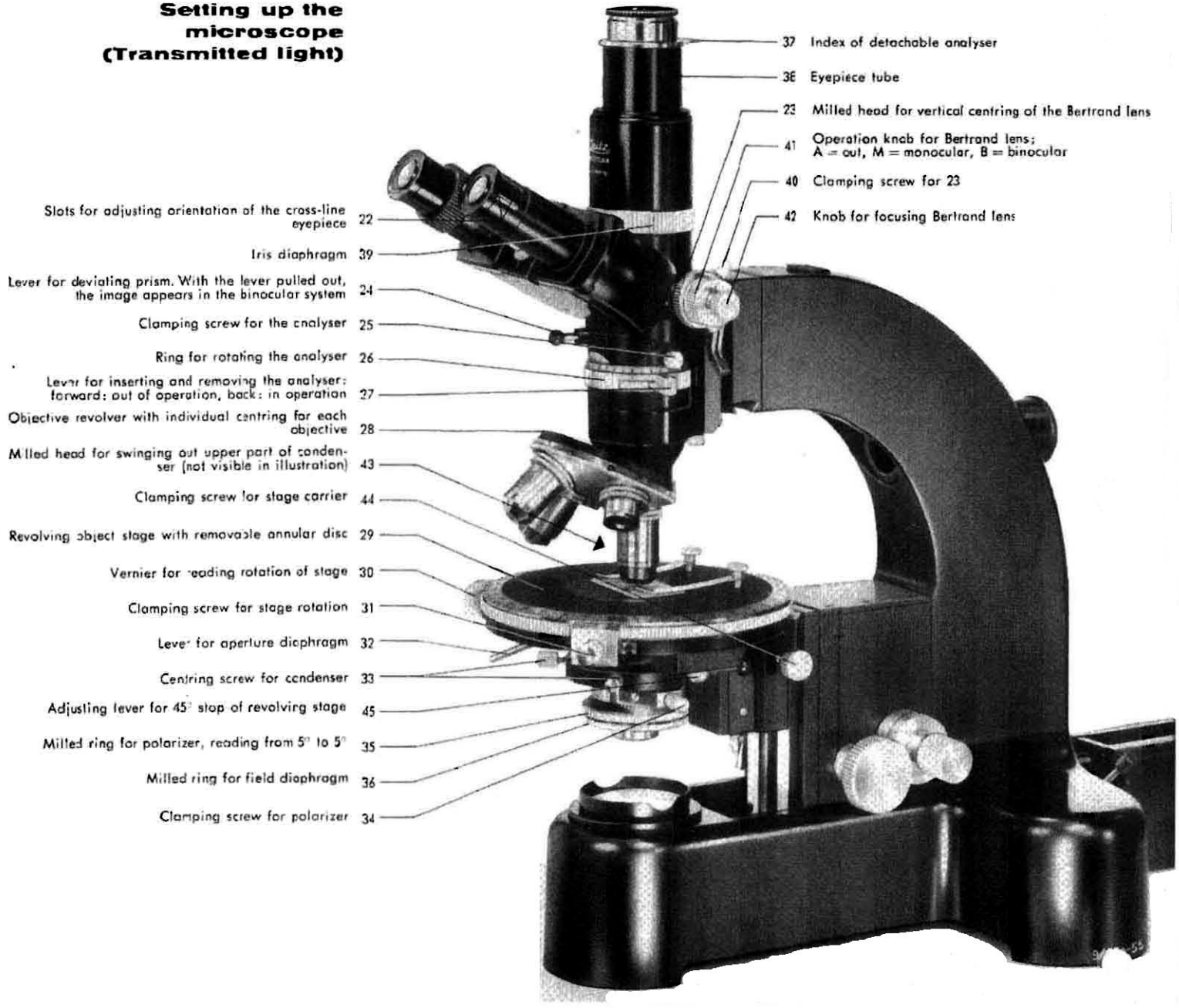
With the photo tube FS 45 with which the ORTHOLUX-Pol is equipped, small details of the specimen can be selected for observation by masking out with the iris diaphragm 39 in the straight part of the tube.

3. Setting up the microscope for incident light observation with the vertical illuminator

Connect up the upper low voltage lamp.

Slide the vertical illuminator in place of the objective revolver or objective changing clutch on to the dovetail slide to the stop and lock it with clamping screw 46.

Setting up the microscope (Transmitted light)



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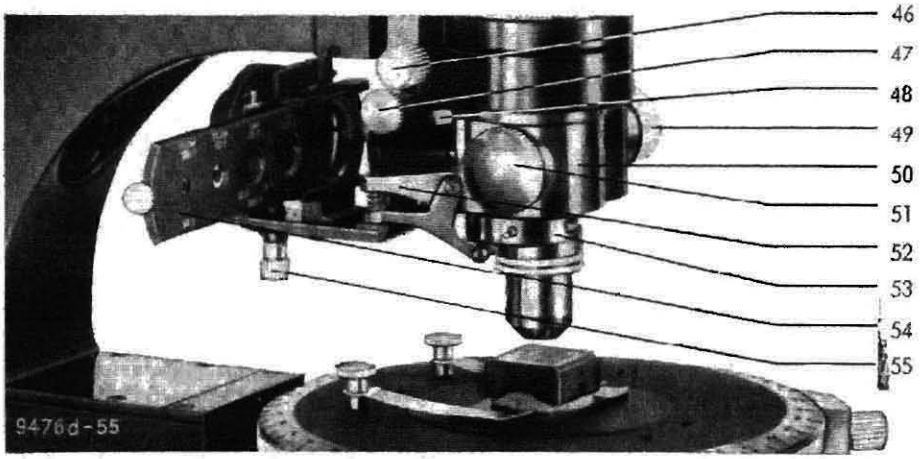

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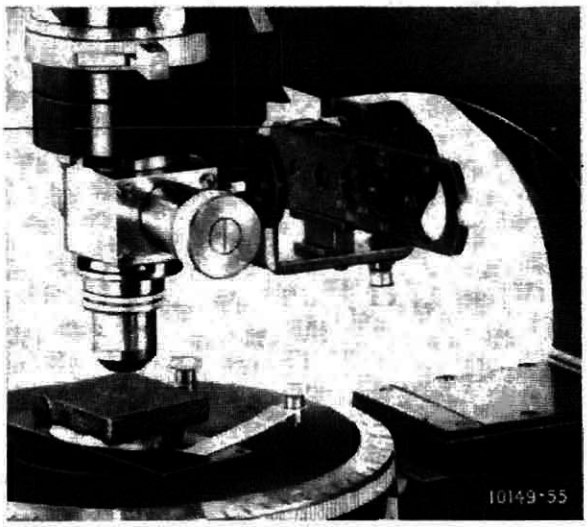

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