LEITZ ORTHOLUX

THE LARGE RESEARCH MICROSCOPE
WITH BUILT-IN ILLUMINATING SYSTEM

ERNST LEITZ - WETZLAR
THE "ORTHOLUX" RESEARCH MICROSCOPE

Features and Advantages.

Stand
Modern design — Large stable stand of light alloy, top portion and foot cast integrally, thus making the instrument easy to carry without straining the focusing motions.

STAND TURNED AWAY FROM THE OBSERVER WHEN IN USE.
Well arranged object stage perfectly free and easily accessible. Convenient orientation and focusing of the specimen. Easy and comfortable position of body and arm, eliminating fatigue.

Coarse and fine focusing motions on double ball bearings, ensuring consistently reliable and accurate working, unaffected by atmospheric influences.

Dual coarse focusing controls and micrometer screw with graduated drumhead (1 interval = 0.001 mm), set low, and not altering their level while the specimens are being focused.

Automatic protection of specimen and front lens.

Object Stage
Large built-in square mechanical stage for specimens up to $100 \times 50 \text{ mm}$, traversing area $76 \times 40 \text{ mm}$.

Vernier readings and reorientation irrespective of the position of the stage clips. Low-set mechanical stage drives. Vertical adjustment on dovetail slide independent of the rack and pinion motion for the observation of thick objects in incident light.

Illumination
Lamp and optical illuminating components incorporated in the foot of the microscope, where they are axially and permanently centred.

Holder for ground glass and daylight filter.
Illumination  HIGH INTENSITY, adjustable for:
Binocular and monocular observation in transmitted or incident light (ordinary or polarised),
Dark-ground microscopy,
Photomicrography,
Drawing or demonstrations, by projection on to the work-table.

Substage  New arrangement. Berek condenser with two iris diaphragms.
Even and brilliant illumination of the entire field of view from the lowest-power objectives (large field) to the highest-power immersion objectives.
Aperture iris diaphragm and field-of-view iris diaphragm.
Practical arrangement of the diaphragms between the condenser lenses. Supplementary optical components of the illuminating system in the microscope stand.
Diaphragms controlling the aperture react strictly at all magnifications.
Exchanging or screwing apart of condenser components no longer necessary when changing over to the lowest magnifications. Swinging out the top lens of the condenser alters its focal length, ensuring perfect and uniform illumination of the larger fields covered by these low power objectives. The lower iris diaphragm, previously used as a field stop, now acts precisely as an aperture diaphragm.
The centrability of the double-diaphragm condenser ensures the optimum conditions of illumination, even where already existing and unmatched objectives are used.
The vertical rack motion serves only for focusing the interchangeable dark-ground condensers.
See the Leitz publication: "The essential features of our new microscope substage". (Bulletin of the Leitz scientific Laboratories).

Below: Schematic illustration showing the path of rays in the ORTHOLUX Microscope for transmitted light (left) and incident light (right).
ORTHOLUX
The large Research Microscope with built-in illuminating system

A. ORTHOLUX Model I for transmitted light only.

Constitutional details as outlined above.

Large built-in square mechanical stage.

Quadruple nosepiece on detachable carrier.

Berek condenser with two iris diaphragms, N.A. 0.95*, with centring device on changing slide.

Detachable lamp housing with illuminating lenses in helical focusing mount, filter holders, ground glass and daylight filter, low-voltage filament lamp 6 volts 3-6 amps, including one spare bulb.

Interchangeable binocular body with inclined eyepieces, with correction mount on one eyepiece-tube.

Research Microscope ORTHOLUX I, complete, equipped with binocular body with inclined eyepieces; in carrying case, without objectives or eyepieces ............................................... ORBIN 817.—

Research Microscope ORTHOLUX I, complete, but with monocular tube with inclined eyepiece; in carrying case, without objectives or eyepieces .................................................. ORMON 718.—

Prices of single accessories:

Interchangeable binocular body with inclined eyepieces and correction mount for one eyepiece; without eyepieces .......... ORSEN 144.—

Case for same (advisable when several tubes are being purchased) ................................................................. OEEP 10.—

Interchangeable monocular tube with inclined eyepiece, but without eyepiece ................................................ OREEF 45.—

Case for same (advisable when several tubes are being purchased) ................................................................. OEEF 6.—

Interchangeable straight photographic tube without draw-tube, in case ......................................................... ORFOT 28.—

The quadruple nosepiece on special changing slide, including compensating optical components . . . . . . . . . . . . ORFIR 42.—

Case for storing same (advisable when procured subsequently) ............................................................................... OEEZG 8.—

The Berek condenser with two iris diaphragms, N.A. 0.95 in centring mount on changing slide ......................... ORBER 100.—

Case for storing same (advisable when procured subsequently) ............................................................................... OGEV 5.—

* A higher illuminating aperture than 1.0 is only attained when the surface of the condenser and the object slide are united by a film of oil. Similarly, Abbe illuminating apparatus with the usual condenser apertures of 1.20 or 1.40 only give aperture values above 1.0, when their upper lens is connected to the object slide by a layer of oil.

The resolving power is primarily a function of the numerical aperture of the microscope objective. Experience shows that, in the majority of cases, the optimum quality of image is attained with an illuminating aperture which is about two-thirds the aperture of the objective. The N.A. of 0.95 as a maximum thus enables the optimum illuminating aperture to be used for all objectives. For those rare cases in which it is desired, for special reasons, to increase the condenser aperture to the full objective aperture, we recommend the provision of the interchangeable Condenser Cap N.A. 1.40, which can only be used with oil.

Interchangeable Condenser Cap, N.A. 1.40 ............................................................................................................... Codeword: Orapu RM 15.—
For Dark-ground Microscopy:

Dark-ground condenser D 0.80, on slide with centring
mount; in case............................................. OREBP 95.—
Dark-ground condenser D 1.20, on slide with centring
mount; in case............................................. ORNCl 69.—
Intermediate adapter with iris diaphragm, for dark-ground
work, fitting all objectives................................... IRTIS 9.—

For the Drawing or Demonstration
of Microscopic Specimens:

Drawing Mirror, capable of being swung in or out, for
placing on the inclined monocular tube.................... PIIGL 14.—
Case for same.................................................. OEE7T 4.—
(As regards the use of drawing heads and suitable drawing
stages, see our Catalogue D 7670.)

For work in Polarised Light:

Small revolving object stage with stage clips, for placing
on the large mechanical stage, in case..................... ORDRE 17.—
Polarising filter for slipping on to the lower lens of the
condenser....................................................... ORPOL 15.—
Analyser-filter for inserting in the objective nosepiece of
the microscope................................................ ORNAL 15.—

Optical Outfits:

All microscope objectives may be used advantageously
on the ORTHOLUX research microscope. A complete
selection of the objectives we manufacture is contained in
our general microscope catalogues.

A few outfits that can be recommended:

(a) Achromatic objectives 18, 3, 6L
Oil Imm. 1/12, N. A. 1.30
Huyghens eyepiece ×6, periplanatic eyepieces ×8
and ×10

Binocular OEEIz 188.—
Monocular OEE7M 159.—

(b) Achromatic objectives 3P, 4
Fluorite objectives 0.4, Oil Imm. 1/12, N. A. 1.32
Periplanatic eyepieces ×6, ×8, ×12

Binocular OEE7A 303.—
Monocular OEE7WS 268.—

(c) Apochromats 16 mm, 8 mm, 4 mm
(with correction mount), Oil Imm. 2 mm, N. A. 1.32
Periplanatic eyepieces ×6, ×8, ×12

Binocular OFEEW 508.—
Monocular OFEE7 473.—

Specially suitable for bacteriological examinations:
Fluorite Oil Immersion Objective 1/16, N. A. 1.32, initial
magnification ×114............................................ FLUXU 140.—

The Model I ORTHOLUX is equipped for transmitted
light microscopy only, and cannot subsequently be supplement-
ated for working with incident light (except by using
a separate light source.)

B. ORTHOLUX Model II for transmitted and incident
light, change-over by sliding mirror incorporated in the
microscope foot for diverting the illuminating rays. Other-
wise as ORTHOLUX I.

Increase in price for ORTHOLUX II Additional Codeword: ORAUF 60.—
For the examination of unpolished objects by incident light (Biology, Chemistry, etc.):
- Ultropak Illuminating Attachment on interchangeable angular carrier for ORTHOLUX II, including case: ORULT 62.00
- The same auxiliary device, but with polarising arrangement for eliminating disturbing reflexes on the object: ORUPO 102.00
- In conjunction with the Ultropak the special UO-Objectives are used as listed in our Ultropak catalogues for the various modes of microscopy.

For bright and dark-ground examination of highly reflecting objects (polished metal sections, etc.) by incident light:
- PANOPAK (Ultrapak illumination and vertical illuminator on slide for rapid change), with Iris-Diaphragm, mounted on interchangeable angular carrier, for ORTHOLUX II, including case: ORPAN 290.00
- For particulars of suitable objectives for use with the Panopak, see our catalogue G 7695, page 22.
- Mirror-arrangement, interchangeable with the microscope lamp, for using daylight: ORTAG 38.00

The following items are necessary for the ORTHOLUX MICROSCOPES:
- For use on A.C. supplies:
  - Regulating transformer with ammeter: REDYX 45.00
  - Spare lamp for A.C.: LINID 2.50
- For use on D.C. supplies:
  - Regulating resistance with ammeter (including extra charge for special lamp housing): ORGLI 70.00
  - Additional Codeword for spare lamp: LAGLE 4.00
- Large transparent cover of Astralon, extremely light and rigid: ORAST 40.00
- When ordering this cover with the microscope a simple packing-case can be provided on request for dispatch, instead of the cabinet included in the prices of the microscope stands.

Reduction in price for use of INORT 25.00

All our camera attachments and our photomicrographic apparatus MA IV a and MA IV b are suitable for photomicrographic work with the ORTHOLUX microscope. It should be stated when ordering these instruments, that they are intended for use with the ORTHOLUX. Prices on application.

Monochromatic yellow-green glass filter for photomicrographic work: ORFIL 11.00