MICROSCOPES

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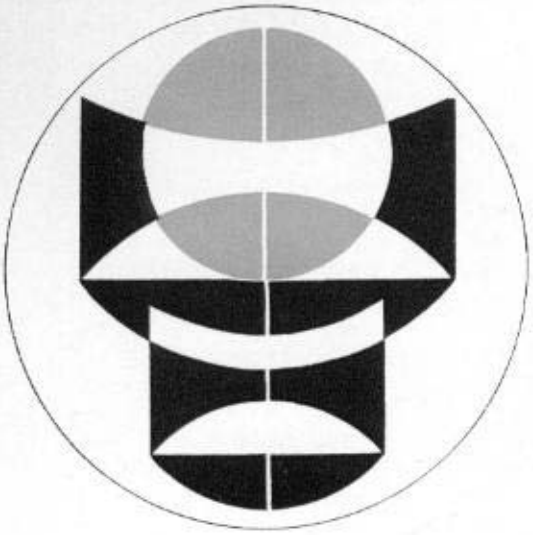
SSSR · MÖSKVA



The Soviet optico-mechanical industry turns out a wide range of different microscope types which are used with great success at factories, educational establishments, and scientific centres both in the Soviet Union and abroad.

Using the latest advances in optical instrument-making, a large contingent of research workers, engineers, and technicians are continually perfecting existing microscopes, improving their optical systems and components, and developing fundamentally new designs and types of microscopes for a great variety of applications.

Recently a number of microscopes for spectral and other microscopic investigations have been developed (**МСЛ-2, МЛК-1, МСК-1, МИК-3,** etc.). At the same time, some microscopes have been brought up to date (among them the "Biolam" series of microscopes, **ММУ-3, МИМ-9, МИК-4, ММР-2Р,** etc.), which has made it possible not only to improve quality and increase productivity, but also to extend the service life of the instruments.

A wide choice of all kinds of objectives and eyepieces along with the high quality of Soviet-made optics known throughout the world, high technical characteristics, convenience and reliability in operation, and functional styling are all features of the Soviet-made microscopes designed to handle various problems in science and technology.

Please send all inquiries for additional information about Soviet-made instruments and orders for them to:

121200 Moscow, Smolenskaya-Sennaya, 32–34,
V/O MASHPRIBORINTORG

Telegrams: **Moscow Mashpribor**

Telephone: **244-27-75**

Telex: **7235, 7236**

CONTENTS

Biological Microscopes

CLASSROOM MICROSCOPE
ШМ-1

The ШМ-1 class-room microscope is the simplest biological microscope designed for bright-field, transmitted-light work at low magnifications.

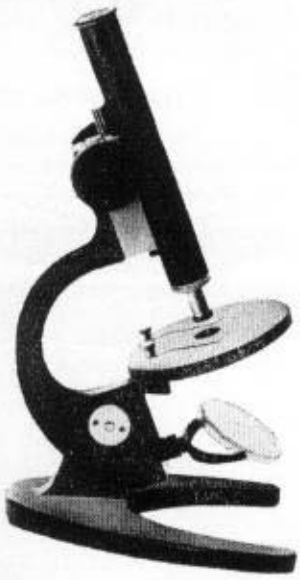
The ШМ-1 class-room microscope is an aid in the study of natural sciences at secondary and technical schools and other educational establishments and is intended to show a variety of preparations to students and to examine minute details of objects invisible to the unaided eye.

In addition to direct observation in the microscope, it may be supplemented with a variety of attachments or simple fixtures to project microscopic objects onto a viewing screen, to take their photographs on photographic plates (photomicrography), to draw sketches, or to measure objects, etc.

The microscope comes complete with two achromatic objectives (8×0.20 and 20×0.40) and three Huygens eyepieces (7×, 10× and 15×).

BASIC CHARACTERISTICS

Total magnification of microscope	**56 to 300×**
Angle of tilt of microscope	**≤45°**
Overall dimensions, mm	**130×180×270**
Mass, kg	**2.4**



SIMPLIFIED BIOLOGICAL MICROSCOPE
МБУ-4

The МБУ-4 is a simplified biological microscope mainly intended for transmitted light, bright-field work and also for the examination of opaque objects at low magnifications. The МБУ-4 microscope is designed for use at general and technical secondary schools and other educational establishments as an aid in the study of natural sciences, at botanical, agricultural, zoological and medical laboratory, and also at factory laboratories.

The microscope comes complete with two achromatic objectives (8×0.20 and 20×0.40) and three Huygens eyepieces 7×, 10× and 15×).

BASIC CHARACTERISTICS

Magnification of microscope	**56 to 300×**
Drawtube travel per revolution of micrometer drum, mm	**0.1**
Drawtube travel per division of micrometer drum rotation, mm	**0.002**
Overall dimensions, mm	**130×205×305**
Mass, kg	**2.7**

TRICHINA MICROSCOPE
МБУ-6

The МБУ-6 trichina microscope is a simplified biological microscope intended for the detection and examination of trichina and other parasites in meat and meat products.

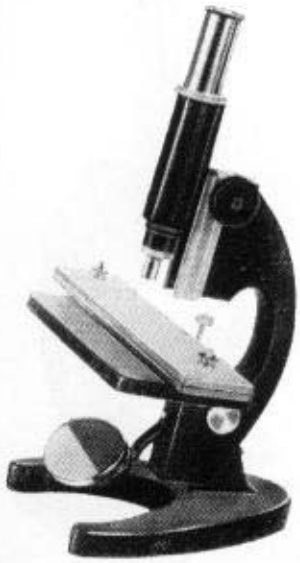
The microscope is designed for transmitted-light, dark-field work.

The microscope is widely used by meat-packing laboratories, livestock breeders, etc.

The microscope comes complete with two achromatic objectives (3.7×0.11 and 8×0.20) and one Huygens eyepiece (7×).

BASIC CHARACTERISTICS

Magnification of microscope	26× and 56×
Drawtube travel per control knob revolution, mm	20
Stage dimensions, mm	100×170
Overall dimensions, mm	190×220×325
Mass, kg	2.86



PRACTICAL BIOLOGICAL MICROSCOPE
"BIOLAM P-1"

The "Biolam P-1" practical microscope is intended for the transmitted-light, bright-field examination of transparent objects for educational and laboratory purposes in medicine, biology, zoology, and allied sciences.

With the "Biolam P-1" microscope, objects are examined through a monocular attachment.

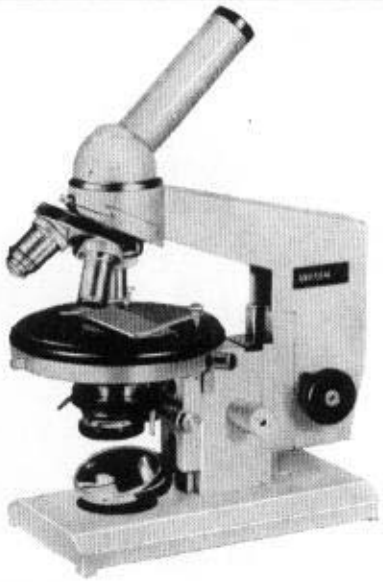
The light system is a demountable mirror which is used for work with both natural (daylight) illumination and with a type ОИ-19 illuminator supplied on separate order.

The microscope comes complete with three achromatic objectives (8×0.20, 40×0.65, and 90×1.25) and two compensating eyepieces (7× and 15×).

The "Biolam P-1" microscope is widely used by secondary and higher educational establishments, research institutions, and medical laboratories.

BASIC CHARACTERISTICS

Magnification of microscope	56 to 1350×
Focusing range, mm:	
coarse focusing	40
fine focusing	2
Overall dimensions, mm	230×140×350
Mass, kg	3.1



PRACTICAL BIOLOGICAL MICROSCOPE
"BIOLAM P-2"

The "Biolam P-2" practical biological microscope is intended for he transmitted-light, bright-field examination of transparent objects nd is widely used by educational and research establishments in tudies in the fields of medicine, biology, zoology, and allied sciences.

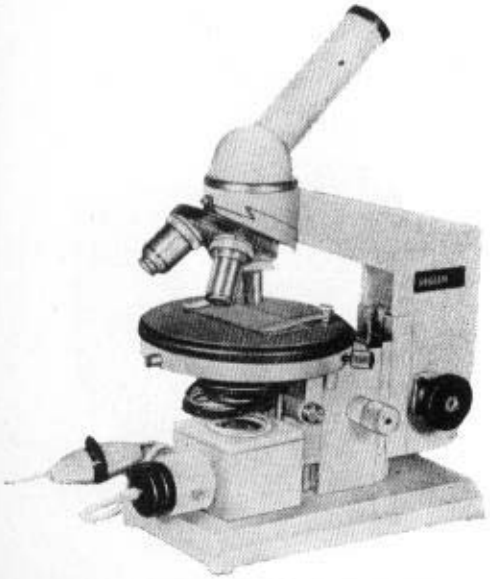
With the "Biolam P-2" microscope, objects are examined through monocular attachment.

The illuminating system of the microscope incorporates a type ОИ-32 simplified illuminator fitted into a locating socket in the base of the microscope, and a demountable mirror for work with natural daylight) illumination or with a type ОИ-19 illuminator supplied on eparate order.

The microscope comes complete with four achromatic objectives 8×0.20, 20×0.40, 40×0.75, and 90×1.25) and two compensating yepieces (7× and 15×).

BASIC CHARACTERISTICS

Magnification of microscope	56 to 1350×
Focusing range, mm:	
coarse focusing	40
fine focusing	2
Overall dimensions, mm	230×140×350
Mass, kg	3.1



PRACTICAL BIOLOGICAL MICROSCOPE
"BIOLAM P-3"

The "Biolam P-3" practical biological microscope is intended for the transmitted-light, bright-field examination of transparent objects in investigations in the fields of medicine, biology, zoology, and allied sciences at educational and research establishments, in medical laboratories, etc.

The optical system of the microscope has provisions for observation of objects through a type АУ-12 binocular attachment.

The illuminating system is a demountable mirror which can be used with both natural (daylight) illumination and with a type ОИ-19 illuminator supplied on separate order.

The microscope comes complete with three achromatic objectives (8×0.20, 40×0.65, and 90×1.25) and two paired compensating eyepieces (7× and 10×).

BASIC CHARACTERISTICS

Magnification of microscope	84 to 1350×
Focusing range, mm:	
coarse focusing	40
fine focusing	2
Overall dimensions, mm	230×140×350
Mass, kg	3.7

PRACTICAL BIOLOGICAL MICROSCOPE

"BIOLAM P-4"

The "Biolam P-4" practical biological microscope is designed for he transmitted-light, bright-field examination of transparent objects.

The optical system of the microscope has provisions for observa- ions of microscopic objects through a type АУ-12 binocular attach- nent.

The illuminating system of the microscope incorporates a type ОИ-35 special-purpose demountable illuminator fitted into a locating ocket in the microscope base, and a demountable mirror for work vith both natural (daylight) illumination and with a type ОИ-19 lluminator supplied on separate order.

The microscope comes complete with three achromatic objectives 20×0.40, 40×0.65, and 90×1.25), one planachromatic objective 9×0.20), two paired compensating eyepieces (7× and 10×), and one neasuring compensating eyepiece with a magnification of 7×.

The "Biolam P-4" microscope is used by educational and research stablishments, medical laboratories in studies in the fields of bio- ogy, zoology and allied sciences.

BASIC CHARACTERISTICS

Magnification of microscope	94.5 to 1350×
Focusing range, mm:	
coarse focusing	40
fine focusing	2
Overall dimensions, mm	230×350×350
Mass, kg	4.5

PRACTICAL BIOLOGICAL MICROSCOPE

"BIOLAM P-5"

The "Biolam P-5" practical biological microscope is designed for the transmitted-light, bright-field examination of transparent objects in various investigations in the fields of medicine, biology, zoology and allied sciences.

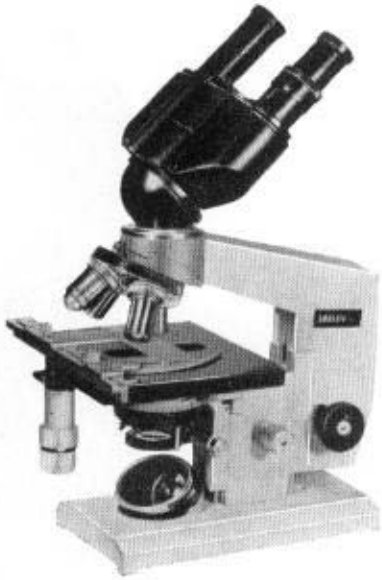
With the "Biolam P-5" microscope, objects are examined through a type АУ-12 binocular attachment. The illuminating system is a demountable mirror which can be used with both natural (daylight) illumination and a type ОИ-19 illuminator supplied on separate order.

The microscope comes complete with three achromatic objectives (8×0.20, 40×0.65 and 90×1.25), and two paired compensating eyepieces (7× and 10×).

The "Biolam P-5" microscope is widely used by educational and research establishments and medical laboratories.

BASIC CHARACTERISTICS

Magnification of microscope	84 to 1350×
Focusing range, mm:	
coarse focusing	40
fine focusing	2
Overall dimensions, mm	230×140×350
Mass, kg	4.5



PRACTICAL BIOLOGICAL MICROSCOPE

"BIOLAM P-6"

The "Biolam P-6" practical biological microscope is designed for the transmitted-light, bright-field examination of transparent objects and is widely used by educational and research establishments and medical laboratories in investigations in the fields of biology, zoology, medicine and allied sciences.

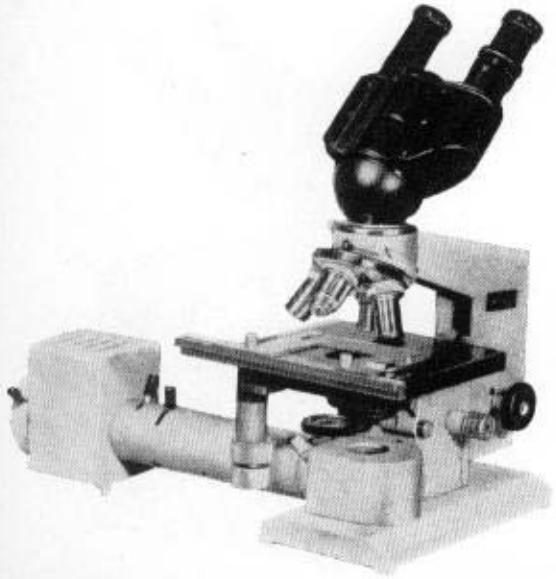
The optical system of the microscope has provisions for observation of microscopic objects through a type АУ-12 binocular attachment.

The illuminating systems of the microscope incorporates a type ОИ-35 special-purpose demountable illuminator fitted into a locating socket in the microscope base. Besides, the standard equipment of the microscope includes a demountable mirror for work with natural (daylight) illumination or with a type ОИ-19 illuminator available on separate order.

The microscope comes complete with three achromatic objectives (20×0.40, 40×0.65, and 90×1.25), two paired compensating eyepieces (7× and 10×), and one measuring compensating eyepiece with a magnification of 7×.

BASIC CHARACTERISTICS

Magnification of microscope	**84 to 1350×**
Focusing range, mm:	
coarse focusing	**40**
fine focusing	**2**
Overall dimensions, mm	**230×140×350**
Mass, kg	**4.5**



STUDENTS' BIOLOGICAL MICROSCOPE

"BIOLAM C-1"

The "Biolam C-1" students' biological microscope is designed for the transmitted-light, bright-field examination of transparent objects in investigations in the fields of medicine, zoology, biology, and allied sciences.

With the "Biolam C-1" microscope, objects are examined through a monocular attachment.

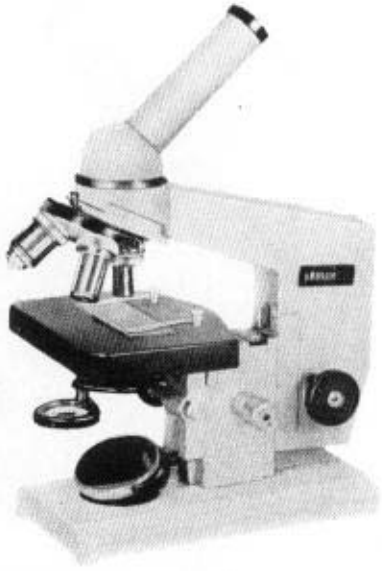
The illuminating system is a demountable mirror which can be used with both natural (daylight) illumination and a type ОИ-19 illuminator supplied on separate order.

The microscope comes complete with three achromatic objectives (8×0.20, 40×0.65, and 90×1.25), and two compensating eyepieces (7× and 15×).

The "Biolam C-1" microscope is used by a secondary and higher educational establishments, research instiutions, medical and other laboratories.

BASIC CHARACTERISTICS

Magnification of microscope	**56 to 1350×**
Focusing range, mm:	
coarse focusing	**40**
fine focusing	**2**
Overall dimensions, mm	**230×140×350**
Mass, kg	**2.9**



STUDENTS' BIOLOGICAL MICROSCOPE

"BIOLAM C-2"

The "Biolam C-2" students' biological microscope is designed for he transmitted-light, bright-field examination of transparent objects n investigations in the fields of medicine, zoology, biology and allied ciences.

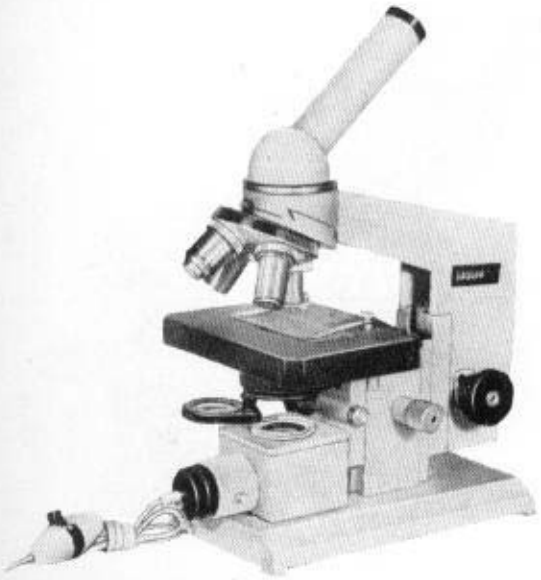
With the "Biolam C-2" microscope, objects are viewed through monocular attachment.

The illuminating system of the microscope incorporates a type OИ-32 simplified demountable illuminator fitted into a locating socket n the microscope base. Besides, the standard equipment of the nicroscope includes a demountable mirror for work with both natural daylight) illumination and a type OИ-19 illuminator supplied on eparate order.

The microscope comes complete with three achromatic objectives 8×0.20, 20×0.40, and 40×0.65), one planachromatic objective 3.5×0.10, two compensating eyepieces (10× and 15×), and one Huygens eyepiece with a magnification of 7×.

BASIC CHARACTERISTICS

Magnification of microscope	24.5 to 600×
Focusing range, mm:	
fine focusing	2
coarse focusing	40
Overall dimensions, mm	230×140×350
Mass, kg	2.9



STUDENTS' BIOLOGICAL MICROSCOPE

"BIOLAM C-3"

The "Biolam C-3" students' biological microscope is designed for the transmitted-light, bright-field examination of transparent objects in investigations in the fields of medicine biology, zoology, and allied sciences.

The optical system of the microscope has provisions for observation of objects through a type АУ-12 binocular attachment.

The illuminating system is a demountable mirror which can be used for work with both natural (daylight) illumination and a type OИ-19 illuminator supplied on separate order.

The microscope comes complete with four achromatic objectives (8×0.20, 40×0.65, 85×1.0 and 90×1.25), and two paired compensating eyepieces (7× and 10×).

BASIC CHARACTERISTICS

Magnification of microscope	84 to 1350×
Focusing range, mm:	
coarse focusing	40
fine focusing	2
Overall dimensions, mm	230×140×350
Mass, kg	3.45

TRAVELLING BIOLOGICAL MICROSCOPE

"BIOLAM Д-1"

The "Biolam Д-1" travelling biological microscope is designed for the transmitted-light, bright-field examination of transparent objects in educational and research work in the fields of medicine, biology, zoology, and allied sciences under expeditionary conditions.

With the "Biolam Д-1" microscope, objects are viewed through a monocular attachments. The standard equipment of the microscope includes a demountable mirror for work with both natural (daylight) illumination and a type ОИ-19 illuminators supplied on separate order.

The microscope comes complete with three achromatic objectives (40×0.75, 40×0.65, and 90×1.25), one planachromatic objective (9×0.20, two compensating eyepieces (10× and 15×), and one Huygens eyepiece with a magnification of 7×.

BASIC CHARACTERISTICS

Magnification of microscope	**63 to 1350×**
Focusing range, mm:	
coarse focusing	**40**
fine focusing	**2**
Overall dimensions, mm	**230×140×350**
Mass, kg	**2.9**

TRAVELLING BIOLOGICAL MICROSCOPE

"BIOLAM Д-2"

The "Biolam Д-2" travelling biological microscope is designed for the transmitted-light, bright-field examination of transparent objects in educational and research work in the fields of medicine, zoology, biology and allied sciences under expeditionary conditions.

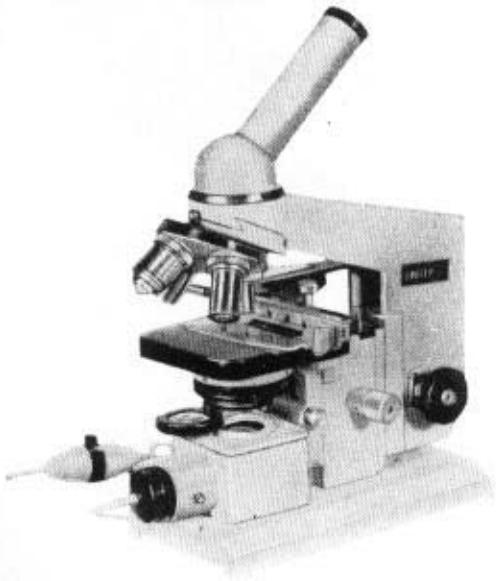
With the "Biolam Д-2" microscope, objects are viewed through a monocular attachment.

The illuminating system of the microscope employes a type ОИ-32 simplified demountable illuminator fitted into a locating socket in the microscope base. Besides, the standard equipment of the microscope includes a demountable mirror for work with natural (daylight) illumination and type ОИ-19 illuminator supplied on separate order.

The microscope comes complete with three achromatic objectives (8×0.20, 40×0.65, and 90×1.25), two compensating eyepieces (10× and 15×), and one Huygens eyepiece with a magnification of 7×.

BASIC CHARACTERISTICS

Magnification of microscope	**56 to 1350×**
Focusing range, mm:	
coarse focusing	**40**
fine focusing	**2**
Overall dimensions, mm	**230×140×350**
Mass, kg	**2.9**



BIOLOGICAL RESEARCH MICROSCOPE

МБИ-3

The МБИ-3 biological research microscope is the simplest type of research microscope designed for the transmitted-light, bright- and dark-field exmination of transparent objects with both direct and oblique illumination. The microscope is employed by medical and biological laboratories in the investigations of hystological sections, microbiological preparations, to count formed blood elements, and also in other fields of science, technology and industry.

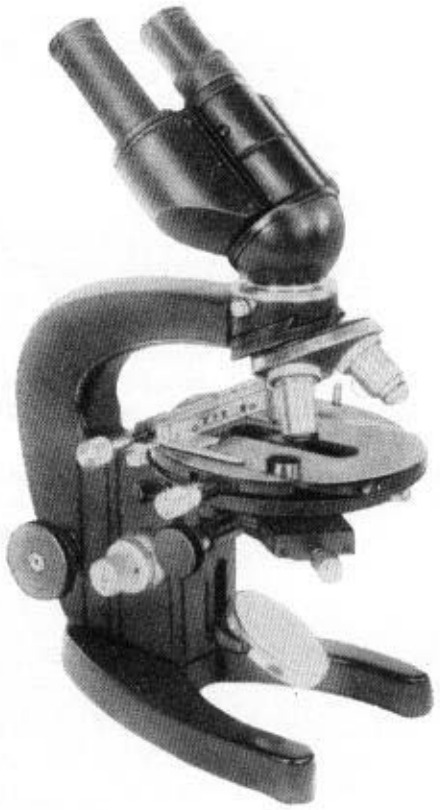
The microscope is convenient to use owing to an inclined binocular attachment which has a magnifiotion of 1.5× and a horizontally arranged stage. The binocular attachment may be replaced with a straight monocular drawtube to take photographs of the objects viewed.

All work on the microscope can be carried out with both natural (daylight) and artificial illumination. In the latter case, it will be good practice to employ types ОИ-19 and ОИ-31 illuminators which are not included in the standard equipment of the microscope, but may be had on separate order.

The microscope comes complete with four apochromatic objectives (10×0.30, 20×0.65, 60×0.7 to 1.0, and 90×1.30), one achromatic objective (90×1.25), and six sizes of compensating eyepieces (5×, 7×, 10×, 15×, 20×).

BASIC CHARACTERISTICS

Magnification of microscope	**75 to 1350×**
Least division of micrometer drum, mm	**0.002**
Overall dimensions, mm	**130×220×350**
Mass, kg	**5.1**



UNIVERSAL RESEARCH MICROSCOPE

МБИ-6

The МБИ-6 microscope is a universal research microscope designed for work under laboratory conditions at medical, biological, physical, and chemical research institutions and may also be used in many fields of technology.

The МБИ-6 microscope can be used for examination and photography of objects by transmitted light with direct and oblique illumination; for dark-field, polarized-light, phase-contrast, and also for reflected-light bright- and dark-field work.

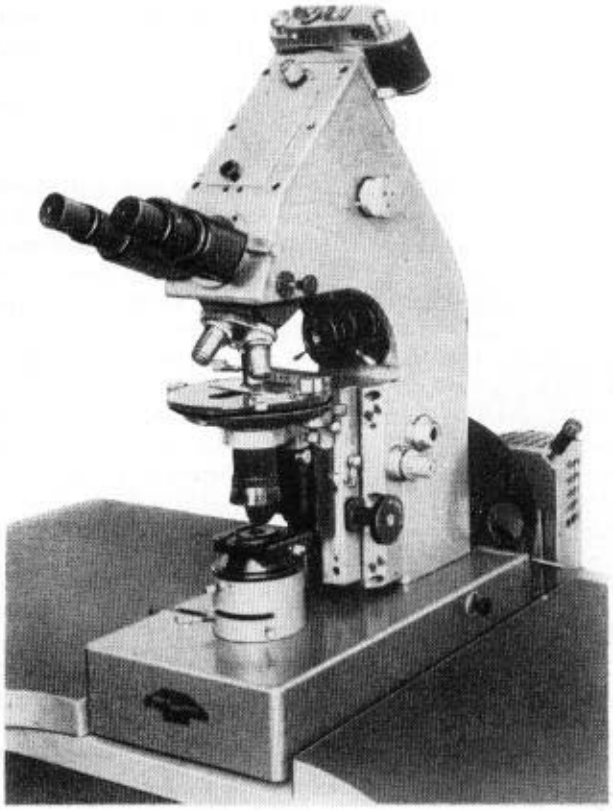
For photography work, the microscope can take attachable photographic cameras, namely a 35-mm film camera with 24×36 mm negatives, or a 9×12 cm plate camera.

The microscope comes complete with four planochromatic objectives for transmitted-light work (3.5×0.10, 9×0.20, 20×0.40, and 40×0.65), three apochromatic objectives (10×0.65, 60×0.70 to 1.0 and 90×1.30), five achromatic objectives for phase-contrast work (10×0.30, 20×0.40, 40×0.65, 90×1.25, and 40×0.75), one apochromatic objective for phase-contrast work (70×1.23), and four achromatic epi-objectives for reflected-light work (9×0.20, 20×0.40, 40×0.65, and 95×1.0).

The standard equipment of the microscope also includes five sizes of compensating eyepieces (5×, 7×, 10×, 15×, and 20×), two Huygens eyepieces (7× and 10×), and five photographic eyepieces (7×, 10×, 12.5×, 15×, and 20×).

BASIC CHARACTERISTICS

Magnification of microscope:	
with transmitted light	**17.5 to 2250×**
with reflected light	**45 to 2375×**
Least increment in object displacement, mm	**0.1**
Maximum height of object in reflected-light work, mm	**115**
Overall dimensions, mm	**1100×750×1440**
Mass, kg	**100**



LARGE BIOLOGICAL MICROSCOPE

МББ-1А

The МББ-1А large biological microscope is designed for the examination of transparent objects by transmitted light against bright and dark field with direct and oblique illumination.

The МББ-1А microscope is used by medical and biological research laboratories in the investigations of hystological sections, microbiological preparations and similar objects and is especially recommended for work which involves living low-contrast objects.

The contrast of unstained preparations may be improved and objects in vivo may be investigated by the phase contrast method. As an alternative, investigations may be carried out with polarized light.

For observations by reflected light against a dark and bright field, it is recommended to employ a type ОИ-21 illuminator which is not regularly supplied with the outfit but may be had on separate order.

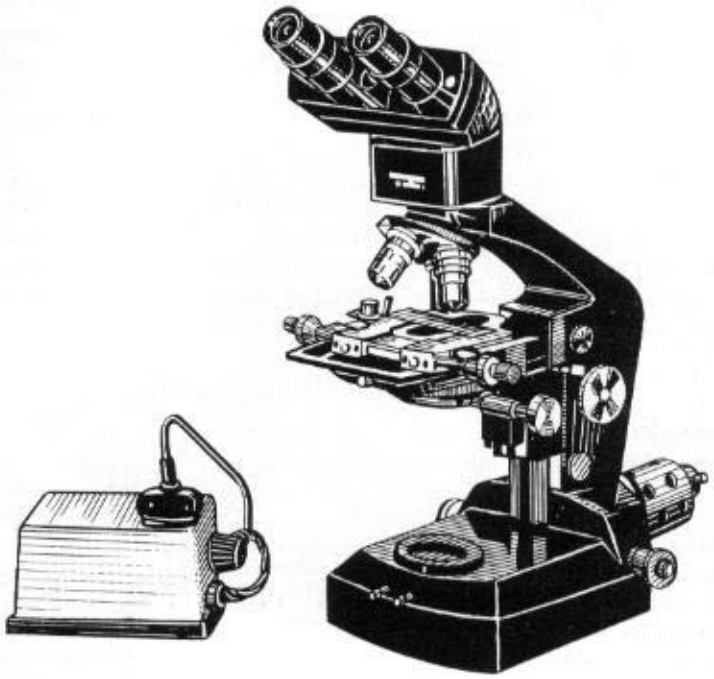
The microscope comes complete with eight objectives as follows: one planachromatic objective (3.5×0.10), six apochromatic objectives (10×0.30; 20×0.65; 40×0.95; 60×0.7–1.0; 70×1.23; and 90×1.30), one achromatic objective (40×0.75) and two sizes of compensating eyepieces.

The microscope is fitted with a type АУ-26 demountable binocular attachment with a triple revolving nosepiece which makes it possible to change the magnification of the attachment in steps (1.1×, 1.6×, and 2.5×).

Photographs of microscopic objects can be taken with type МФН photomicrographic attachments supplied on separate order.

BASIC CHARACTERISTICS

Magnification of microscope	**27 to 2250×**
Stage:	
range of rotation	**0–180°**
range of vertical displacement, mm	**0–50**
range of transverse displacement, mm	**0–40**
forward and backward displacement range of mechanical stage, mm	**0–60**
Accuracy of stage and mechanical stage displacement readings, mm	**0.1**
Overall dimensions, mm	**200×450×400**
Mass, kg	**6.5**



UNIVERSAL RESEARCH MICROSCOPE

МБИ-11

The МБИ-11 is a universal research microscope used by the labo-tories of medical, biological, zoological and other research institu-ons. The microscope is adapted for the observation of objects by ansmitted light against a bright field with direct and oblique illu-ination, against a dark field by the phase contrast method, by flected light against a dark or bright field, and also with mixed umination, that is, with the object simultaneously illuminated from low, through the condensor, and from above, through the objective.

The microscope is fitted with a type АУ-26 demountable binocular tachment whose magnification can be adjusted to 1.1×, 1.6×, and ×. Instead of the binocular attachment, the microscope can be ted with a type МФН photomicrographic attachment to take photo-aphs of microscopic objects.

The microscope comes complete with six apochromatic objectives transmitted-light work (10×0.30; 20×0.65; 40×0.95; 60×0.7–1.0; ×1.23; 90×1.30), and four epi-objectives for reflected-light work ×0.20; 21×0.40; 40×0.65; and 95×1.0). The microscope is also pplied with four sizes of compensating eyepieces (7×, and 10×), d a Huygens eyepiece with a magnification of 7×.

BASIC CHARACTERISTICS

agnification of optical train of microscope:	
by transmitted light (at maximum numerical aperture of 1.30)	**92.4 to 2700×**
by reflected light	**69 to 2375×**
age displacement range in two mutually rpendicular directions, mm	**55×40**
curacy of stage displacement readings, mm	**0.1**
aximum working distance, mm	**90**
erall dimensions, mm	**470×200×530**
ass, kg	**26.2**

INVERTED BIOLOGICAL MICROSCOPE

МБИ-13

The МБИ-13 inverted biological microscope is intended for visual observations, taking photographs and motionpicture films of living biological objects enclosed in a culture medium at a fixed temperature of +37 °C or at any other predetermined temperature in the range from +25 to +42 °C.

The microscope is adapted for observations by transmitted light against a bright or dark field, with polarized light, and by the phase contrast method.

The instrument is a stationary outfit consisting of an inverted biological microscope proper, a constant temperature cabinet, and a picture-taking compartment containing single-shot and continuous-sequence mechanisms.

Photographs are taken with a ZORKY camera, and continuous sequencies with type KCP-1M or 16СП cine cameras which can be actuated by both their own drives and the single-shot and continuous-sequence mechanisms.

The microscope can be used for investigations in oncology, virusology, experimental hystology, cytology, and other fields of medicine.

The microscope comes complete with two planachromatic objectives (3.5×0.10 and 9×0.20), three achromatic objectives (20×0.40; 40×0.65; and 60×0.85), and twelve types of eyepieces for visual observations and for taking photographs and motion pictures.

Using the electric circuitry of the picture-taking control console, the operator can do the following:

turn on the lamp of the microscope illuminator;

take motion pictures at a speed of 8 to 32 frames per second when using a type KCP-1M camera or at a speed of 8 to 64 frames per sec when using a type 16СП cine camera;

take continuous sequencies at speeds of 6 to 10 frames per sec;

take sequencies of single shots at intervals of 2 to 30 sec between the exposures;

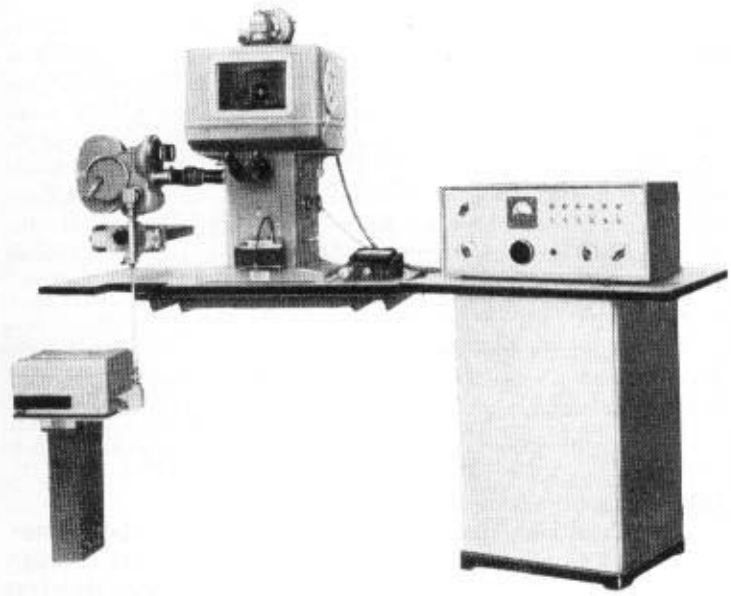
take sequencies of single shots at intervals of 1.5 to 15 min between the exposure;

take single shots.

BASIC CHARACTERISTICS

Magnification:

in visual observations with binocular attachment	26 to 900×
in visual observations with monocular attachment	17 to 600×
in taking photographs	10.5 to 750×
in taking motion pictures with KCP-1M cine camera	6 to 412×
in taking motion pictures with 16СП cine camera	2.8 to 195×
Displacement range of mechanical stage in two mutually perpendicular directions, mm	20×20
Accuracy of mechanical stage displacement readings, mm	0.1
Overall dimensions, mm	1400×750×1650
Mass, kg	50



UNIVERSAL RESEARCH MICROSCOPE

МБИ-15

The МБИ-15 biological microscope is a universal research microscope adapted for visual observation and taking photographs of objects by all existing microscopic methods.

With transmitted light, objects can be viewed against a bright field with direct and oblique illumination, against a dark field by the phase and interference contrast methods, and also with polarized light.

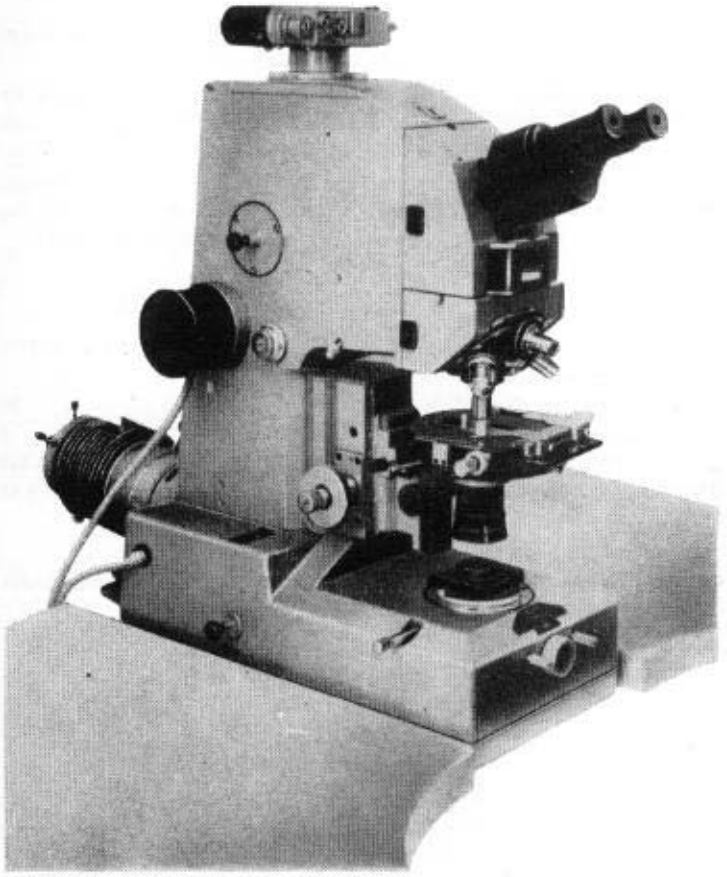
With reflected light, observations can be carried out on a bright and dark field, with mixed illumination, or using the fluorescence of the objects excited by the blue-violet region of the light spectrum in the range 400–450 nm and by ultra-violet rays up to 360 nm. Besides, the objects under observation can be illuminated from above and simultaneously from below using the phase contrast or dark-field technique. Photographs of objects are taken with a 35-mm film camera on 24×36 mm negatives and with a plate camera on 9×12 cm negatives. In taking photographs, the objects are illuminated from an impulse light source.

The microscope comes complete with seventeen objectives for transmitted light work, namely four planachromatic objectives (3.5×0.10; 9×0.20; 20×0.40; and 40×0.65), six apochromatic objectives (20×0.65; 40×0.95; 60×1.30; two 70×1.23; and 90×1.3), seven achromatic objectives (10×0.30; 10×0.40; 20×0.40; 30×0.90; 40×0.65; and two 90×1.25), three epi-objectives for reflected-light work (9×0.20; 21×0.40; and 40×0.65), and one achromatic objective (95×1.25). For visual observations and taking photographs, the microscope is furnished with a 4× Huygens eyepiece, a 7× Koelner eyepiece, compensating eyepieces (5×, 7×, 10×, 15×, and 20×) and a 12.5× orthoscopic objective.

The microscope is widely used in investigations in the fields of biology, botany, zoology and medicine, and also in other fields of science and technology.

BASIC CHARACTERISTICS

Magnification of microscope:	
in visual observations	**28 to 2000×**
in taking photographs	**18 to 3000×**
Overall dimensions, mm	**1400×700×1140**
Mass, kg	**100**



TRAVELLING BIOLOGICAL MICROSCOPE

"BIOLAM Д-3"

The "Biolam Д-3" travelling biological microscope is designed for the transmitted-light, bright-field examination of transparent objects in the fields of medicine, zoology, biology, and allied sciences under expeditionary conditions.

The optical system of the microscope has provisions for observation of objects through a type АУ-12 binocular attachment.

The illuminating system is a demountable mirror which can be used for work with both natural (daylight) illumination and type ОИ-19 illuminator supplied on separate order.

The microscope comes complete with three achromatic objectives (20×0.40, 40×0.65, and 90×1.25), one planachromatic objective (9×0.20), and two paired compensating eyepieces (7× and 10×).

BASIC CHARACTERISTICS

Magnification of microscope	**94.5 to 1350×**
Focusing range, mm:	
coarse focusing	**40**
fine focusing	**2**
Overall dimensions, mm	**230×140×350**
Mass, kg	**3.45**

Stereoscopic Microscopes

STEREOSCOPIC MICROSCOPE
МБС-2

The МБС-2 stereoscopic microscope on a universal stand forms an erect image of objects in solid relief which can be observed by both transmitted and reflected light. The microscope is used in the laboratories of medical, biological, zoological and other institutions in investigations on living objects, plants, etc.

The universal stand of the microscope is constructed so that it allows sufficient room for manipulation of objects which cannot be accommodated on the microscope stage.

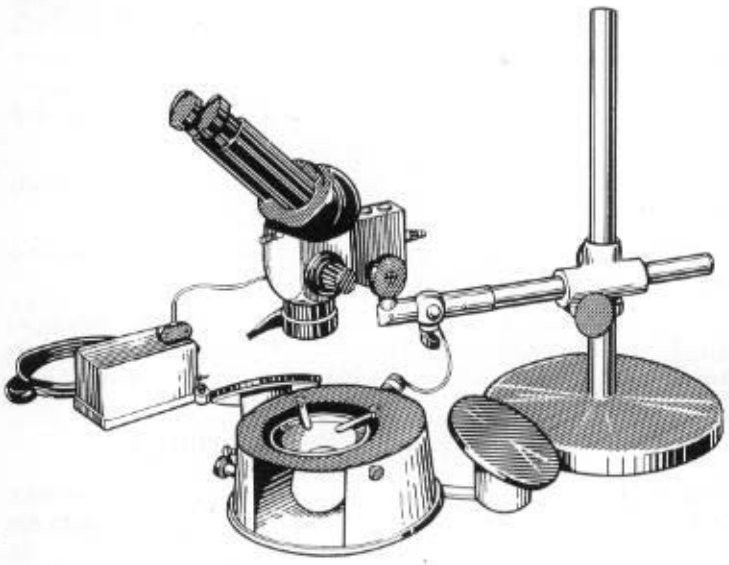
The МБС-2 microscope is widely used in many other fields of science, technology and industry. Its objective is a special system built into an optical head and composed of four lenses with a focal distance of 80 mm and two paired Galileo systems. By rotating these systems, it is possible to obtain two ranges of magnification.

A distinction of the optical train of the МБС-2 microscope is a large working distance which remains the same for all magnifications, and a wide field of view. The objects observed in the МБС-2 microscope can be photographed with a type МФН-5 photomicrographic attachment which is not included in the standard equipment of the microscope.

Observations with the МБС-2 microscope can be made with both natural (daylight) illumination and special-purpose illuminators.

BASIC CHARACTERISTICS

Magnification of microscope	**3.5 to 88×**
Linear field of view, mm	**39 to 2.6**
Working distance of microscope, mm	**64**
Magnification of optical head	**0.57×, 1×, 2×, 4×, 7×**
Magnification of eyepieces	**6×, 8×, 12.5×**
Magnification of eyepiece micrometer	**8×**
Overall dimensions, mm	**400×245×460**
Mass, kg	**17.5**



STEREOSCOPIC POLARIZING MICROSCOPE

МПС-2

The МПС-2 stereoscopic polarizing microscope is designed for the investigation of petrographic sections of normal size (28×48 mm) and enlarged size (60×90 mm) by transmitted and reflected light (unpolarized and polarized). The microscope can also be used to investigate both polished and unpolished microsections with direct and oblique illumination. With the image produced by the МПС-2 microscope in solid relief, it is an easy matter to identify both transparent and some opaque minerals from their properties manifested in natural state, which fact considerably simplifies studies into the structural relationships between minerals. Alternating these observations with examinations of a polished microsection by reflected diffuse light, one can readily bring out most of the transparent and opaque minerals in a single section.

Owing to the long working distance of the microscope, a variety of manipulations can be done on the object.

Photographs of the image can be taken with a type МФН-5 photomicrographic attachment.

The microscope is used in mineralogy, petrography, mineralography, crystallography, chemistry, physics, metallurgy, textile industry or fibre examinations, and some other fields of science and industry.

BASIC CHARACTERISTICS

Magnification of microscope	**4 to 100×**
Overall dimensions, mm	**540×200×500**
Mass, kg	**20**

BINOCULAR MICROSCOPE
БМ-51-2

The БМ-51-2 binocular microscope is designed for examination of minute objects, engravings, surface patterns, fractures, breaks, scratches, and surfaces under small magnifications in cases where it is important to have a stereoscopic image.

Owing to the excellent stereoscopic effect produced by the microscope, details of objects can be viewed at any depth and of any shape.

The microscope is used in the assembly of precision mechanisms, and also in research work in medicine, botany, and zoology.

The БМ-51-2 binocular microscope is in effect a combination of two self-contained optical trains each using a 0.7× objective. The prisms of each optical train are built into a separate drawtube, and the top covers of the draw tubes mount eyepieces wit a magnification of 12.5×.

BASIC CHARACTERISTICS

Total magnification of microscope	**8.75×**
Linear field of view, mm	**25**
Maximum working distance, mm	**140**
Overall dimensions, mm	**dia. 160×300**
Mass, kg	**3.5**

STEREOSCOPIC MICROSCOPE
МБС-200

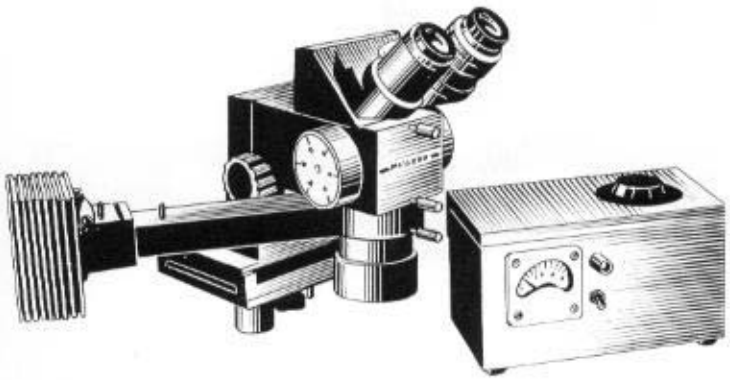
The МБС-200 is a stereoscopic microscope forms a direct image of the object in solid relief, by reflected light.

The illuminating system of the microscope produces shadowless illumination.

The microscope is widely used by the laboratories and shops of the microelectronics industry.

BASIC CHARACTERISTICS

Magnification of microscope	**16.2 to 204×**
Field of view, mm	**7.3 to 1.0**



STEREOSCOPIC MICROSCOPE

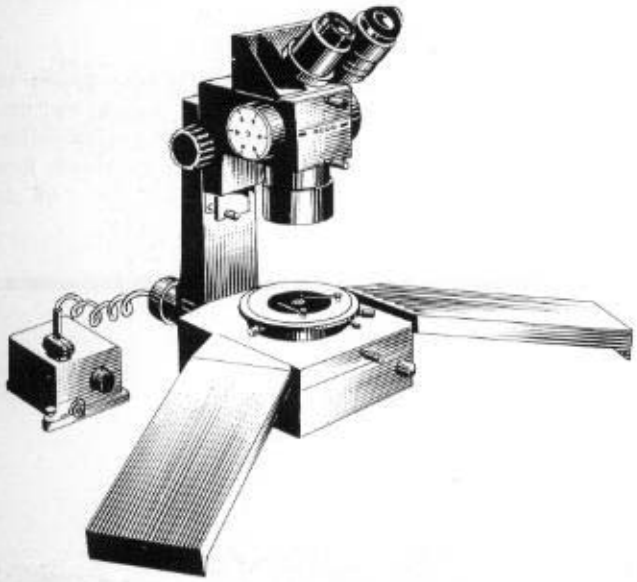
MCCO

The MCCO stereoscopic microscope is intended for the examina-
on of small objects, touching up photographic plates and other uses
wolving transmitted and reflected light, and mixed illumination.

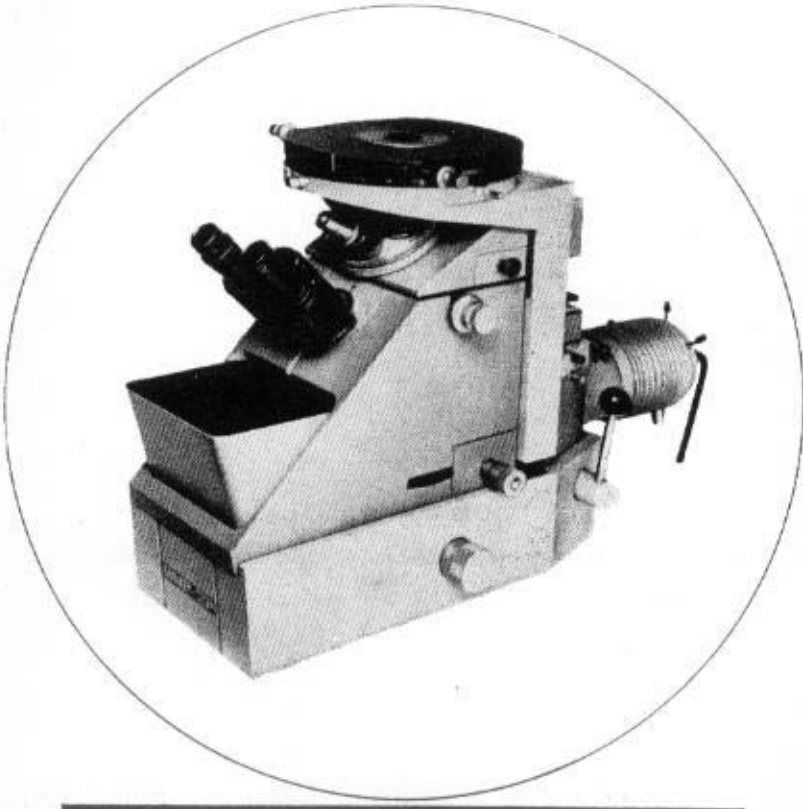
The MCCO microscope can successfully be employed in the labo-
tories and shops of the microelectronics industry.

BASIC CHARACTERISTICS

Magnification of microscope	3.5 to 120×
Field of view, mm	44 to 1.8



Metallographic Microscopes



SIMPLIFIED METALLOGRAPHIC MICROSCOPE
ММУ-3

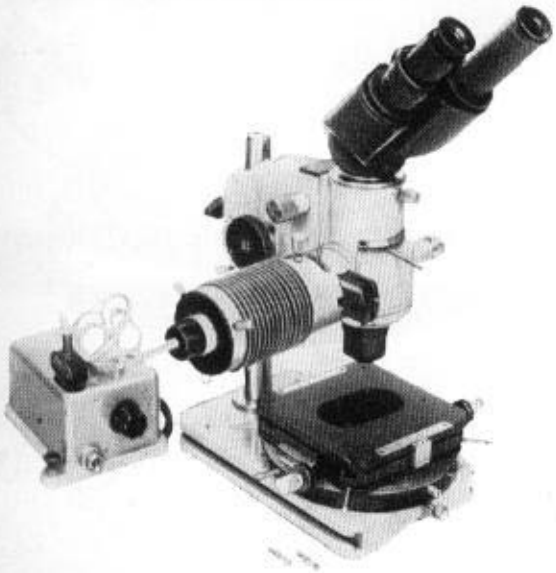
The ММУ-3 simplified metallographic microscope is designed for isual examination of opaque objects by reflected light on a bright nd a dark field, and by polarized light.

With the ММУ-3 microscope, objects can be photographed with Type МФН photomicrographic attachment.

The microscope is used at factory laboratories and for a variety f shop work.

BASIC CHARACTERISTICS

lagnification	100×, 300×, 500×
ange of stage displacements in two mutually erpendicular directions, mm	40×20
laximum height of object, mm	100
verall dimensions, mm	250×220×330
lass, kg	6



METALLOGRAPHIC SHOP MICROSCOPE
MMP-2

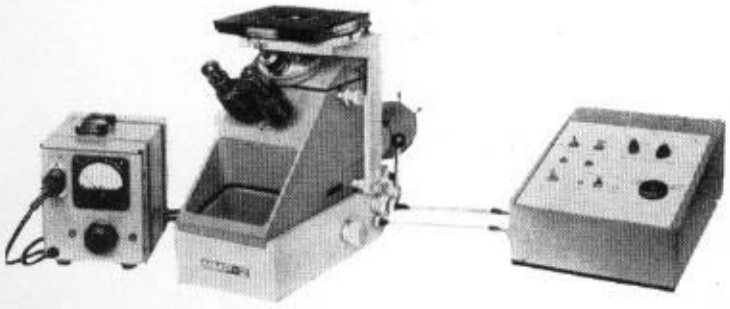
The MMP-2 is a metallographic shop microscope of inverted construction (that is, with the interchangeable stage located at the top), adapted to examine, inspect, and take photographs of the microstructure of metal and alloy microsections by the bright-field technique with direct and oblique illumination, and also with dark-field and polarized-light illumination. The optical systems of the microscope gives standard total magnifications necessary for visual observations with a binocular attachment, on a viewing screen, and for taking photographs of objects on 9×12 cm plates or on film with 24×36 mm negatives.

The automatically and manually actuated stages have motions in two mutually perpendicular directions. The objectives can be changed by rotating a revolving nosepiece.

The MMP-2 microscope is widely used in the shop laboratories of metal-working and metallurgical plants, at research institutions and other establishments concerned with the working and testing of metals.

BASIC CHARACTERISTICS

Magnification of microscope:	
in visual observation	80 to 1000×
in taking photographs	50 to 1000×
Displacement range of stage in two mutually perpendicular directions, mm	30×20
Accuracy of stage displacement readings, mm	0.1
Overall dimensions, mm	550×225×395
Mass, kg	24.5



METALLOGRAPHIC MICROSCOPE
MMP-2P

The MMP-2P metallographic microscope is intended to examine and take photographs of the microstructures of metals, alloys and other opaque objects on a bright field by direct and oblique illumination, on a dark field, and with polarized light.

The optical system of the microscope provides standard magnifications necessary for visual observations with a binocular attachment, on a viewing screen, and in taking photographs of objects on 9×12 cm plates and on a film with 24×36 mm negatives.

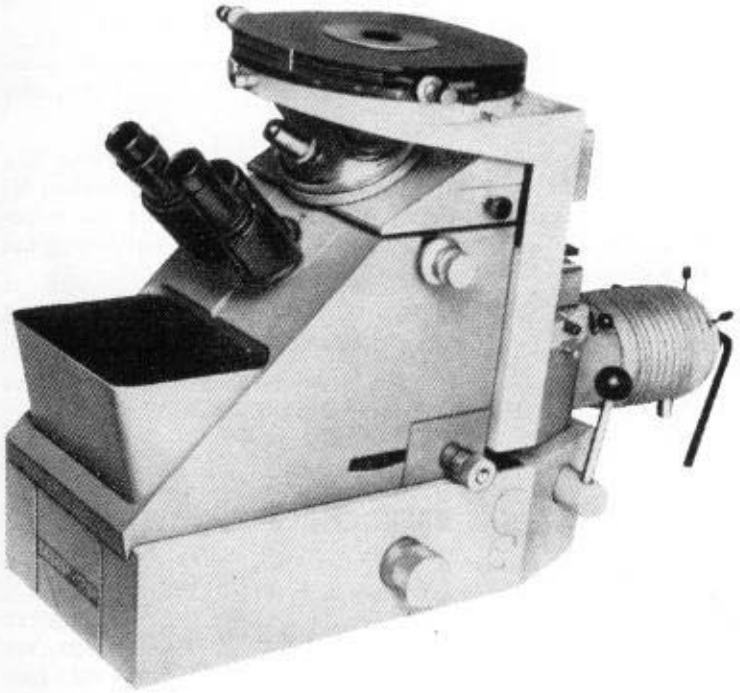
In contrast to the MMP-2, the MMP-2P microscope comes complete with a stage manually controlled in two mutually perpendicular directions.

The objectives are changed with the aid of a revolving nosepiece.

The MMP-2P microscope is used in the shop laboratories of metal-working and metallurgical plants, at research institutions, and other establishments.

BASIC CHARACTERISTICS

Magnification of microscope:	
in visual observation	**80 to 1000×**
in taking photographs	**50 to 1000×**
Range of stage displacement in two mutually perpendicular directions, mm	**30×20**
Accuracy of stage displacement readings, mm	**0.1**
Overall dimensions, mm	**550×225×395**
Mass, kg	**24.5**



UNIVERSAL METALLOGRAPHIC MICROSCOPE
МИМ-9

The МИМ-9 universal metallographic microscope is a research instrument designed to observe visually and to take photographs of the microstructures of opaque objects on a bright field with direct and oblique illumination, on a dark field with polarized light, by the phase contrast and interference method, to measure relief, and to evaluate fractures and microsections on a point-scale basis.

The optical system of the МИМ-9 microscope incorporating planachromatic and planapochromatic objectives produces high-quality images of the objects.

Photographs are taken on 9×12 cm and 13×18 cm plates and on film with 24×36 mm negatives. The microscope has provisions for examination of objects on a viewing screen. The stage of the microscope has mechanisms for moving the object in a rectangular coordinate system.

The stage is lifted, the bellows of the camera are extended, and the exposure times are set from a control console.

The microscope is widely used in the metallographic laboratories of research institutions, in industry, and at educational establishments.

BASIC CHARACTERISTICS

Magnification of microscope	**20×, 30×, 100–4000×**
Range of stage displacement in two mutually perpendicular directions, mm	**15×15**
Size of viewing screen, mm	**130×180**
Overall dimensions, mm	**1400×750×1200**
Mass, kg	**200**

Polarizing Microscopes

RESEARCH POLARIZING MICROSCOPE

МИН-8

The МИН-8 is a large polarizing microscope designed to examine ansparent objects by transmitted unpolarized and polarized light in onoscopic and orthoscopic light beams.

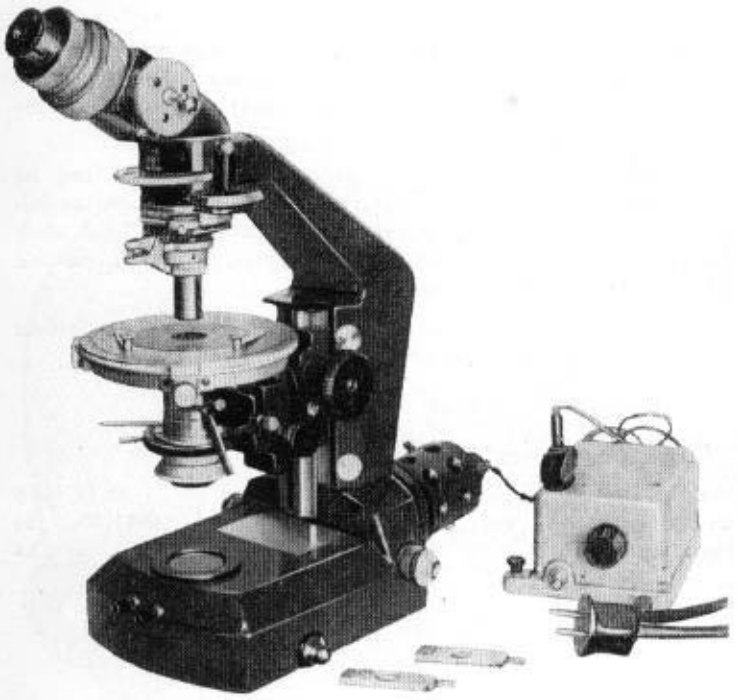
The microscope comes complete with two planachromatic objec-es (3.5×0.10 and 9×0.20), four achromatic objectives (20×0.40;)×0.65; 60×0.85, and 90×1.25), two sizes of Huygens eyepieces × and 8×), and two photographic eyepieces (10× and 15×).

The microscope is adapted to take a type ОИ-12 illuminator which ay be used in the examination of opaque objects by reflected light oth polarized and unpolarized). When fitted with type МФН photo-icrographic attachments, the microscope can take photographs of e objects. Besides, the microscope can be fitted with a Fyodorov age, a type КФ-4 attachment for phase-contrast work, and type И-13 dark-field condensor which are not however included in the andard equipment of the microscope and may be had on separate der.

The microscope is used by crystallographic, mineralogical, petro-aphic, chemical, physical, and many other research and educational boratories.

BASIC CHARACTERISTICS

agnification of microscope	17.5 to 1350×
int displacement due to rotation of stage, mm	0–0.005
nge of stage rotation	360°
curacy of stage rotation readings	6′
verall dimensions, mm	210×390×380
ass, kg	8.4



TRAVELLING POLARIZING MICROSCOPE

МПД-1

The МПД-1 is a small polarizing microscope designed to examine mineralogical sections or powered minerals and rocks by transmitted light under expeditionary conditions. Investigations can be carried out with both unpolarized and polarized light in orthoscopic and conoscopic light beams.

The microscope comes complete with a planachromatic objective (9×0.20), two achromatic objectives (40×0.65 and 60×0.85), and two sizes of eyepieces (5× and 8×).

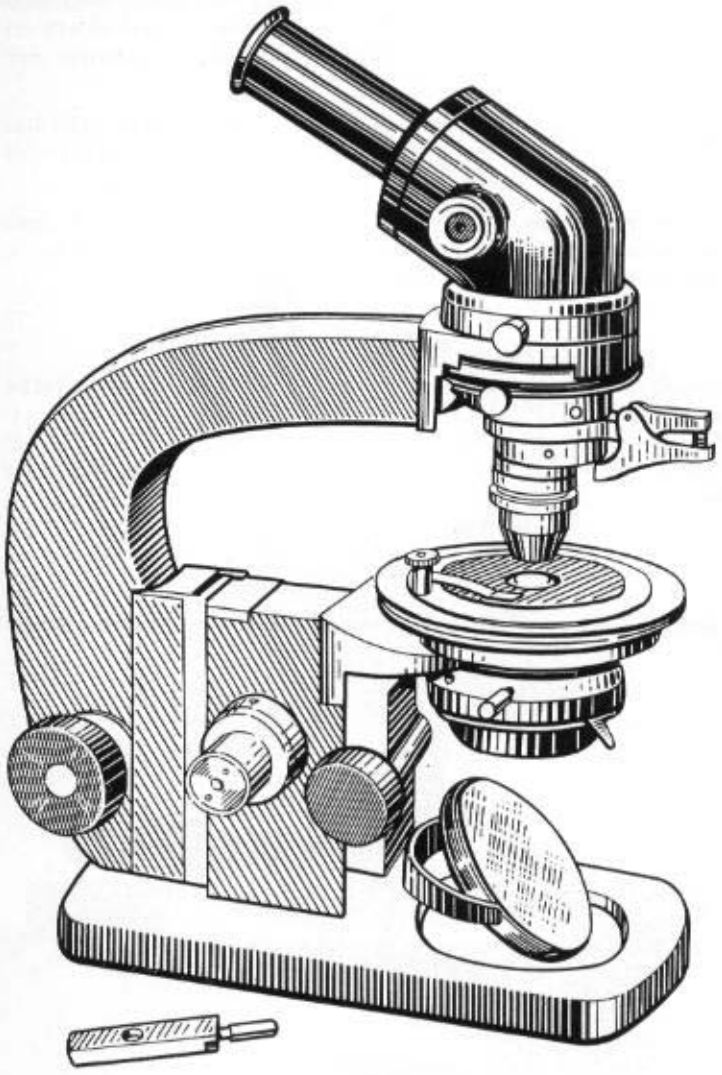
The microscope is adapted for the investigation of minerals by the so-called immersion technique which is best suited to field conditions and reveals the optical characteristics of crystals sufficient to identify a given material.

Depending on the conditions at hand, examinations can be carried out with both natural (daylight) illumination and with special-purpose illuminators. The latter may be types ОИ-19 and ОИ-31 which are not included in the standard equipment of the microscope and may be had on separate order.

The microscope may take a type КФ-4 standard phase-contrast attachment and also a type ОИ-13 dark-field condensor.

BASIC CHARACTERISTICS

Magnification of microscope	**45 to 900×**
Overall dimensions, mm	**290×200×100**
Mass, kg	**3.4**



ORE MICROSCOPE
МИН-9

The МИН-9 ore microscope is a polarizing microscope designed to examine opaque objects by polarized and unpolarized reflected light on a bright field.

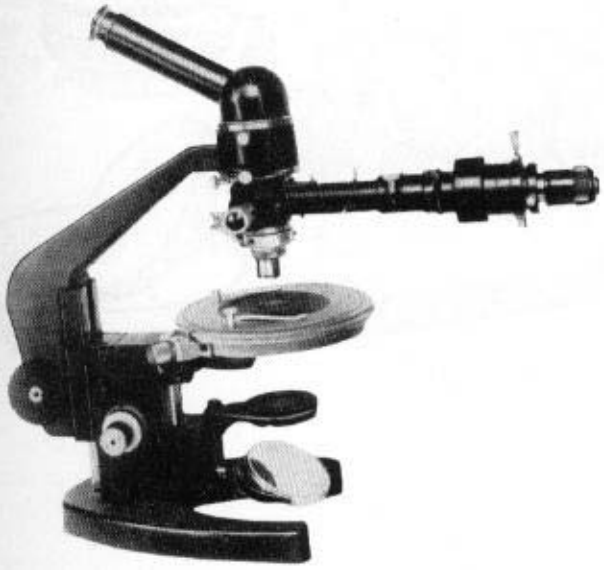
It can also be used for examination of transparent objects by transmitted light at low magnifications with both unpolarized and polarized light.

The microscope comes complete with seven achromatic objectives (4.7×0.11; 9×0.20; 11×0.20; 21×0.40; 30×0.65; 40×0.65; and 95×1.25) and four different types of eyepieces (7×, 10×, 15×).

The microscope is mainly used by mineralographic and coal-petrographic laboratories, but can also be used by laboratories in other fields of science, technology and industry.

BASIC CHARACTERISTICS

Magnification of microscope	**33 to 1425×**
Least graduation of stage	**1°**
Accuracy of stage rotation readings	**6′**
Overall dimensions, mm	**190×320×380**
Mass, kg	**5**



Fluorescence Microscopes

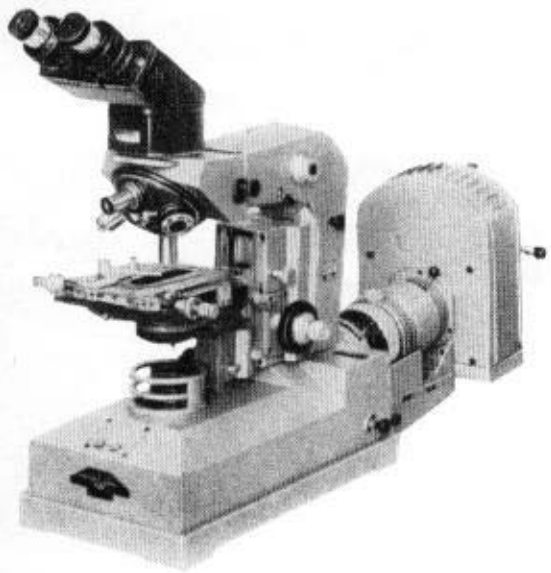
FLUORESCENCE MICROSCOPE
МЛ-2А

The МЛ-2А fluorescence microscope is intended to examine micro-biological, hystological and other preparations by the fluorescence excited by the blue-violet region of the spectrum and also by rays with a wavelength of up to 360 nm.

In fluorescence examination, objects may be illuminated either from above through an opaque illuminator and the objectives or from below using a type ОИ-13 dark-field condensor or a type КФ-4 phase-contrast attachment included in the standard equipment of the instrument. The microscope may also be used to examine objects by a mixed illumination. In this case, the light exciting fluorescence is directed simultaneously from above and from below; the preparation is illuminated by the phase-contrast or dark-field method.

The microscope may additionally be used for the examination of objects in the visible region of the spectrum by transmitted light on a bright field and by reflected light on a dark field.

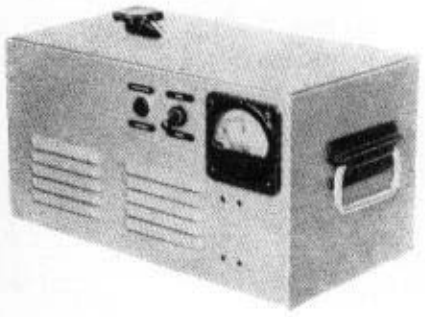
The transmitted and reflected light objectives supplied with the microscope (10×0.40Л; 20×0.40Л; 30×0.90Л; 40×0.65Л; 40×0.75Л; 60×1.25Л; 60×1.0Л; 65×1.1Л; 90×1.25Л 21×0.40; 40×0.65; 60×0.30ФЛ; 40×0.65ФЛ; and 90×1.25ФЛ) produce a high quality image of the objects.



The МЛ-2А microscope comes complete with a type АУ-26 binocular attachment for examination of objects and a type МФН-10 monocular photographic attachment for taking photographs of objects with a ZORKY-4 photographic camera.

BASIC CHARACTERISTICS

Magnification of microscope:	
in visual observations	**53 to 1350×**
in taking photographs	**20 to 540×**
Range of stage displacement in two mutually perpendicular directions, mm	**40×60**
Maximum height of object in reflected light work, mm	**90**
Overall dimensions, mm:	
microscope	**625×225×416**
electric control panel	**380×210×220**
Mass, kg:	
microscope	**24**
electric control panel	**20.5**



FLUORESCENCE MICROSCOPE
МЛ-2Б

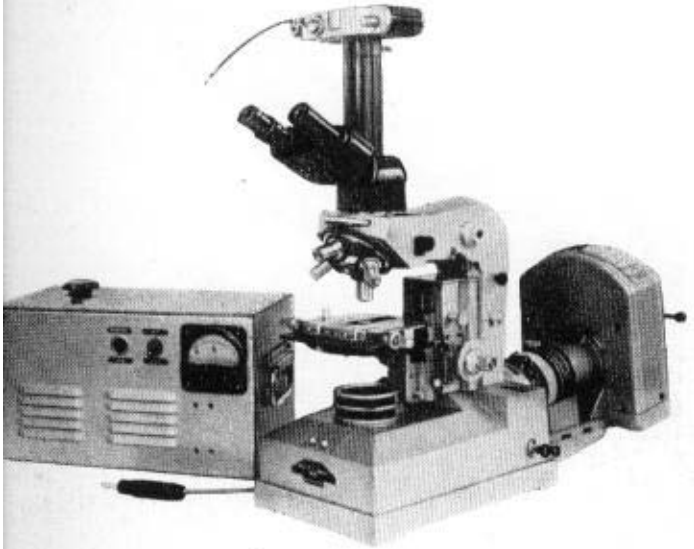
The МЛ-2Б fluorescence microscope is intended to examine micro-iological, hystological and other preparations by the fluorescence xcited by the blue-violet region of the spectrum and also by ultra-iolet rays with a wavelength of up to 360 nm.

In performance and design, the МЛ-2Б is almost identical with ıe МЛ-2А microscope.

The МЛ-2Б microscope comes complete with a trinocular attach-ıent for observation and photomicrography and a type МФН-10 ıonocular photographic attachment to take photographs of objects ith a ZORKY-4 photographic camera.

BASIC CHARACTERISTICS

lagnification of microscope:	
in visual observations	**53 to 1350×**
in taking photographs	**20 to 648×**
ange of stage displacement in two mutually erpendicular directions, mm	**40×60**
laximum height of object in reflected light work, mm	**90**
verall dimensions, mm:	
microscope	**625×225×416**
electric control panel	**380×210×220**
lass, kg:	
microscope	**24**
electric control panel	**20.5**



FLUORESCENCE MICROSCOPE
МЛ-2В

The МЛ-2В fluorescence microscope is intended to examine micro-biological, hystological and other preparations by the fluorescence excited by the blue-violet region of the spectrum and also by ultra-violet rays with a wave-length of up to 360 nm.

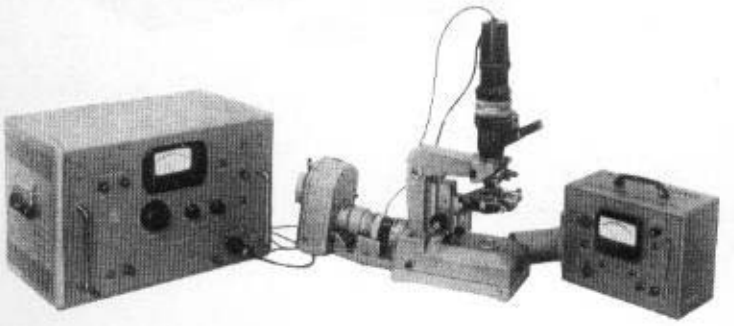
In performance and design, the МЛ-2В is almost identical with the МЛ-2А microscope.

The МЛ-2В has an additional facility for evaluating the intensity of fluorescence of the object. For this purpose, the standard equip-ment of the microscope includes a ФМЭЛ-1А photometric attachment with accessories.

The МЛ-2В microscope is fitted with a type АУ-26 binocular attachment for observation of objects and a type МФН-10 monocular attachment to take photographs of objects with a ZORKY-4 photo-graphic camera.

BASIC CHARACTERISTICS

Magnification of microscope:	
in visual observations	**53 to 1350×**
in photomicrography	**20 to 540×**
Range of stage displacements in two mutually perpendicular directions, mm	**40×60**
Maximum height of object in reflected light work, mm	**90**
Minimum area on preparation in photometry, mm	**0.001**
Overall dimensions, mm:	
microscope	**625×225×416**
electric control panel	**380×210×220**
Mass, kg:	
microscope	**24**
electric control panel	**20.5**



FLUORESCENCE MICROSCOPE
МЛ-3

The МЛ-3 fluorescence microscope is designed to examine and take photographs of biological sections in the reflected light of fluorescence excited by the blue-violet region of the spectrum in the wave-length range 400–650 nm and by ultra-violet rays with a wave-length of up to 360 nm.

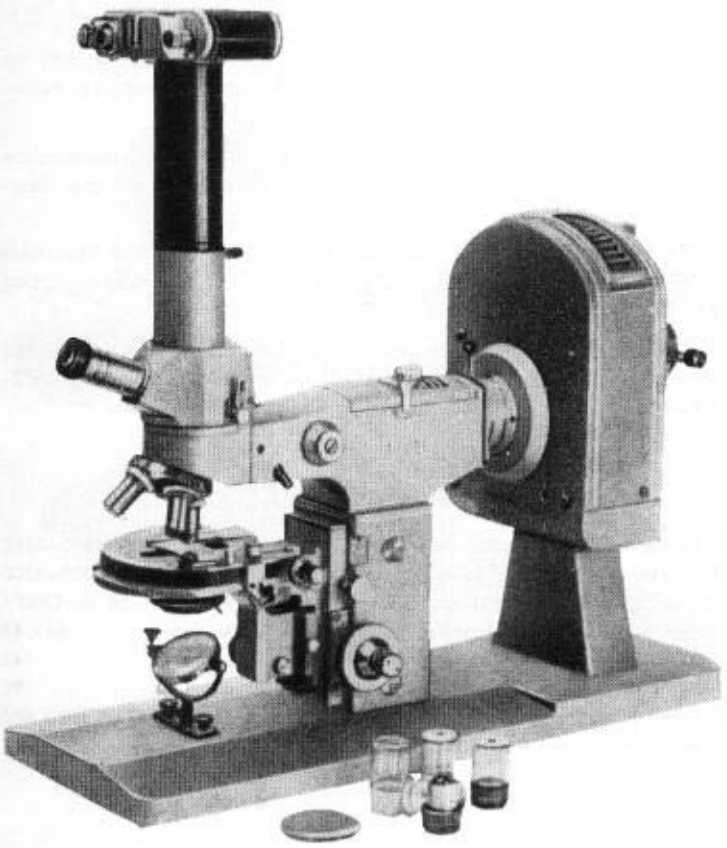
With the МЛ-3 microscope, objects can be examined by the light of fluorescence with illumination from above, through the opaque illuminator, and the objective by the bright field technique. In each case, the object can simultaneously be illuminated from below and examined by the dark field or phase contrast method, using a type ОИ-13 dark-field condensor or a type КФ-4 phase-contrast attachment. With the МЛ-3 microscope, photomicrographs can be taken on 35-mm films with 24×36 mm negatives using a photographic camera, photographic drawtube and an adapter supplied with the instrument. To measure the intensity of fluorescence, a type ФМЭЛ-1 photometric attachment may be fitted on the microscope head.

The type ОИ-13 condensor, КФ-4 phase contrast attachment, and the ФМЭЛ-1 photometric attachments are not included in the standard equipment of the microscope and may be had on separate order.

The МЛ-3 microscope is used by medical and biological laboratories, including hystological, cytological, microbiological, botanical, and many others.

BASIC CHARACTERISTICS

Magnification of microscope:	
in visual observation	**50 to 1350×**
in photomicrography	**17 to 450×**
Overall dimensions, mm	**570×230×400**
Mass, kg	**30**



TRAVELLING FLUORESCENCE MICROSCOPE

МЛД-1

The МЛД-1 travelling fluorescence microscope is designed to examine visually biological preparations by the fluorescence excited by the blue-violet region of the spectrum in the wave-length range 400–550 nm and by ultra-violet rays with a wave-length of up to 365 nm.

With the МЛД-1 microscope, fluorescence examinations may be carried out only with objects illuminated from above, through a micro-objective, by the bright-field method.

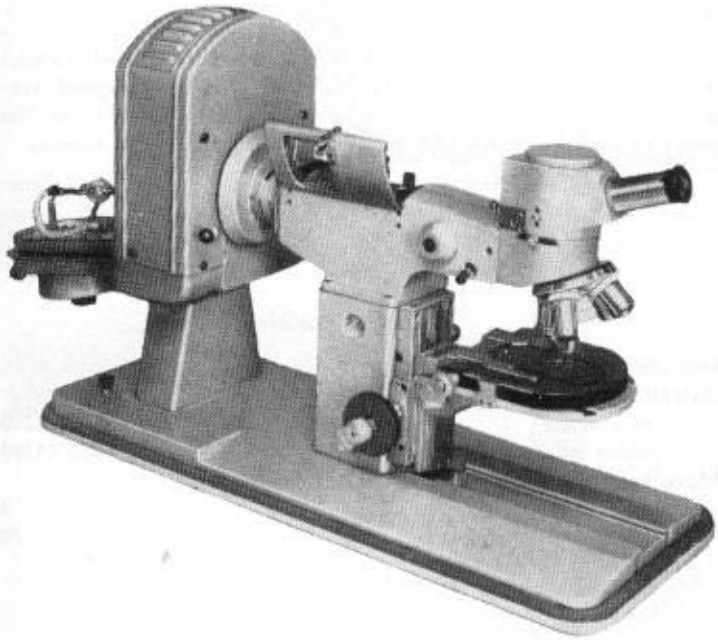
For its operation, the microscope depends on the fluorescence given up by objects when excited by rays of a definite spectral composition.

The microscope comes complete with four achromatic objectives (10×0.40; 40×0.65 and 90×1.25) and four sizes of compensating eyepieces (5×, 7×, 10×, and 15×).

The microscope is mainly intended for field work in truck-mounted laboratories, but may also successfully be used in stationary laboratories concerned with medical and biological investigations.

BASIC CHARACTERISTICS

Excitation range fluorescence, Å	**3600–4400**
Fluorescence range investigated, Å	**4000–6500**
Magnification of microscope in visual observations	**50 to 1350×**
Range of stage displacement in horizontal plane, mm	**60×40**
Vertical displacement of stage, mm	**40**
Maximum height of object, mm	**90**
Overall dimensions of microscope in case, mm	**570×230×400**
Mass of microscope in case (less control panel), kg	**27**



CONTACT FLUORESCENCE MICROSCOPE

МЛК-1

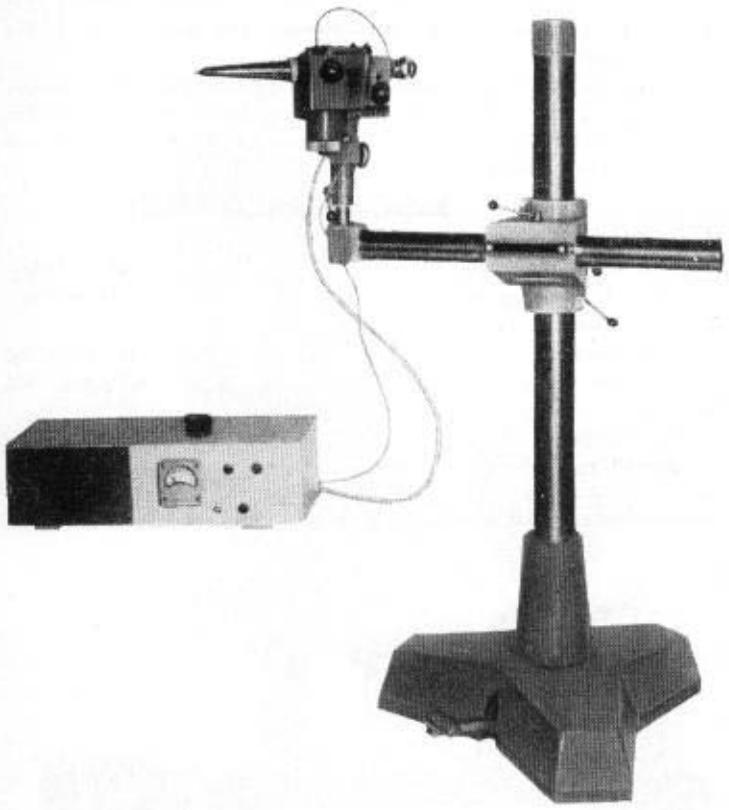
The МЛК-1 contact fluorescence microscope is designed to examine and take photographs of the microstructures of human and animal tissues by visible fluorescence in the wave-length range from 440 to 700 nm, excited by the blue-violet region of the spectrum. Among other things, the microscope can be used for the contact investigation of hard-to-reach human organs, for observation and photomicrography during operations and after removal of organs from the body and for diagnosing tumours and some other diseases. The object is illuminated with an opaque illuminator, from above, through the objective.

The microscope comes complete with a specially designed contact achromatic objective (11.6×0.65) and two specially designed eyepieces (8× and 15×). Photomicrographs are taken on 35-mm film with 24×36 mm negatives, using a strobe-lamp as a light source.

The МЛК-1 microscope is widely employed by medical research and clinical establishments in the field of surgery, oncology, gynecology, etc.

BASIC CHARACTERISTICS

Magnification of microscope	**93× and 174×**
Overall dimensions, mm:	
microscope	**470×180×300**
stand	**800×650×1300**
Mass, kg:	
microscope	**5**
stand	**50**



FLUORESCENCE MICROSCOPE

МЛ-4

The МЛ-4 fluorescence microscope is designed to examine biological and other objects by visible and ultra-violet fluorescence. Fluorescence examinations may be carried out with the objects illuminated from above, through an opaque illuminator, and the objective.

Besides, the microscope may be used to examine objects illuminated from below, through a condensor, and also by the phase contrast technique.

The microscope has provisions for taking photographs of objects, or measuring the intensity of visible and ultra-violet fluorescence, and for registering the relative intensities of fluorescence in the various spectral intervals.

BASIC CHARACTERISTICS

Magnification of microscope:

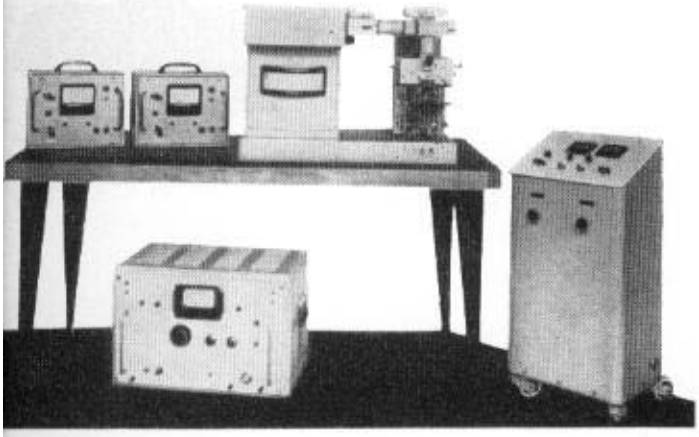
in visual observations	50 to 1350×
in photomicrography	17 to 450×

Overall dimensions, mm:

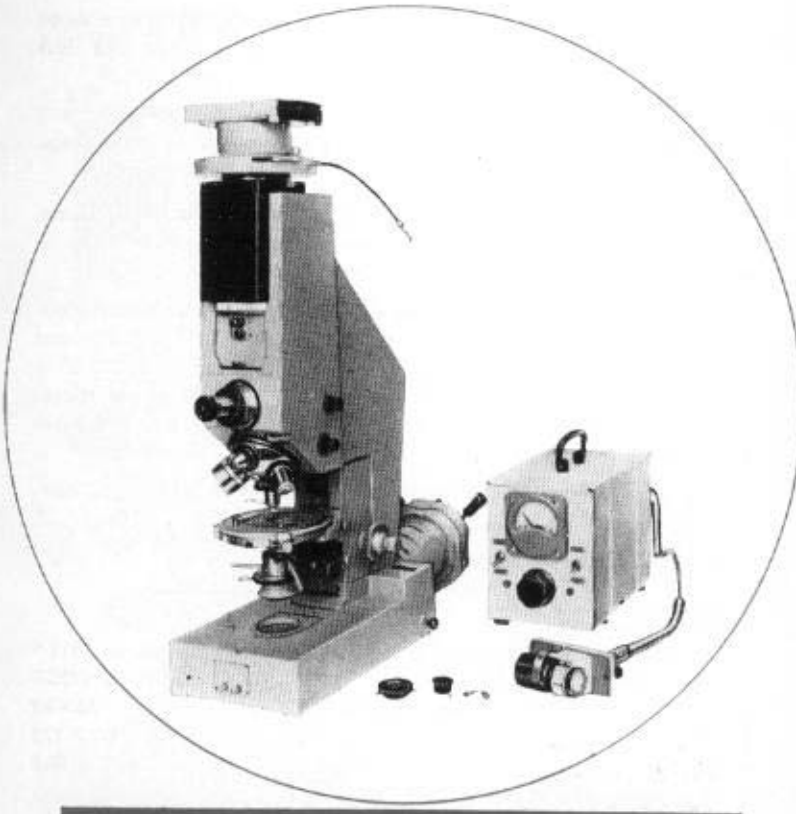
microscope	730×500×550
control panel	320×400×900

Mass, kg:

microscope	50
control panel	72



Infra-red and Ultra-violet Microscopes



INFRA-RED MICROSCOPE
МИК-4

The МИК-4 infra-red microscope is designed to investigate objects by unpolarized and polarized light in the infra-red region of the spectrum extending from 750 to 1200 nm in wave length, and also in the visible region of the spectrum.

Objects can be examined visually and their photographs can be taken both by transmitted and reflected light on a bright and dark field.

In transmitted-light work using polarized rays in the visible and infra-red region of the spectrum, use may be made of both orthoscopic and conoscopic light beams.

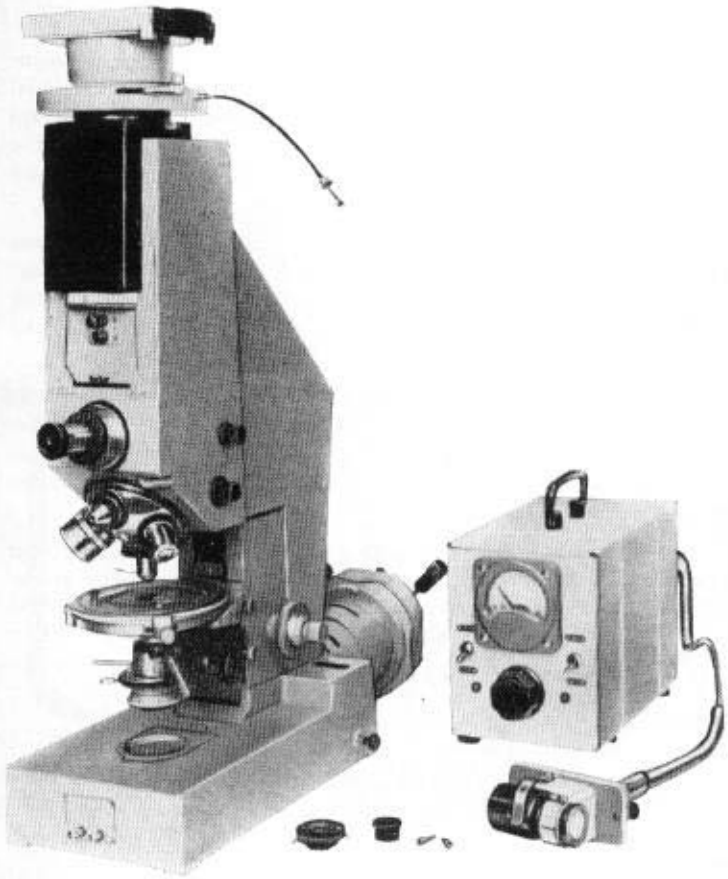
The infra-red image is converted to a visible one by a system incorporating an electron-optical image converter which has a magnification of 6 to 33.6× of its own.

The microscope comes complete with six objectives for transmitted-light work (3.5×0.10; 9×0.20; 60×0.85; 10×0.30; 75×1.00; and 20×0.80) and four objectives for reflected-light work (9×0.20; 21×0.40; 40×0.65; and 95×1.00). The standard equipment of the microscope also includes three types of projection eyepieces and five types of eyepieces (5×, 7×, 8×, 15×, and 28×) for visual observations.

The microscope may be used in mineralogy, study of semi-conductors, and also in glass-making.

BASIC CHARACTERISTICS

Magnification:	
in the infra-red region	**44 to 5517×**
in the visible range	**21 to 1425×**
Range of object displacement, mm	**38×22**
Overall dimensions, mm	**500×175×375**
Mass, kg	**17.5**



ULTRA-VIOLET MICROSCOPE
МУФ-6

The МУФ-6 ultra-violet microscope is designed to investigate and ake photographs of biological preparations by transmitted light and o produce photographic records of optical density and absorption ectra of the various areas of preparations in the region from 2500 o 7000 Å.

The microscope also makes it possible to study biological prepa-rations by their visible and ultra-violet fluorescence. Ultra-violet uorescence is investigated by photomicrography and subsequent pplication of the colour transformation method with the aid of a ype МУФ-2Х chromoscope which is part of the standard equipment f the МУФ-6 microscope.

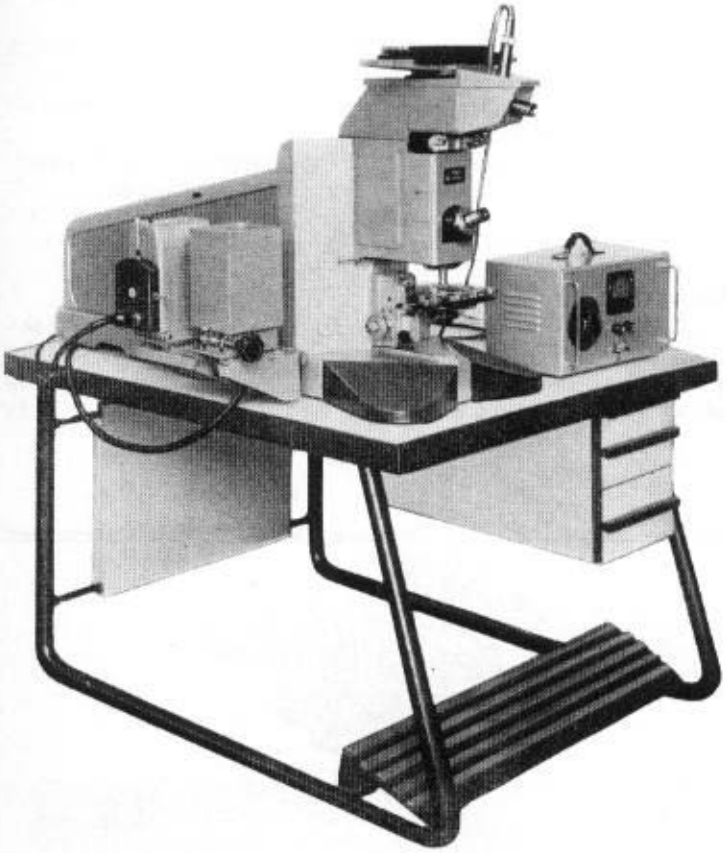
The microscope comes complete with two ultra-violet objectives 0×0.20 and 58×0.80), one quartz objective (48.5×0.65); five mirror-ns objectives (40×0.50; 75×0.65; 73.5×1.0; 115×0.7; 125×1.0) nd four achromatic objectives (10×0.40; 30×0.90; 40×0.75, and 0×1.25).

The microscope is also supplied with four Huygens eyepieces ×, 7×, 10×, and 15×) and nine different projection quartz eye-ieces (3×, 8×, 10×) for photomicrography. Visual observation of pre-arations by transmitted ultra-violet rays is carried out on the screen f an electron-optical image converter.

The МУФ-6 microscope is widely used by various medical and ducational establishments, and also by research institutions in the elds of biology, botany, virusology and similar divisions of science.

BASIC CHARACTERISTICS

Magnification in visual observation:	
by ultra-violet rays on the screen of an electron-optical image converter	**28 to 948×**
by visible light	**40–1350×**
by visible fluorescence	**40 to 630×**
Magnification in photomicrography:	
by ultra-violet rays	**28 to 948×**
by visible fluorescence	**28 to 853×**
by ultra-violet luminescence	**28 to 440×**
Overall dimensions, mm	**1230×350×650**
Mass, kg	**200**



INFRA-RED STEREOSCOPIC MICROSCOPE

МИК-3

The МИК-3 infra-red stereoscopic microscope is designed for stereoscopic examination of objects transparent in the wave-length range from 0.75 to 1.2 μ of the infra-red region of the spectrum.

The microscope has provisions for visual stereoscopic and non-stereoscopic observations of objects and for taking their photographs in infra-red light.

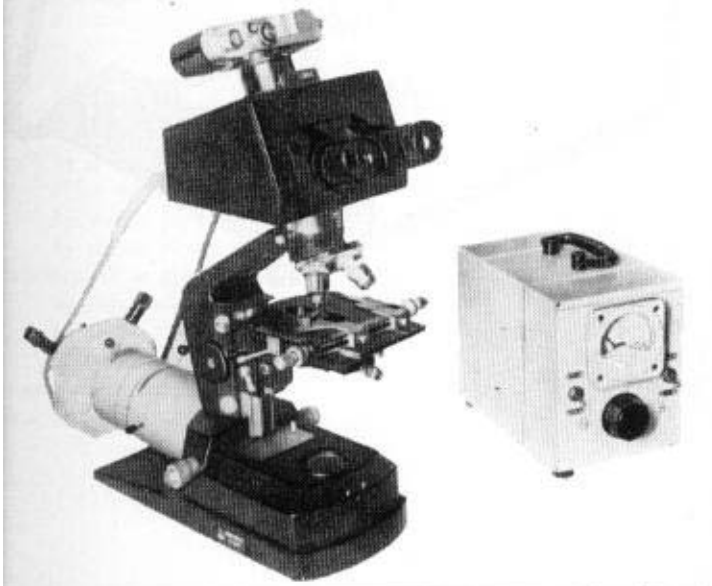
Photographs are taken with a ZORKY-4 camera on a 35-mm film with 24×36 mm negatives.

The infra-red image is converted to a visible one by electron-optical image converters.

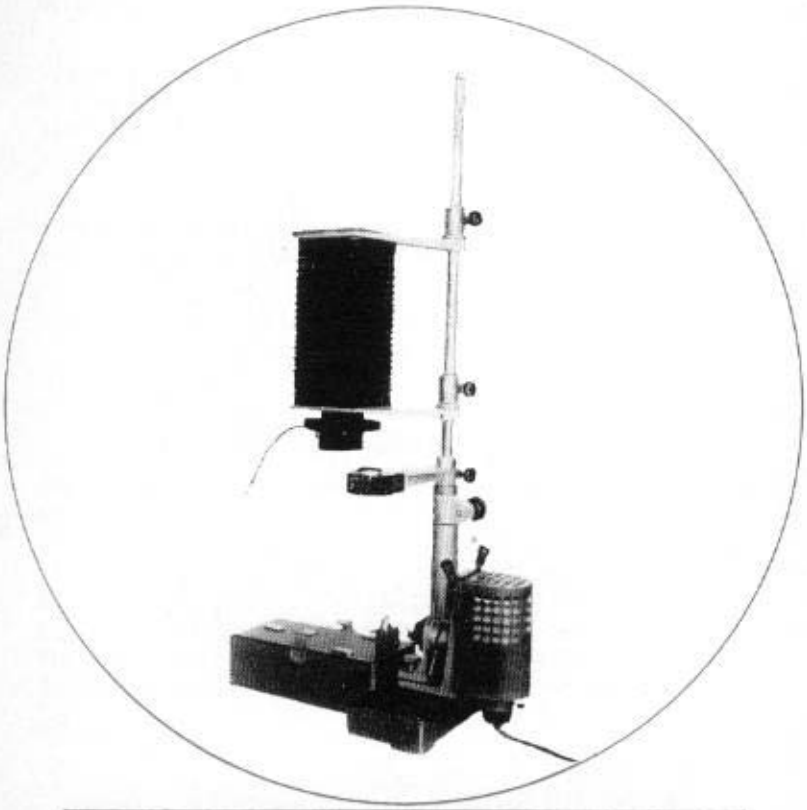
The microscope is employed in the investigations of semi-conductors, in glass-making, mineralogy, petrography, zoology, etc.

BASIC CHARACTERISTICS

Magnification of microscope:	
in visual observations	**25 to 544×**
in photomicrography	**.6 to 120×**
Overall dimensions, mm	**470×180×450**
Mass, kg	**15**



Microprojection, Photomicrography and Cine-micrography Outfits



TRICHINA MICROPROJECTOR ТМП

The ТМП trichina microprojector is designed to examine and detect trichina and other parasites in meat products.

The trichonoscope comes complete with a 30× achromatic objective.

The preparation to be examined is squeezed between two special plates directly on the microscope.

The stage movement makes it possible to investigate all rows of the squeezer cells in turn. A special device prevents examination of cells in the second row before all cells in the first row have been examined.

The instrument has a system of limit stops, owing to which the squeezer may be removed only in two positions, namely either before the beginning of a test or after all the cells of the squeezer have been examined.

The microprojector is widely used by the laboratory of meat-packing plants, meat inspectors on markets, etc.

BASIC CHARACTERISTICS

Size of image on screen (ellipse with axes), mm	**280 to 300**
Distance from screen to observer, mm	**350**
Displacement range of stage and squeezer, mm:	
in longitudinal direction	**150**
in transverse direction	**32**
Vertical travel range of objective (change of focus), mm	**±2**
Overall dimensions, of packing case, mm	**1780×1050×815**
Mass of microprojector, kg	**70**

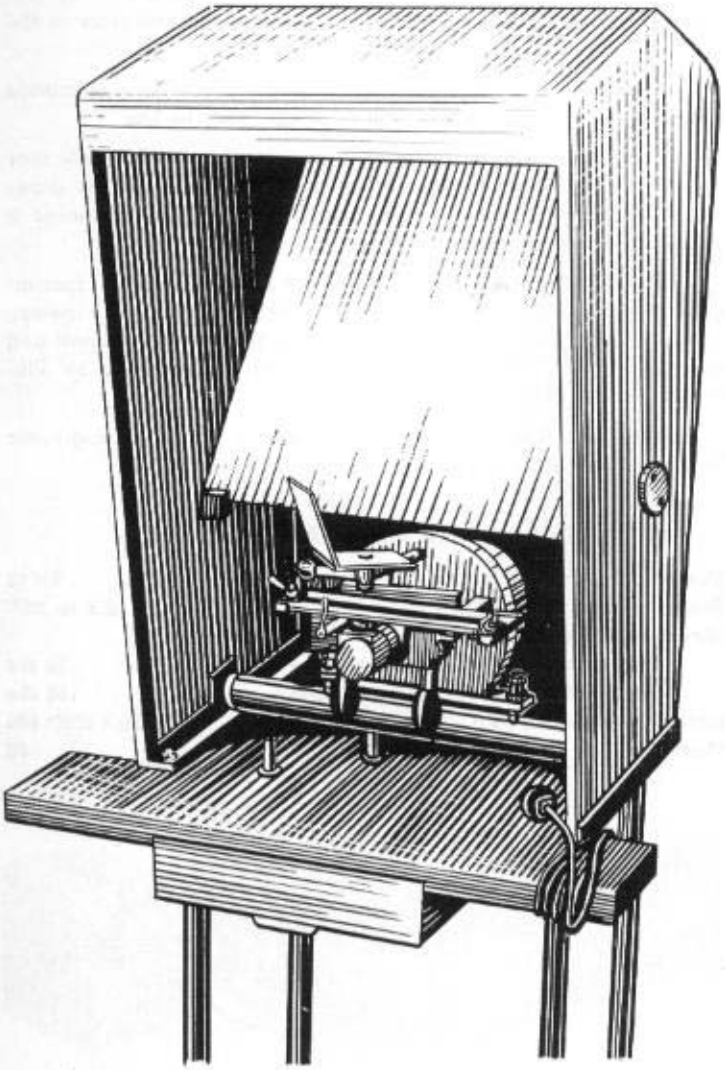


PHOTO MACRO- AND MICROGRAPHY OUTFIT
ΦMH-2

The ΦMH-2 outfit is designed to take photographs of various transparent and opaque objects encountered in research work in the fields of technology, biology, botany, etc.

The outfit has also provisions for making reproductions of printed matter, hand drawings, mechanical drawings, and the like.

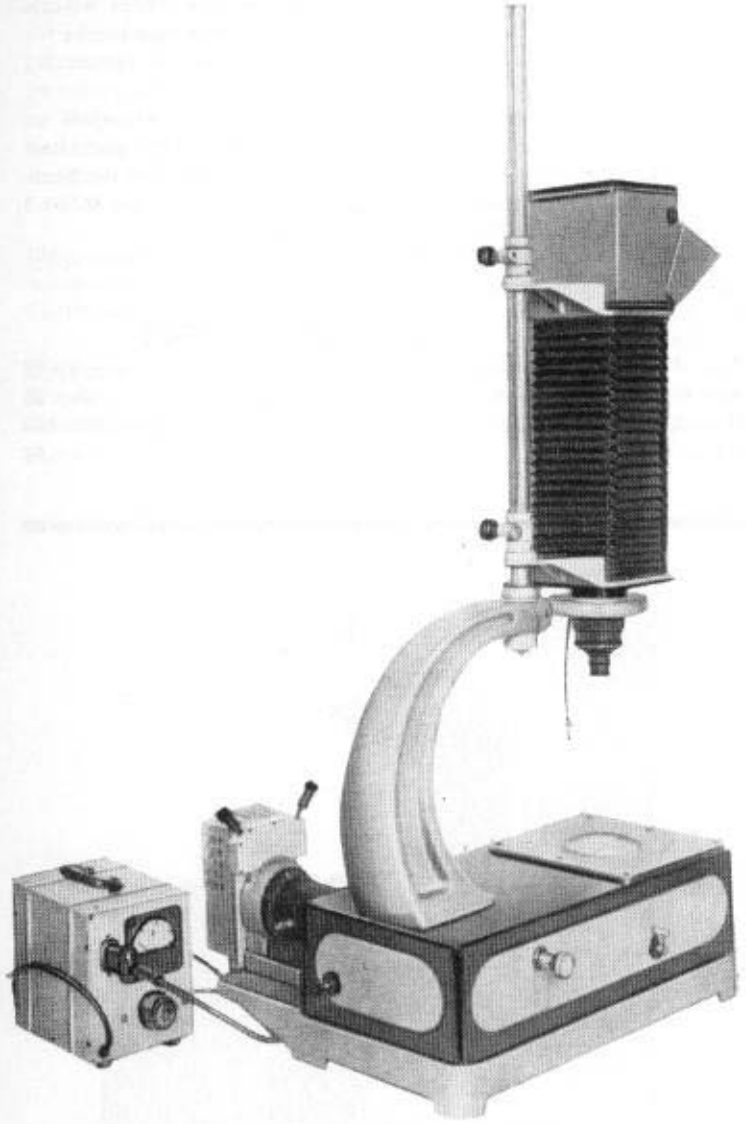
In conjunction with biological microscopes, the ΦMH-2 outfit may be used to take photomicrographs of transparent objects. The drawing attachment supplied with the outfit (model ΦMH-2P) makes it possible to draw microobjects on paper.

The standard equipment of the ΦMH-2 outfit includes special-purpose illuminators which can produce direct, oblique, shadowless, annular, and all other forms of illumination for both transparent and opaque objects. With these illuminators, any object may be illuminated with diffuse or condensed light.

The ΦMH-2 outfit comes complete with a set of photographic objectives with focal distances of 40, 65, 100 and 150 mm.

BASIC CHARACTERISTICS

Size of photographic plates, cm	**9×12**
Range of scales in photography	**0.5 to 20×**
Maximum size of object, mm:	
in operation with small macrostage	**50 dia**
in operation with large macrostage	**100 dia**
Overall dimensions, mm	**1200×550×600**
Mass, kg	**60**



PHOTOMICROGRAPHIC OUTFIT
ФМН-3

The ФМН-3 outfit is designed to take photographs of objects through a microscope with the use of a high-intensity light source.

Photographs are taken on photographic plates measuring 9×12 cm or on 35-mm film with 24×36 mm negatives.

The light filters supplied with the outfit are placed in pockets on the outside of the field-diaphragm assembly. Any other light filters available to the investigator can be installed in a pocket on the heat-filter mount. The microscope is set up on the base of the ФМН-3 outfit and is locked in place by angles and screws.

The outfit is intended for use at research and educational laboratories in conjunction with biological microscopes.

BASIC CHARACTERISTICS

Size of photographic plate, cm	**6.5×9 and 9×12**
Size of negative on film, mm	**24×36**
Overall dimensions, mm	**300×300×800**
Mass, kg	**20**

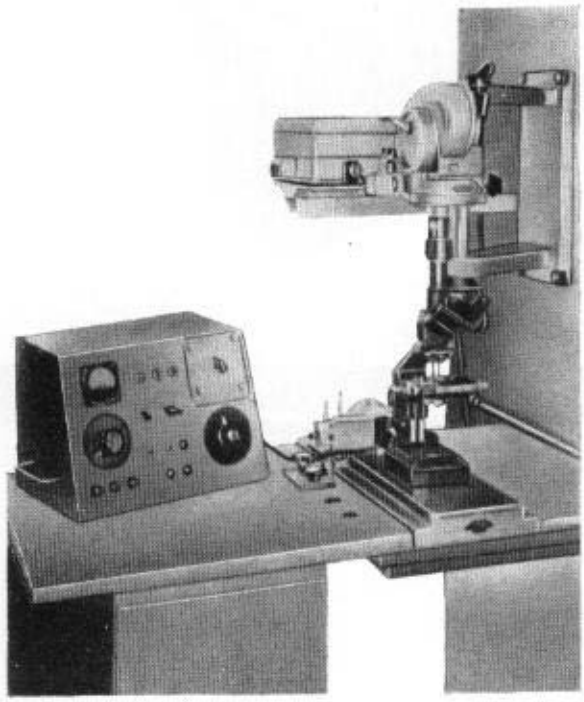
CINEMICROGRAPHY OUTFIT
МКУ-2

The МКУ-2 is a stationary universal outfit incorporating facilities for the examination of microscopic objects by the various light-microscopy methods and cinemicrography of fast and slow processes in microscopic objects over a broad range of shooting speeds.

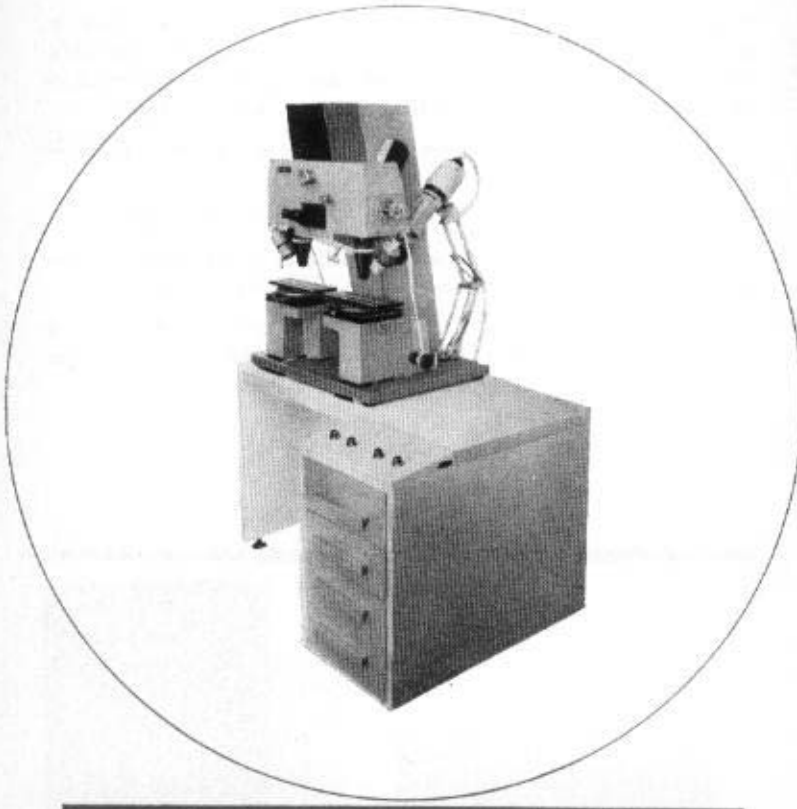
The outfit will be of interest to biological, medical, crystallographic and many other laboratories at research establishments, educational institutions and industrial enterprises.

BASIC CHARACTERISTICS

Magnification of the optical system (without microscope) in cinemicrography	**0.76 to 16×**
Continuous shooting speed of fast processes	**10 frames/s to 64 frames/s**
Single-shot micrography of slow processes at intervals of	**from 2 s. to 15 min.**
Overall dimensions, mm	**700×1300×1800**
Mass, kg	**110**



Microscopes for Advanced Microscopic Investigations



MICROSPECTRAL ANALYSIS OUTFIT

МСЛ-2

The МСЛ-2 outfit is designed for the microspectral emission local nalysis of structural components of alloy metals, and minerals.

The outfit comprises a microscope, an electrode holder, a laser, spectrograph, and a control console.

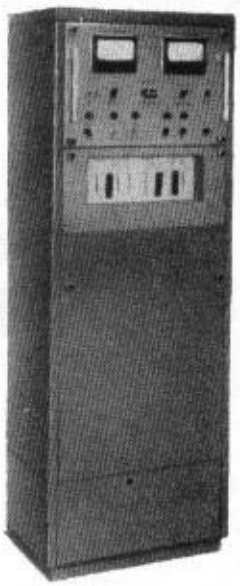
The microscope is used to examine objects to locate the areas to e analysed, and to project the laser emission onto the area under ıvestigation. The microscope can be used to examine transparent nd opaque objects on a dark field and with polarized light.

The laser serves to evaporate the material within the area under ıvestigation.

The evaporated material is excited by a spark discharge.

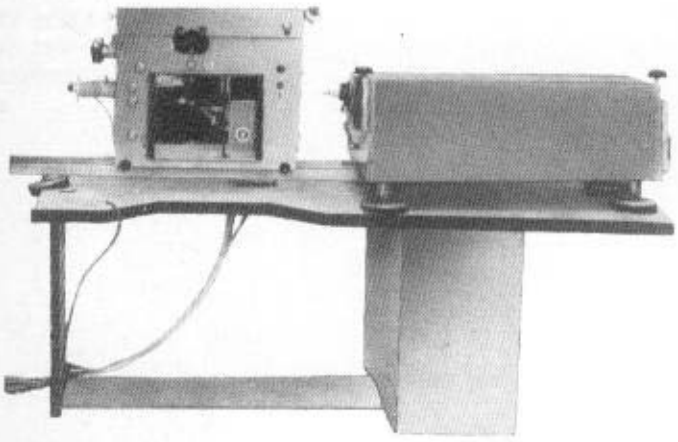
The spectrograph decomposes the emission of the material under ıvestigation into a spectrum and takes photographs of the latter.

The control console consists of a power unit and a system to elect the various modes of operation for the laser and spark gene-ıtor.



BASIC CHARACTERISTICS

Magnification of microscope in visual observation	50 to 400×
Range of stage displacement in two mutually perpendicular directions, mm	40×20
Wave-length of laser emission, μ	1.06
Effective range of spectrograph, μ	0.22 to 0.88
Power taken by control console, W	800
Least diameter of area under analysis, μ	40
Overall dimensions, mm:	
microscope	560×240×540
laser	390×130×130
control console	545×570×1550
spectrograph	1000×710×400
desk	1860×700×760
Mass, kg	424



CRIMINAL INVESTIGATION COMPARISON MICROSCOPE MCK-1

The MCK-1 criminal investigation comparison microscope provides a means for the examination and photography of two objects under comparison which can be seen simultaneously or separately in the field of vision.

The optical system of the microscope consists of two identical and independent optical trains forming an image of two objects in the same plane. In observations with a binocular attachment, projection on a viewing screen, and photography, the microscope forms erect images of two objects under comparison within the same field. The magnification can be selected by bringing in or out a particular Galileo system which gives four magnifications as follows: 2.5, 0.6, 0.4, and 1.6×.

Using the light filters supplied with the microscope, objects can be examined by fluorescence.

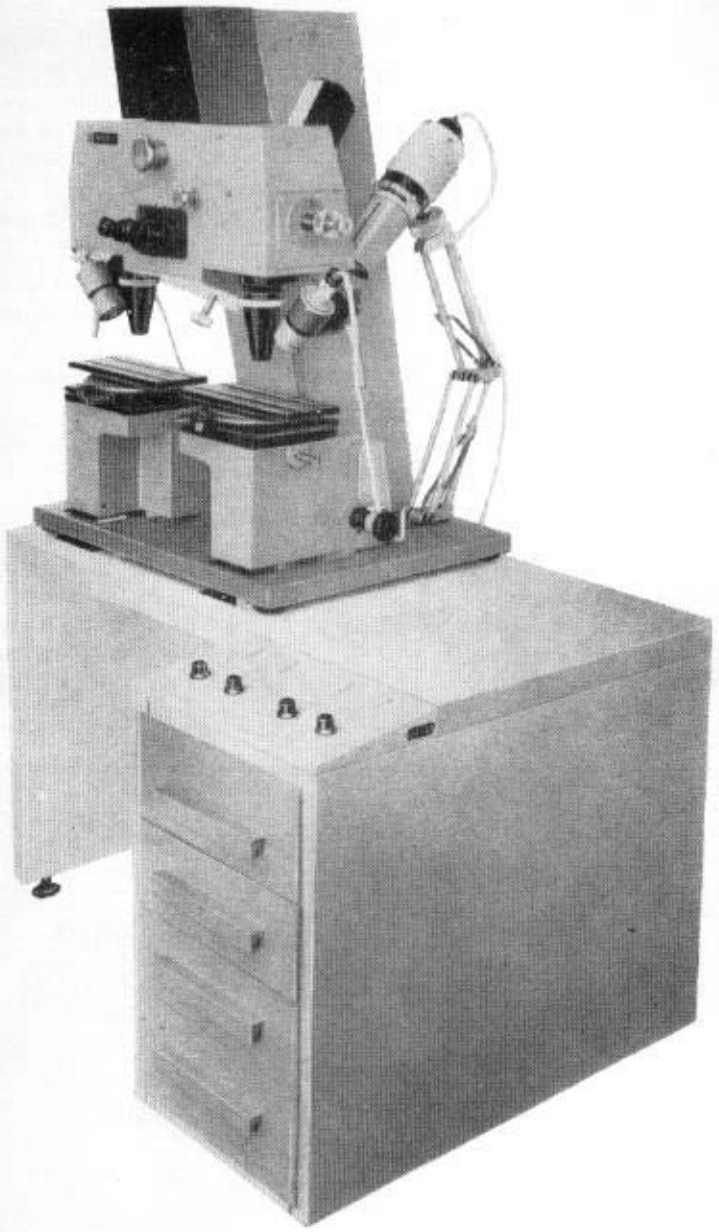
Photographs are taken on 6.5×9 cm plates.

The construction of the MCK-1 microscope ensures an ultimate in convenience to the observer and reliability of operation.

The microscope is widely used in criminal investigation laboratories.

BASIC CHARACTERISTICS

Magnification of microscope:	
in visual observation	**2.7 to 60×**
in photography	**2 to 21×**
Size of viewing screen, mm	**130 to 150**
Displacement range of stage, mm	**40×40**
Overall dimensions, mm	**800×500×850**
Mass, kg	**80**



INTERFERENCE MICROSCOPE
МБИН-4

The МБИН-4 interference biological microscope is designed to examine objects by transmitted light using the interference contrast method, to measure the path length difference due to films and sections, and to determine from this path length difference the dry weight of living and fixed cells and sections, dry matter concentration, the total weight, thickness and volume of an object.

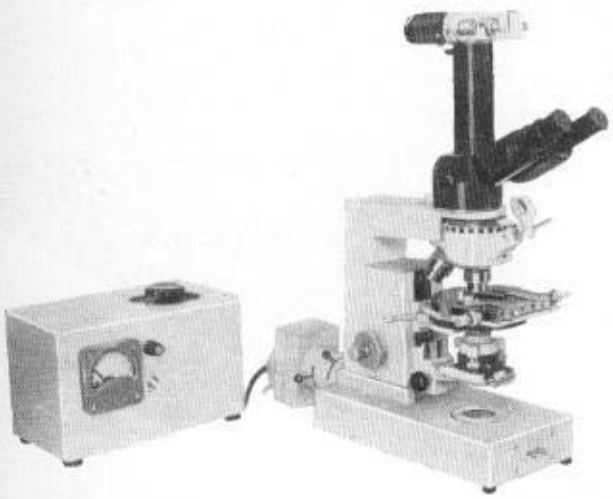
The microscope comes complete with two objectives (10×0.30 and 40×0.65) and four sizes of eyepieces (7×, 10×, 15× and 20×).

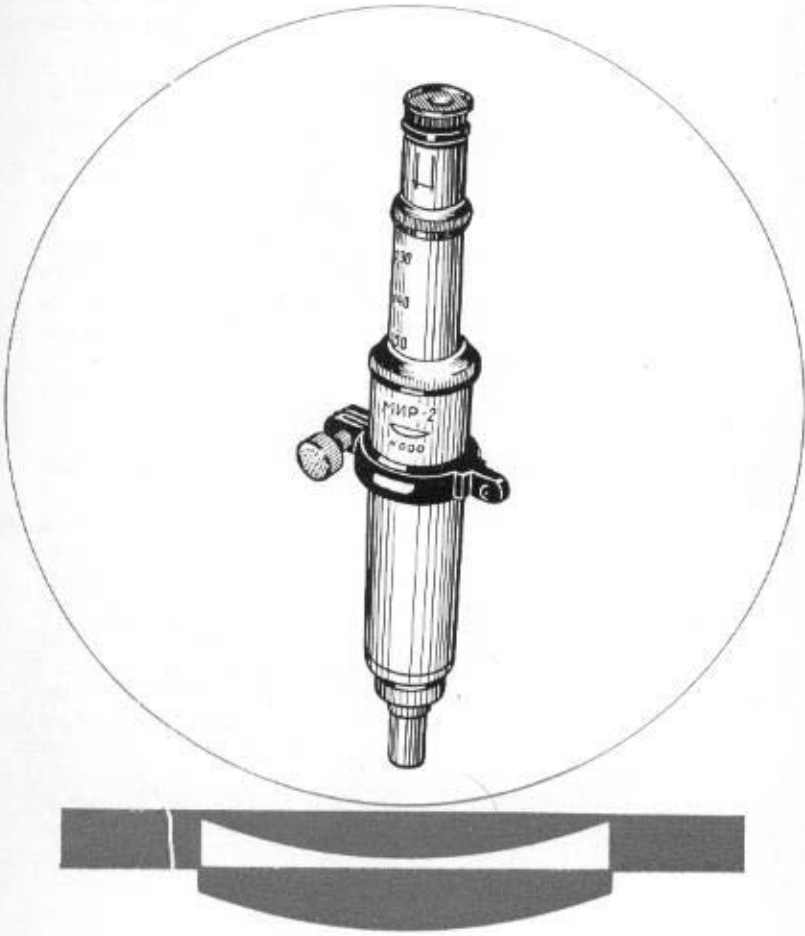
In visual observation and photomicrography with the aid of type МФН-11 binocular attachment, the magnification may be adjusted by rotation of a revolving nosepiece by 1.1×, 1.6×, 2.5×.

The microscope is employed at factories laboratories, research institutions, and educational establishments.

BASIC CHARACTERISTICS

Magnification of microscope:	
in visual observation	**77 to 960×**
in photomicrography	**26 to 240×**
Size of split image, μ	**165 and 330**
Sensitivity of interference method, λ	**0.02 to 0.003**
Overall dimensions, mm	**600×150×500**
Mass, kg	**20**





SMALL TOOL-ROOM MICROSCOPE
ММИ-2

The ММИ-2 small tool-room microscope is designed to measure linear dimensions in rectangular and polar coordinates, and also angle elements in various parts, cutting and measuring tools.

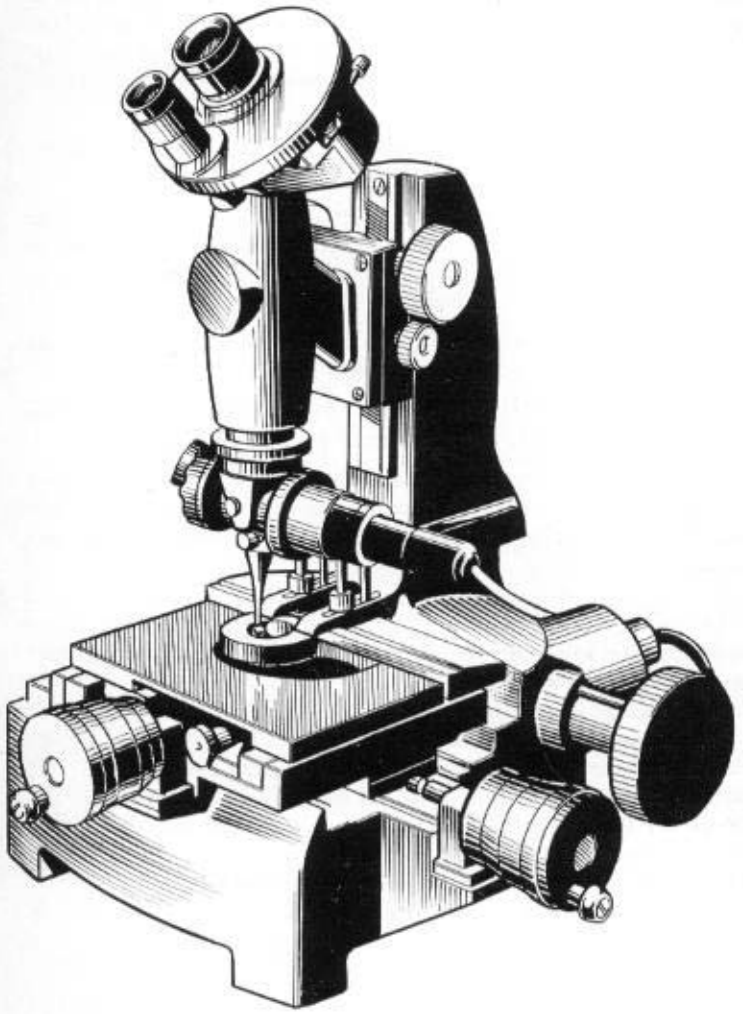
The ММИ-2 tool-room microscope has provisions for measuring the elements of external threads, angles, tapers, radii, and effective dimensions of various templets, gagues, and similar objects.

The microscope has provisions for observation with both transmitted and reflected light. Owing to a prism, an erect (non-inverted) image of the object under observation can be seen in the eyepiece, and all movement of the object are seen by the observer as they actually occur, which adds to the operator's skills.

The ММИ-2 microscope is widely used in the shops and measurement laboratories of engineering, instrument-making and tool-making factories, at educational and research establishments. In shops, the ММИ-2 microscope is the main measuring instrument in the manufacture of parts.

BASIC CHARACTERISTICS

Magnification of microscope	**10×, 30×, 50×**
Ranges of measurement, mm:	
in longitudinal direction	**0–75**
in transverse direction	**0–25**
Limit of error in length and diameter measurements, mm	**±0.005**
Maximum separation between centres, mm	**200**
Maximum diameter of objects mounted on centres, mm	**55**
Maximum diameter of objects set up on knife-edge supports, mm	**100**
Overall dimensions, mm	**375×350×430**
Mass, kg	**27**



LARGE TOOL-ROOM MICROSCOPE
БМИ-1

The БМИ-1 large tool-room microscope is intended to measure the outside linear dimensions and diameters of shafts, the angles of cutting tools and templets, the dimensions of thread cutting tools and gauges, centre to centre distances of holes, dimensions of cylindrical and taper bushings, radial shapes, and similar components.

The microscope can also be used for marking out with a centre-punch.

With the БМИ-1 microscope, measurements may be made both directly with micrometers and by comparison when a magnified image of the outline to be measured is projected and compared with a reference outline on a drawing.

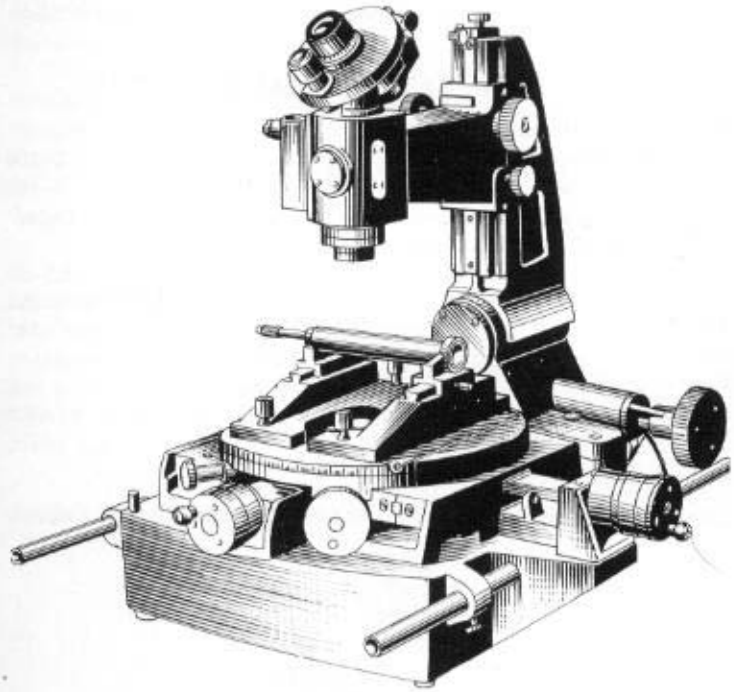
Threads can be measured by an outline comparison method, the axial section method, and with measuring knife edges.

The microscope has provisions for measurements in rectangular and polar coordinates, with transmitted and reflected light.

The multitude of measurements that can be made with БМИ-1 tool-room microscope makes it an indispensable instrument for tool-making shops, measuring laboratories, research establishments, and educational institutions.

BASIC CHARACTERISTICS

Magnification of microscope	**10×, 15×, 30×, 50×**
Ranges of measurement, mm:	
in longitudinal direction	**0–150**
in transverse direction	**0–50**
Maximum diameter of object mounted on centres, mm	**85**
Maximum diameter of part set up on knife-edge supports, mm	**130**
Maximum distance between objective and workable, mm	**200**
Overall dimensions, mm	**840×800×870**
Mass of microscope complete with angle-measuring eyepiece head and illuminator, kg	**65**



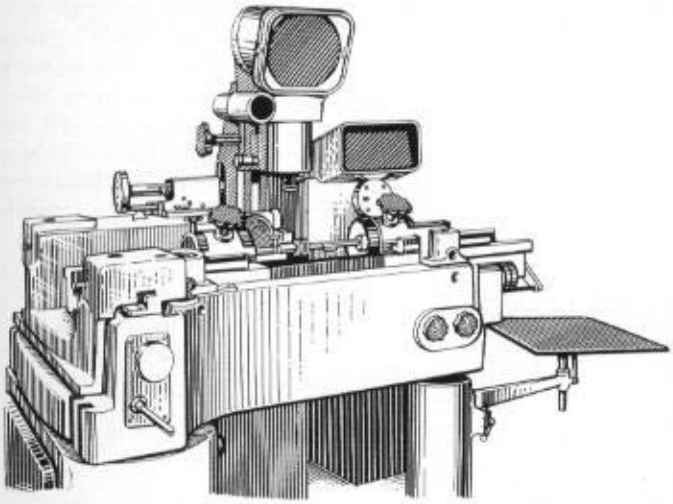
UNIVERSAL MEASURING MICROSCOPE
УИМ-23

The УИМ-23 universal measuring microscope is a sighting instrument with projection-type reading devices designed to measure the linear and angle dimensions of various parts in rectangular and polar coordinates. Among other things, it can be used to measure all kinds of workpieces, cutting tools, templets, cams, tapers, threading taps and dies, chasers, etc. It can also be used to measure the dimensions of small holes.

The УИМ-23 universal measuring microscope is widely used at engineering works, research institutions, and educational establishments.

BASIC CHARACTERISTICS

Range of length measurement, mm:	
in longitudinal direction	**0–200**
in transverse direction	**0–100**
Range of angle measurements	**0–360°**
Range of whole diameter measurement by contactless methods, mm	**0.1–50**
Overall dimensions, mm	**1150×1150×1500**
Mass, kg	**541**



UNIVERSAL MEASURING MICROSCOPE
УИМ-24

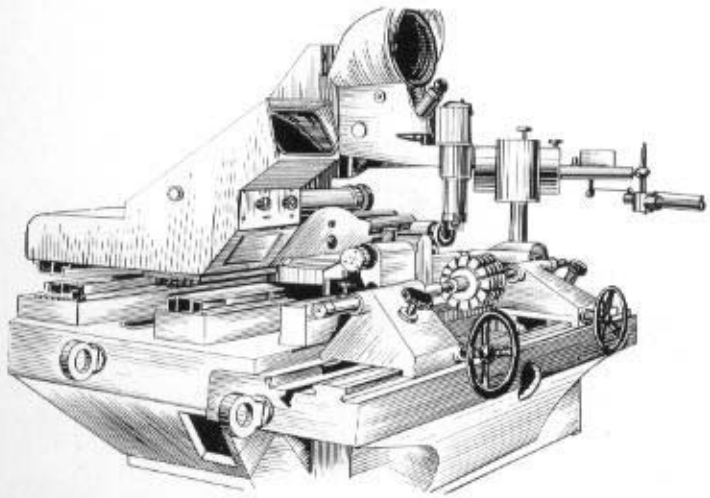
The УИМ-24 universal measuring microscope is designed to measure the linear and angular dimensions of various parts in rectangular and polar coordinates. Among other things, can be used to measure all elements of thread gauges, templets, cutting tools, milling cutters, and similar parts.

The УИМ-24 microscope is a measuring sighting instrument with projection-type reading devices. The workpiece being measured is held stationary, and the sighting system of the instrument together with the carriages is free to be moved in a horizontal plane in two mutually perpendicular directions.

The universal measuring microscope can be widely used in the laboratories of medium and heavy engineering works, and also at research establishments.

BASIC CHARACTERISTICS

Range of length measurement, mm:	
in longitudinal direction	**0–500**
in transverse direction	**0–200**
Range of angle measurements	**0–360°**
Maximum distance between centres, mm	**1000**
Maximum mass of workpiece to be measured, kg	**100**
Range of travel of lifting device, mm	**250**
Overall dimensions, mm	**1500×1300×1600**
Mass, kg	**1550**



READING MICROSCOPE
МИР-2

The МИР-2 reading microscope is a simplified modification of a measuring microscope with a reading eyepiece scale and is used to measure small objects and distances between mark lines, dots, and surface irregularities.

The МИР-2 microscope is mainly used by shop and factory laboratories, quality inspection departments, and educational establishments.

BASIC CHARACTERISTICS

Magnification of microscope	**19 to 33×**
Range of measurement, mm	**0.015 to 6**
Overall dimensions, mm	**134×34×67**
Mass, kg	**0.29**

READING MICROSCOPE
МПБ-2

The МПБ-2 reading microscope is used to measure the diameter of the indentation produced on metals in the Brinell hardness test.

The microscope is supplied with conversion charts from which the respective Brinell hardness number can be found for the diameter of the indentation measured with the microscope.

BASIC CHARACTERISTICS

Magnification of microscope	**24×**
Linear field of view, mm	**9**
Range of eyepiece adjustment, diopters	**±4**
Maximum diameter of indentation measured on scale, mm	**6.5**
Overall dimensions of packing case, mm	**64×75×220**
Mass of instrument, in packing case, kg	**0.8**

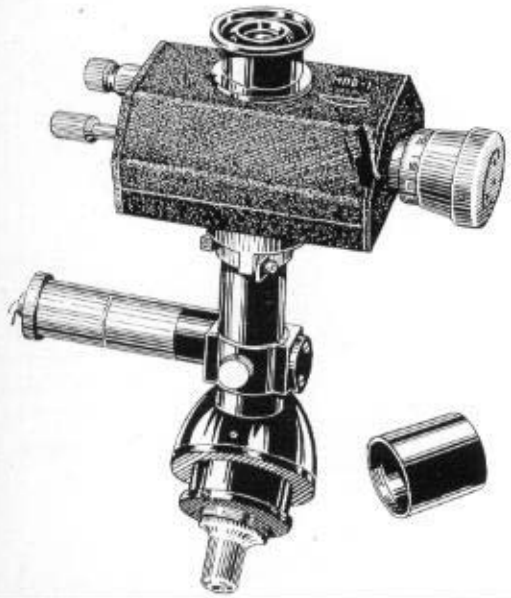
HARDNESS TEST MICROSCOPE
МПВ-1

The МПВ-1 hardness test microscope is an accessory to hardness testers and is used to measure the linear dimensions of indentations in the Vickers hardness test.

The set of objectives and eyepiece supplied with the microscope provide for visual observations with magnifications of 50× and 125×.

BASIC CHARACTERISTICS

Magnification of microscope	**50× and 125×**
Range of measurement, mm	**0–12**
Accuracy of reading, mm:	
with 10×0.30 objective	**0.001**
with 3.7×0.11 objectives	**0.0025**
Overall dimensions, mm	**210×165×95**
Mass, kg	**2.29**



MICROSCOPE FOR SPECTROGRAM MEASUREMENTS
МИР-12

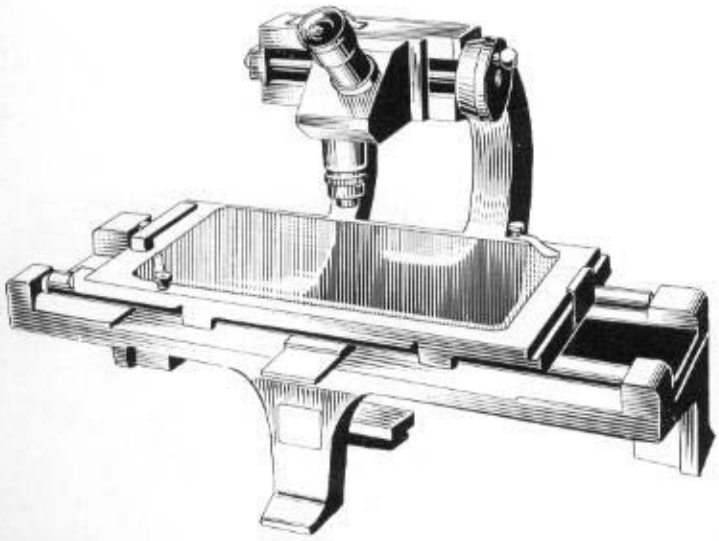
The МИР-12 microscope is used to interpret spectrograms by measuring distances between the unknown and known spectral lines.

In identifying the spectral lines of an unknown element, the wavelength "yardstick" to be used may be the spectrum of pure iron because the spectral lines of iron have been investigated in detail and their wave-lengths can be taken from spectral tables. For this purpose it is necessary to take photographs a spectrum of pure iron and juxtapose it edge to edge with that of the element under investigation.

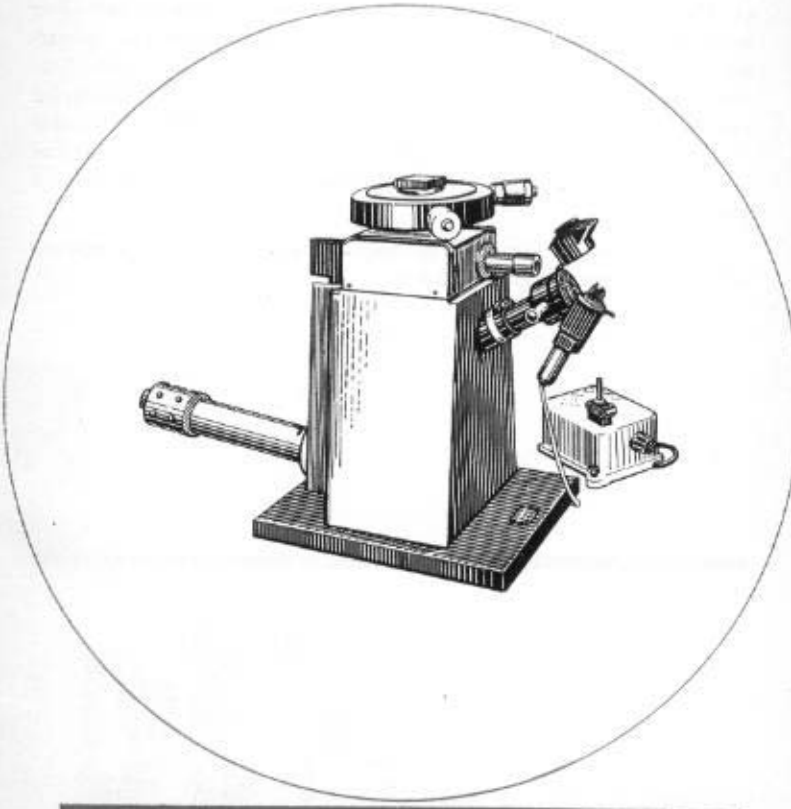
The instrument is used in all laboratories and establishments concerned with spectral analysis.

BASIC CHARACTERISTICS

Magnification of microscope	**15×**
Linear field of view, mm	**5**
Range of measurements in longitudinal direction, mm	**0 to 50**
Overall dimensions, mm	**440×280×315**
Mass, kg	**12**



Surface Inspection Instruments



MICROINTERFEROMETER

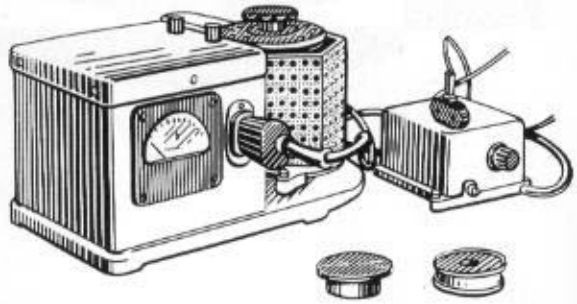
МИИ-10

The МИИ-10 microinterferometer is used to measure the height of irregularities on machined surfaces.

With the МИИ-10 microscope, measurements can be made by the conventional interference method (0.65–0.03 μ) and also by the immersion-replica method (10–0.6 μ).

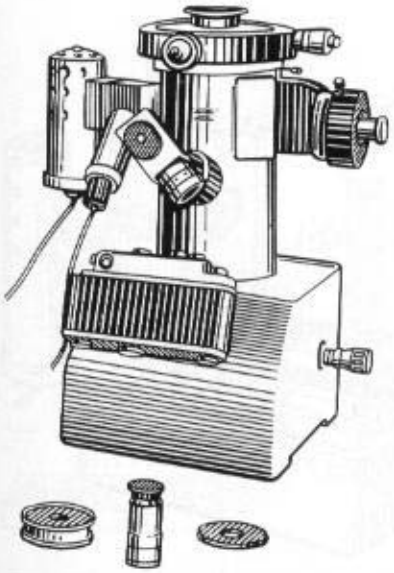
The interference method is usually employed to measure reflecting machined surfaces with white and monochromatic light. The immersion-replica method is employed only in conjunction with monochromatic light to measure the height of irregularities on machined metallic and nonmetallic surfaces widely differing in reflectance, also to measure the height of irregularities on hard-to-reach or internal surfaces on parts of any size and shape without removal from a machine-tool.

The interference pattern is photographed with a ZORKY-4 camera on negative measuring 24×36 mm.



BASIC CHARACTERISTICS

Range of measurement of irregularities, μ	**10–0.03**
Magnifications:	
in visual observations with 20× eyepiece micrometer	**500×**
in visual observations with 15× eyepiece	**375×**
in photography	**200×**
Field of view, mm:	
in visual observations with 20× eyepiece micrometer	**0.36**
in visual observations with 15× eyepiece	**0.40**
in photography	**0.12×0.18**
Overall dimensions, mm	**300×330×380**
Mass, kg	**30**

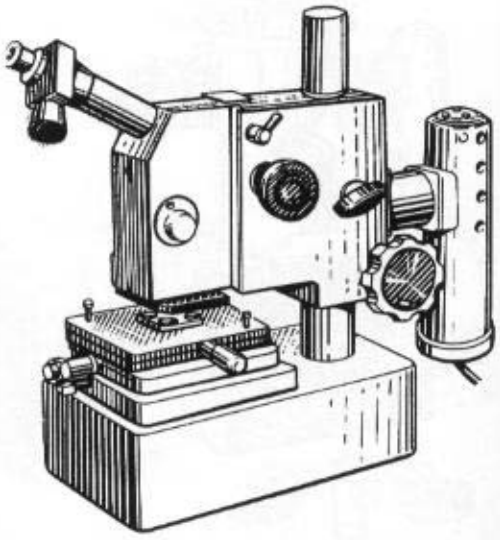


MULTIBEAM MICROINTERFEROMETER
МИИ-11

The МИИ-11 multibeam microinterferometer is a reflected-light microscope in the object plane of which is placed an interference device. The МИИ-11 microinterferometer is used for the visual evaluation and measurement of the height of steps, thin film thickness, small linear displacements, and minute deviations from an ideal plane from the value of shift or curvature of interference bands in the range from 1 to 0.005 μ. The МИИ-11 microinterferometer can measure surfaces with a reflectance of at least 0.3.

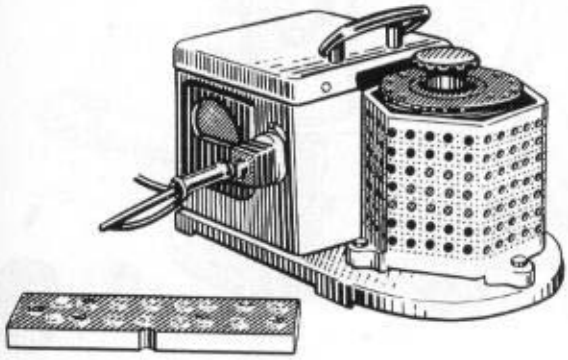
To ensure an optimum contrast of interference bands on surfaces widely differing in reflectance, the microinterferometer comes complete with four plates having reflectances of 0.45, 0.65, 0.75 and 0.90.

The microinterferometer may be used at the laboratories of research institutions and educational establishments, and also by industrial laboratories.



BASIC CHARACTERISTICS

Range of measurement, μ	1–0.005
Magnification of microinterferometer	50×
Field of view, mm	3.3
Overall dimensions, mm	170×350×380
Mass, kg	20



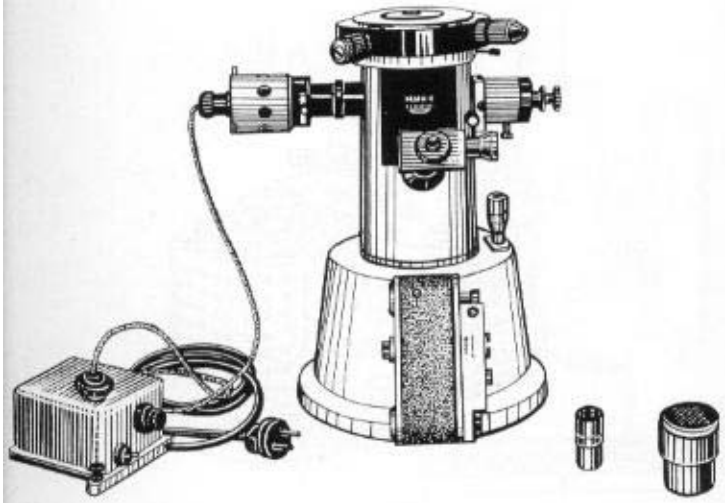
INTERFERENCE MICROSCOPE
МИИ-4

The МИИ-4 interference microscope is a special-purpose high-precision measuring instrument used for the visual evaluation, measurement and photography of irregularities on the external surfaces of parts with parallel machining marks, and also the height of steps, film thickness, coating thickness, and similar objects.

The interference microscope is widely used at the laboratories of research institutions and educational establishments and industrial organization concerned with surface finish problems.

BASIC CHARACTERISTICS

Magnification of microscope:	
in visual observation	**490×**
in photography	**290×**
Field of view of microscope, mm:	
in visual observation	**0.32**
in photography	**0.10**
Range of measurements in surface finish control, μ	**1.0 to 0.03**
Overall dimensions, mm	**340×300×380**
Mass, kg	**23.4**



MICROPROFILOMETER
МИИ-12

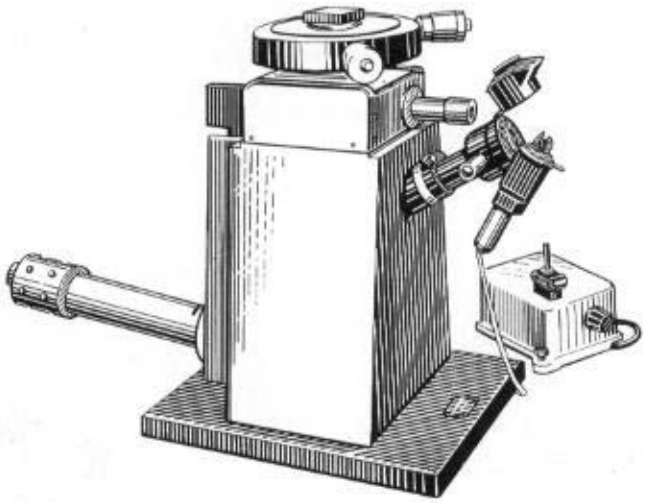
The МИИ-12 microprofilometer is a special-purpose instrument designed for visual evaluation and measurement of the height of irregularities in the range from 0.03 to 1 μ on outside surfaces on which machining marks occur at random.

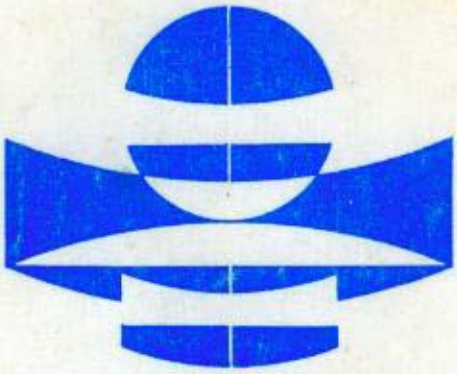
The МИИ-12 microprofilometer is an interference-type instrument in which surface measurements are made by using bands of the same chromatic order ("a fluted spectrum").

The instrument may be used at industrial laboratories, research institutions for the control of metallic and other well reflecting surfaces worked by honing or electrical polishing, and also to test surfaces on which machine marks are of local nature, such as after polishing of glass, quartz, germanium, silicon and similar materials with free abrasives.

BASIC CHARACTERISTICS

Range of measurement of surface regularities, μ	**0.03–1**
Magnification of the instrument	**510×**
Effective length in the plane of object, mm	**0.25**
Objective:	
focal distance, mm	**10**
numerical aperture	**0.5**
Overall dimensions, mm	**250×500×380**
Mass, kg	**30**





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