

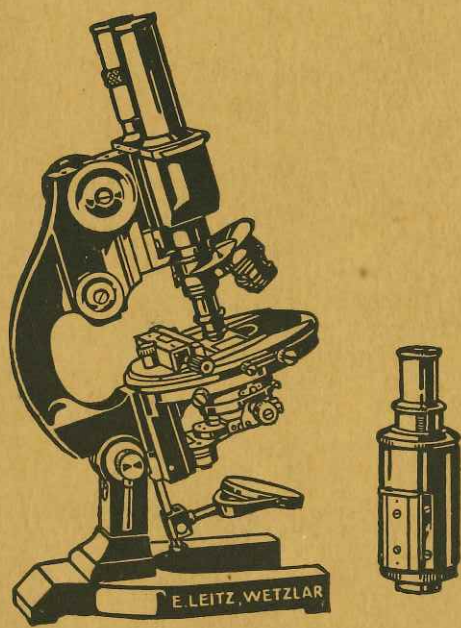
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CATALOG L

LEITZ

MICROSCOPES, MICROTOMES, PHOTOMICROGRAPHIC
AND PROJECTION APPARATUS, MICROSCOPE
ACCESSORIES
and
BLOOD TESTING INSTRUMENTS



MODEL "ABM"
COMBINATION MICROSCOPE
FOR BINOCULAR AND MONOCULAR VISION

60 EAST



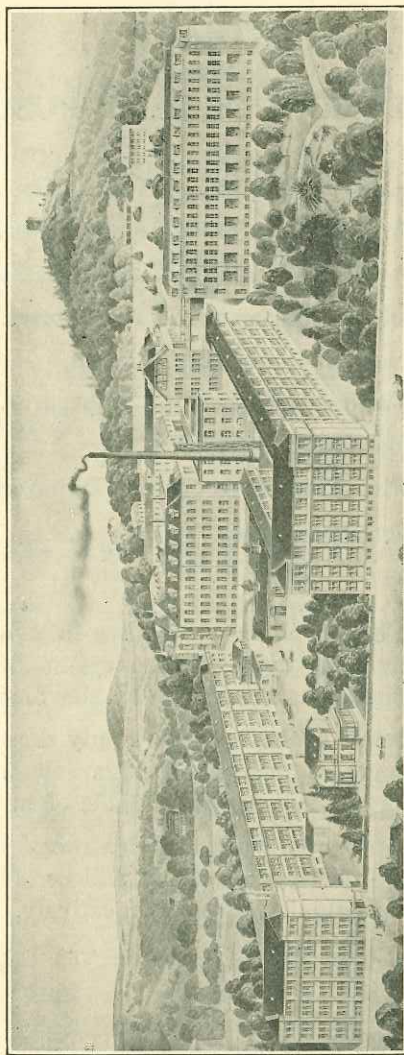
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JK



ERNST LEITZ — OPTICAL WORKS

EXTRACT

from

VARIOUS SECTIONS OF LEITZ PUBLICATIONS

- SECTION A:** Biological Microscopes and Accessories.
- SECTION IB:** Metallographic Microscopes and Accessories.
- SECTION IIB:** Petrographical Microscopes and Accessories.
- SECTION C:** Dissecting Microscopes and Accessories.
- SECTION D:** Microscope Accessories in General.
- SECTION E:** Blood Testing and Counting Apparatus.
- SECTION F:** Microtomes and Accessories.
- SECTION G:** Photo-Micrographic Apparatus and Accessories.
- SECTION H:** Projection Apparatus.
- SECTION J:** Prismatic Binocular Field Glasses.

In presenting this Catalog-Extract we have in mind to offer a compact edition of combined literature which will convey an idea of the far-reaching field of scientific instruments manufactured by the Leitz Works.

For this Catalog-Extract we have selected only those apparatus which are most frequently in demand and which afford a selection of instruments to meet the requirements for the more popular fields of investigation.

To those who are confronted with a wider range of application and require instruments not listed in this extract we will be pleased to send complete literature treating the individual sections exhaustively.

LEITZ STANDARD

of

OPTICAL and MECHANICAL PRECISION WORKMANSHIP

Leading Microscopists of the present and also past generations have been able to convince themselves of the many important optical and mechanical qualities the Leitz Microscopes and other Leitz Apparatus possess and each day the circle of Leitz Advocates increases.

The unfailing qualities of precision workmanship prompt the foremost institutions of this and other countries to adopt the Leitz Apparatus as Standard for research work and the most exact microscopical requirements.

The recognized optical and mechanical efficiency is the result of the untire-some efforts on the part of the Leitz Research Staff to further new developments and the Leitz Works, therefore, are looked upon as the Leaders in the microscopic field and as the originators of new scientific instruments which, on frequent occasions, have caused a revolution in the constructions and types of microscopical apparatus.

To parties not having had occasion to convince themselves of the superior qualities of Leitz Products, we will gladly afford an opportunity to compare our instruments with others, so that the points of superior quality can easily be established by them.

LEITZ MICROSCOPE STAND

Mechanical Features: The Leitz Microscopes are of the handle arm type, which represents a most practical and at the same time attractive design. Leitz is credited with the innovation of this new pattern of microscope stands while other manufacturers have soon thereafter followed the new type in their construction.

The mechanical stand is graceful in design, providing a steady base and ample room above and below the stage for the accommodation of accessories. The coarse focussing-adjustment consists of a rack and pinion mechanism of an individual character, insuring a precise and smooth motion.

The micrometer fine-adjustment screw possesses an endless motion and does not reach a stop. The microscope tube rises or lowers in continuous alternation through a range of 3 mm. when turning the milled heads continuously in the one or other direction. A distinct advantage of this fine-adjustment is found in the safety device which protects specimen and objective against injury even if by chance the objective should descend somewhat forcibly upon the preparation. In the event of the objective coming in contact with the preparation it will, together with tube, merely rest upon the coverglass, both the front-lens and the coverglass will readily bear the insignificant pressure occasioned by the weight of the tube and the tension of the buffer spring. The science of precision mechanism conceives such an arrangement as the most ideal for a micrometer fine-adjustment.

The fine-adjustment is provided with a spiral cam, having a total range of vertical motion of 3 mm, and since the worm wheel has 30 teeth, it follows that half a revolution of the wheel, i.e., rotation through 15 teeth, will cause the tube to rise or fall through a distance of 3 mm, and hence a rotation through 1 tooth will cause the displacement to be $3/15 = 0.2$ mm. A displacement of the wheel from one tooth to the next requires a complete rotation of the drum with its 100 divisions, so that the displacement of the drum through one division gives to the tube a vertical motion of 0.002 mm.

The precision, slowness and sensitiveness of this micrometer adjustment is ideal for research and measuring purposes, not equalled by any devices of other type.

OBJECTIVES AND EYEPIECES

(It would reach too far to analyze the optical details of Leitz Micro-Optics in this extract and for this reason we will confine ourselves to the explanation of the difference between the various series of objectives and eyepieces. If further optical details are desired, however, we suggest to obtain our complete catalog IV-A.)

Tube-Length: All Leitz Objectives are corrected for a tube-length of 170 mm. The tube-length should be strictly adhered to whenever high power objectives are being used. To facilitate the adjustment of the tube-length the draw-tube has been engraved with a millimeter scale. Without nosepiece the tube is set at mark 170, while with nosepiece it is adjusted to mark 152, since the height of the nosepiece measures 18 mm. If the adjustment of the draw-tube is not properly observed, this would impair the quality of the objectives and consequently the results obtained with the microscope.

Achromatic Objectives: The achromatic series of objectives is used chiefly for routine laboratory investigations and for this purpose is fully efficient as to optical properties relative to chromatic and spherical correction. For the optical characteristics of these objectives we refer to tables reproduced in this catalog. **The advantages derived through the use of the "Periplan" Eyepieces with achromatic objectives of medium and high power will be clearly noticeable.**

Fluorite or Semi-Apochromatic Objectives: As the designation implies, Fluorite-lenses are made use of in the construction of these objectives. In quality the fluorite-objectives range between the achromatic and apochromatic series. The fluorite-lenses are selected by the microscopist who desires to obtain objectives of higher color correction and resolving power than found in achromatic objectives, while at the same time he may be reluctant in regard to the comparatively high price of apochromatic objectives.

The fluorite-objectives are likewise recommended for photomicrography, for which purpose they are highly qualified on account of their excellent optical properties and increased numerical aperture. For the optical characteristics of these objectives we refer to tables, reproduced in this catalog.

Apochromatic Objectives and "Periplan" Eyepieces: The apochromatic series of objectives surpasses all other types in regard to color correction and resolving power. The increased efficiency in optical properties is due to the use of Fluorite in construction. Fluorite is characteristic through:

1. High degree of transparency,
2. Low refractive index,
3. Most favorable conditions in its dispersion properties.

These combined properties are not obtainable with any artificial medium. The introduction of Fluorite for microscope objectives in 1886 marked a new era in the development of microscopes.

The optical properties of Fluorite furnish a means of uniting at least **three** optically significant colors, whereas with the older crown and flint pairs it was not possible to bring more than **two** differently colored rays to a focus.

The high price of apochromatic objectives is due to their complicated formula and to the practical difficulties involved in their manufacture no less than to the scarcity of Fluorite of a quality suitable for optical purposes.

The highest achievement in the construction of microscope objectives is embodied in the apochromatic oil immersion lens 2 mm with a numerical aperture 1.40. This lens has been included in the list of microscope objectives since the Leitz works succeeded in computing a combination in which the front lens can be secured in a comparatively firm mounting.

Apochromatic Objectives vs. "Periplan" Eyepieces.

Though in apochromatic objectives, rays of different colors are brought to a focus in an ideal manner, it is not possible to entirely remove the residual difference in the focal length due to different colors, in consequence of which the resulting images are not strictly coincident. This overlapping of the images gives rise to color fringes at the edge of the field. To eliminate this defect a special series of eyepieces has been introduced under the name of "Periplan" Eyepieces. The formula of these eyepieces admits of still higher magnifications than are practical in the case of Huyghenian Eyepieces.

The remarkable feature of flatness of field to the periphery of the image, as is obtained through the use of the "Periplan" Eyepieces, is one of special importance for Photo-Micrography.

With many objects the absence of the secondary spectrum endows the image with a brilliancy which cannot be attained in any of the achromatic objectives.

Huyghenian Eyepieces: The Leitz Huyghenian Eyepieces are available for use with all Leitz Objectives, though they are primarily designed for combination with Fluorite and Achromatic lenses.

COMPLETE LIST OF MICROSCOPE OBJECTIVES

Character of Objectives	Cat. No.	Designation	Focal Length mm.	Numerical Aperture	Micrometer Values with Huyghenian Eyepiece II (6x)	Code Words	Price \$	
Achromatic Objectives	Dry	22000	1*	42	0,08	0,059 mm = 59 μ	Acola	
		22002	1	40	0,11	0,050 " = 50 "	Acube	
		22005	1B	32	0,15	0,037 " = 37 "	Acaba	
		22006	2	24	0,21	0,029 " = 29 "	Acedu	
		22008	3	16,2	0,25	0,0161 " = 16,1 "	Acora	
		22010	3a	13,0	0,40	0,0122 " = 12,2 "	Acodo	
		22012	4	10,0	0,40	0,0086 " = 8,6 "	Aclan	
		22014	5	5,4	0,64	0,0050 " = 5,0 "	Acati	
		22016	6	4,0	0,85	0,0035 " = 3,5 "	Actis	
		22017	6*	4,0	0,65	0,0035 " = 3,5 "	Acemat	
		22018	7	3,0	0,85	0,00267 " = 2,67 "	Acise	
		Water Immersion	22020	10	2,1	1,20	0,00179 mm = 1,79 μ	Abacw
		Oil Immersion	22022	1/2	2,0	1,30	0,00177 mm = 1,77 μ	Abadv
		Fluorite Objectives	Dry	22024	6a	4,2	0,82	0,0039 mm = 3,9 μ
22026	7a			3,2	0,85	0,00288 " = 2,88 "	Abags	
22030	8			2,6	0,87	0,00235 " = 2,35 "	Abahr	
22032	9			2,2	0,87	0,00185 " = 1,85 "	Abajp	
Oil Immersion	22031		1/7a	3,45	0,85	0,0039 mm = 3,9 μ	Abako	
	22033		1/10a	2,60	1,30	0,00230 " = 2,30 "	Abaln	
	22034		1/12a	1,95	1,32	0,00170 " = 1,70 "	Abaol	
	22036		1/16a	1,60	1,32	0,00145 " = 1,45 "	Abapk	
Apochromatic Objectives	Dry	22050	mm	—	—	With Periplan Eyepiece, 6X		
		22052	16	16	0,30	0,0142 mm = 14,2 μ	Aposa	
		22054	8	8	0,65	0,0068 " = 6,8 "	Apoct	
		22056	4	4	0,95	0,0034 " = 3,4 "	Apovi	
		22056	3	3	0,95	0,00242 " = 2,42 "	Apore	
	Oil Immersion	22058	3	3	1,30	0,00258 " = 2,58 μ	Apofo	
		22060	3	3	1,40	0,00258 " = 2,58 "	Apoty	
		22062	2	2	1,32	0,00170 " = 1,70 "	Apoim	
		22064	2	2	1,40	0,00170 " = 1,70 "	Apoxu	

*Long working distance.

Huyghenian Eyepieces

Designation:	0	I	II*	III	IV	V
Equivalent Focal Length: mm.	62,5	50,0	41,65	31,25	25,0	20,85
Magnifying Power:	4	5	6	8	10	12
Catalog No.:	22038	22040	22042	22044	22046	22048
Code Word:	Abaqj	Abari	Abash	Abatg	Abauf	Abave

*With micrometer code word ABAWD, \$

"Periplan" Eyepieces

Designation:	P. O. 4x	P. O. 5x	P. O. 6x*	P. O. 8x	P. O. 10x	P. O. 12x	P. O. 15x	P. O. 20x	P. O. 25x
Equivalent Focal Length: mm.	62,5	50,0	41,65	31,25	25,0	20,85	16,65	12,5	10,0
Magnifying Power:	4	5	6	8	10	12	15	20	25
Catalog No.:	22065	22066	22067	22069	22071	22073	22075	22077	22079
Code Word:	Abaxc	Abayb	Abaza	Abcau	Abceg	Abcfe	Abchj	Abcil	Abcla

*With micrometer code word ABCNO, \$

MAGNIFICATION TABLE

of
Achromatic, Fluorite and Apochromatic Objectives with Huyghenian and "Periplan" Eyepieces

Designation of Objectives	Initial Magnification	Huyghenian Eyepieces										
		0	I	II	III	IV	V					
		"Periplan" Eyepieces										
		4x	5x	6x	8x	10x	12x	15x	20x	25x		
1*	2,7	11	13,5	16	22	27	32	41	54	68		
1	3,2	13	16	19	26	32	38	48	64	80		
1B	4	16	20	24	32	40	48	60	80	100		
2	5,8	23	29	35	46	58	70	87	116	145		
3	10,3	41	51	62	82	103	123	160	210	260		
3a	13,5	54	68	81	110	135	165	200	270	340		
4	19,0	75	95	115	150	190	230	285	380	475		
5	33,3	135	165	200	265	335	400	500	670	840		
6a	44,0	175	220	265	350	440	530	660	880	1100		
6	45,0	180	225	270	360	450	540	675	900	1125		
7a	58,1	230	290	350	465	580	700	870	1160	1450		
7	62,5	250	310	375	500	625	750	940	1250	1560		
8	70,0	280	350	420	560	700	840	1050	1400	1750		
9	85,2	340	425	510	680	850	1020	1280	1700	2130		
10	90,6	360	455	545	725	905	1090	1360	1810	2270		
1/7 a	54	215	270	325	430	540	650	810	1080	1350		
1/10 a	70	280	350	420	560	700	840	1050	1400	1750		
1/12	90	360	450	540	720	900	1050	1350	1800	2250		
1/12 a	95	380	475	570	760	950	1140	1425	1900	2375		
1/16	114	450	570	700	900	1140	1400	1710	2280	2850		
16 mm	11,5	45	57	70	90	115	140	172	230	285		
8 "	23,0	90	115	140	180	230	280	345	460	575		
4 "	46,0	180	230	280	360	460	560	690	926	1150		
3 "	66,0	270	330	410	540	660	820	990	1320	1650		
2 mm.	92,0	360	460	560	740	920	1120	1380	1840	2300		

Note: The Huyghenian Eyepieces 0-V are equivalent in magnifying power to the "Periplan" Eyepieces 4-12x.

PAIRED OBJECTIVES

for "Greenough-Leitz" Binocular Microscopes

Character of Objectives	Code Words	Cat. No.	Designation	Equivalent Focal Length mm.	Price \$
Dry	Abcqm	22080	55 mm	55	
"	Abdan	22082	48 mm	48	
"	Abdex	22084	40 mm	40	
"	Abdfh	22086	32 mm	32	
"	Abdhr	22088	25 mm	25	
Water Immersion	Abdit	22090	24 mm	24	

PAIRED EYEPIECES

for High Power Binocular and "Greenough-Leitz" Binocular Microscopes

Two of the identical power of either Huyghenian or "Periplan" Eyepieces are used for these microscopes. These Eyepieces are carefully selected so as to match in optical data.

Note: The price per pair is double the price of the single eyepieces as listed.

MAGNIFICATION TABLE

of Paired Objectives in conjunction with Paired Huyghenian and "Periplan" Eyepieces

Objectives	Initial Magnifying Power	Huyghenian Eyepieces						"Periplan" Eyepieces	
		0	I	II	III	IV	V	15X	20X
55 mm	1.85x	7.5	9	11	15	18	22	30	37
48 mm	2.7x	11	13	16	22	27	32	45	54
40 mm	3.6x	14	18	22	29	36	43	60	72
32 mm	5.2x	21	26	31	42	52	62	85	105
25 mm	7.6x	31	38	46	61	76	91	125	150
24 mm	8.14x	33	41	49	66	82	100	132	179

STANDARD OPTICAL EQUIPMENTS

In connection with the Microscope Models ABM, LB, AA, C, D, L, LL, ST, we list Standard Optical Equipments, which we believe have been computed most advantageously in regard to range of magnifying power for the various branches of investigation.

Note: If it is preferred to deviate from these standard equipments, selection of additional objectives and eyepieces can be made from the complete assortment listed on page 6.

Optical Equipment No. 2: Double Dustproof Nosepiece, Achromatic Objectives 3 (16mm) No. 22008, 6 (4mm) No. 22016, Huyghenian Eyepiece III (8X) No. 22044.

Optical Equipment No. 4: Double Dustproof Nosepiece, Achromatic Objectives 3 (16mm) No. 22008, 6 (4mm) No. 22016, Huyghenian Eyepieces II (6X), No. 22042, IV (10X) No. 22046.

Optical Equipment No. 6: Double Dustproof Nosepiece, Achromatic Objectives 3 (16mm) No. 22008, 6 (4mm) No. 22016, Huyghenian Eyepieces II (6X) No. 22042, IV (10X) No. 22046.

Optical Equipment No. 7: Triple Dustproof Nosepiece, Achromatic Objectives 1* (42mm) No. 22000, 3 (16mm) No. 22008, 6 (4mm) No. 22016, Huyghenian Eyepieces II (6X) No. 22042, IV (10X) No. 22046.

Optical Equipment No. 7a: Triple Dustproof Nosepiece, Achromatic Objectives 1b (32mm) No. 22005, 3 (16mm) No. 22008, 6 (4mm) No. 22016, Huyghenian Eyepieces II (6X) No. 22042, IV (10X) No. 22046.

Optical Equipment No. 8: Triple Dustproof Nosepiece, Achromatic Objectives 3 (16mm) No. 22008, 6 (4mm) No. 22016, Huyghenian Eyepieces II (6X) No. 22042, IV (10X) No. 22046.

Optical Equipment No. 9: Triple Dustproof Nosepiece, Achromatic Objectives 1* (42mm) No. 22000, 3 (16mm) No. 22008, 6 (4mm) No. 22016, Huyghenian Eyepieces II (6X) No. 22042, IV (10X) No. 22046.

Optical Equipment No. 9a: Triple Dustproof Nosepiece, Achromatic Objectives 1b (32mm) No. 22005, 3 (16mm) No. 22008, 6 (4mm) No. 22016, Huyghenian Eyepieces II (6X) No. 22042, IV (10X) No. 22046.

Optical Equipment No. 10: Triple Dustproof Nosepiece, Achromatic Objectives 3 (16mm) No. 22008, 6 (4mm) No. 22016, Oilimmersion 1/12 (1.8mm) N.A. 1.30 No. 22022, Huyghenian Eyepieces II (6X) No. 22042, IV (10X) No. 22046.

Optical Equipment No. 15: Triple Dustproof Nosepiece, Achromatic Objectives 3 (16mm) No. 22008, 6 (4mm) No. 22016, Fluorite Oilimmersion 1/12a (1.8mm) N.A. 1.32 No. 22034, Huyghenian Eyepieces II (6X) No. 22042, IV (10X) No. 22046.

Optical Equipment No. 20: Triple Dustproof Nosepiece, Achromatic Objective 3 (16mm) No. 22008, Fluorite Objectives 6a (4mm) No. 22024, Oilimmersion 1/12a (1.8mm) N.A. 1.32 No. 22034, Huyghenian Eyepieces II (6X) No. 22042, IV (10X) No. 22046.

Optical Equipment No. 30: Triple Dustproof Nosepiece, Apochromatic Objectives 16mm No. 22050, 4mm No. 22054, Oilimmersion 2 mm N.A. 1.32 No. 22062, Periplan Eyepieces 8X No. 22069, 15X No. 22075.

Note: With Binocular Microscopes the Eyepieces listed in above equipments are furnished in pairs, carefully matched to each other.

BIOLOGICAL MICROSCOPES

The complete line of these microscopes is listed in our

Catalog IV-A

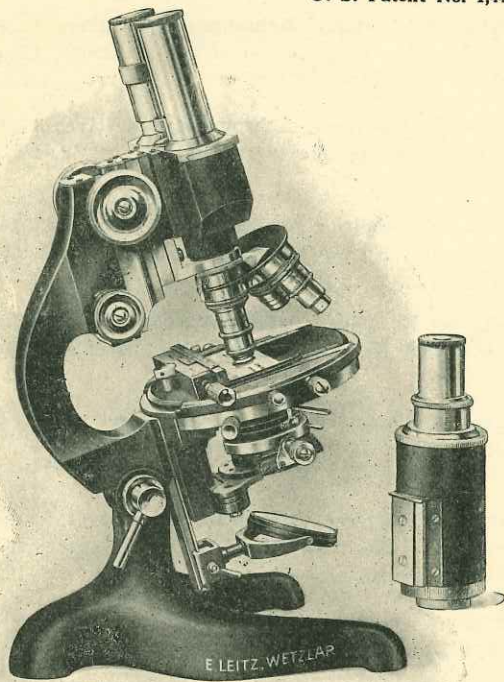
In the following, however, we list only those microscopes which are most frequently in use. Relative to those not listed in this catalog extract, we suggest writing for complete catalog IV-A, from which to make selection.

COMBINATION MICROSCOPE, MODEL "ABM"

for

Binocular and Monocular Vision

U. S. Patent No. 1,448,592



This microscope is considered the standard for research investigations and photo-micrography by government departments as well as leading universities and other institutions.

Both the binocular and monocular tubes can be used interchangeably and are clamped in place by an eccentric lever, to be held in place in a permanently centered position to the optical axis of the microscope. The support with objective-nosepiece remains within the optical axis during the interchange of the tubes and therefore affords a rigid guarantee of the objectives to stay centered regardless if used with the binocular or monocular tube.

The advantages derived through the use of binocular microscopes can be summarized as follows:

1. Complete binocular vision;
2. Perfect adjustment of the oculars to any interpupillary distance;
3. Adjustment of any difference in refraction between the eyes;
4. Complete elimination of eye-strain, therefore, restfulness to the eyes;
5. Improved quality of image;
6. Eyepieces mounted parallel, not convergent as in some other constructions;
7. Any objective, from the lowest power dry to the strongest oilimmersions, can be utilized;
8. Periplan and Huyghenian oculars of the various focal lengths are adaptable;
9. The full numerical aperture of the objectives is maintained;
10. All the features of the regular monocular microscope are embodied.

Prolonged observations with the monocular microscope are very fatiguing and for this reason the Leitz Binocular Microscopes will appeal to the research microscopist, who has hoped that some day a binocular instrument of perfection would be at his disposal to aid him in his work.

The Microscope "ABM" is equipped with the complete substage "a" with swing-out three-lens condenser N.A. 1.40; rack and pinion for focussing the entire substage along the optical axis; two iris diaphragms, one mounted to rack and pinion for oblique illumination; plano and concave mirror on universal joint.

Combination Microscope "ABM-10", as described, complete with optical equipment 10 as listed on page 9, in mahogany cabinet with lock and key.....\$

Code Word: **ABMTE**

Combination Microscope "ABM-20", as described, complete with optical equipment 20 as listed on page 9, in mahogany cabinet with lock and key.....\$

Code Word: **ABMEY**

Combination Microscope "ABM-30", as described, complete with optical equipment 30 as listed on page 9, in mahogany cabinet with lock and key.....\$

Code Word: **ABMHR**

Note: The above microscope equipments include both binocular and monocular tubes, and plain circular, centering stage.

No. 22611 Rotary Mechanical Stage for microscope "ABM".....\$

Code Word: **ABDJE**

No. 22160 Aplanatic-achromatic Condenser, N.A. 1.40, in place of three-lens condenser, additional.....\$

Code Word: **ABDKY**

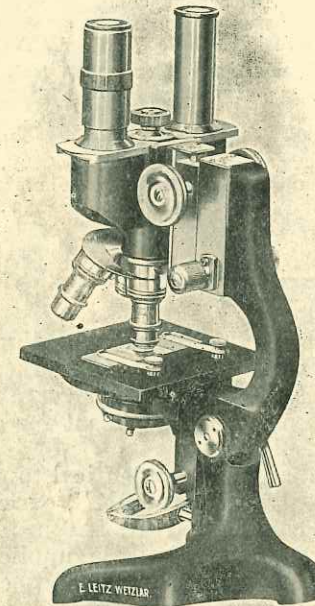
"MON-OBJECTIVE-BINOCULAR" MICROSCOPE MODEL "LB"

A New Binocular Model of Moderate Price

In efficiency of binocular vision the microscope "LB" is equal to the more elaborately equipped instruments. It is simple in construction and represents the most moderately priced model of our complete line of binocular microscopes.

With the advantages of binocular vision so well known and presenting herewith an instrument of moderate price, we believe to have pointed the way for the adoption of Binocular Microscopes for routine laboratory work and the use of such microscopes by students.

Model "LB" is equipped with a quick-screw substage, supplied with Abbe Condenser N.A. 1.20, iris diaphragm attached thereto, plano and concave mirror with universal joint, the complete substage mounted to a rack and pinion movement for focusing within the optical axis.



Microscope "LB-6", as described, complete with optical equipment 6, as listed on page 9, in cabinet with lock and key. Code Word: **ALBIX**.....\$

Microscope "LB-8", as described, complete with optical equipment 8, as listed on page 9, in cabinet with lock and key. Code Word: **ALBGH**.....\$

Microscope "LB-9", as described, complete with optical equipment 9, as listed on page 9, in cabinet with lock and key. Code Word: **ALBNE**.....\$

Microscope "LB-9a", as described, complete with optical equipment 9a, as listed on page 9, in cabinet with lock and key. Code Word: **ALBEA**.....\$

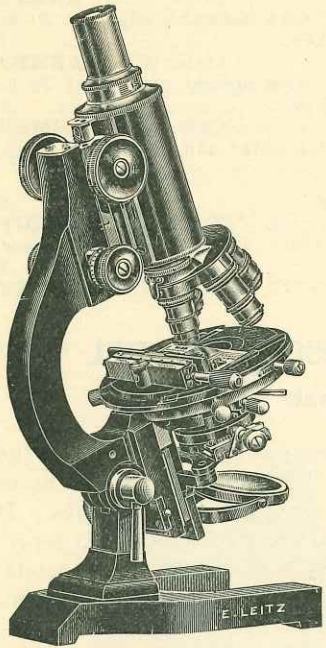
Microscope "LB-10", as described, complete with optical equipment 10, as listed on page 9, in cabinet with lock and key. Code Word: **ALBTN**.....\$

Microscope "LB-15", as described, complete with optical equipment 15, as listed on page 9, in cabinet with lock and key. Code Word: **ALBFT**.....\$

Microscope "LB-20", as described, complete with optical equipment 20, as listed on page 9, in cabinet with lock and key. Code Word: **ALBWH**.....\$

No. 22622. Mechanical Stage, for above microscope. Code Word: **DECHA**.....\$

MICROSCOPE MODEL "AA"



In general construction and design the microscope "AA" is equal to the model "ABM", except that it is furnished with a monocular tube only, therefore not available for binocular vision.

Model "AA" is equipped with a rotary mechanical stage in addition to the circular plain stage with centring screws.

The substage furnished with microscope "AA" is identical to the one as described in connection with model "ABM".

Microscope "AA" is especially recommended for research investigations and photo-micrography.

Microscope "AA-10", as described, complete with optical equipment 10, as listed on page 9, in mahogany cabinet with lock and key. Code Word: AATEN.....\$

Microscope "AA-20", as described, complete with optical equipment 20, as listed on page 9, in mahogany cabinet with lock and key. Code Word: AATWE.....\$

Microscope "AA-30", as described, complete with optical equipment 30, as listed on page 9, in mahogany cabinet with lock and key. Code Word: AATHR.....\$

No. 22160. Aplanatic-achromatic Condenser, N.A. 1.40, in place of three-lens condenser, additional.....\$
Code Word: ABDKY

Note: If the rotary mechanical stage is eliminated deduct

If the plain circular and centring stage is eliminated, deduct

MICROSCOPE MODEL "C"

This microscope constitutes a medium-sized research microscope for advanced laboratory investigations and is preferred whenever a microscope of moderate price, yet sufficient for critical laboratory work, is desired.

Its substage equipment is identical to the one offered with the microscope "ABM", except furnished with Abbe condenser N.A. 1.20 in place of three-lens condenser N.A. 1.40. It is supplied with plain circular and centring stage and can be supplemented by a mechanical stage as listed below.

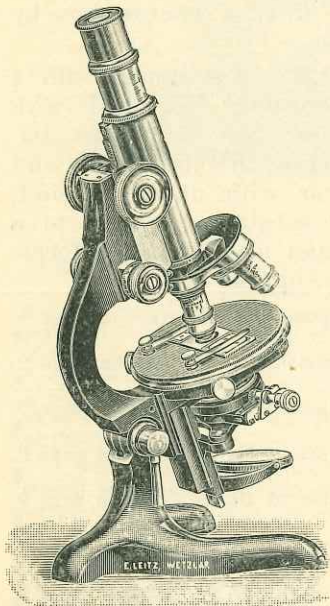
Microscope "C-10", as described, complete with optical equipment 10, as listed on page 9, in mahogany cabinet with lock and key. Code Word: ACCTN.....\$

Microscope "C-20", as described, complete with optical equipment 20, as listed on page 9, in mahogany cabinet with lock and key. Code Word: ACCWY.....\$

Microscope "C-30", as described, complete with optical equipment 30, as listed on page 9, and three-lens condenser N.A. 1.40, in mahogany cabinet with lock and key. Code Word: ACCHR.....\$

No. 22614. Mechanical Stage, large pattern, with worm-screw drive. Code Word: DECSV.....\$

No. 22160. Aplanatic-achromatic Condenser, N.A. 1.40, in place of three-lens condenser, additional.....\$
Code Word: ABDKY



MICROSCOPE MODEL "D"

In construction and size this microscope is identical to Model "C", except that it is supplied with a square stage in place of the circular type.

This microscope is invariably selected whenever a medium-sized research microscope with square stage is preferred.

The microscope stage can be supplemented by a mechanical stage as listed below.

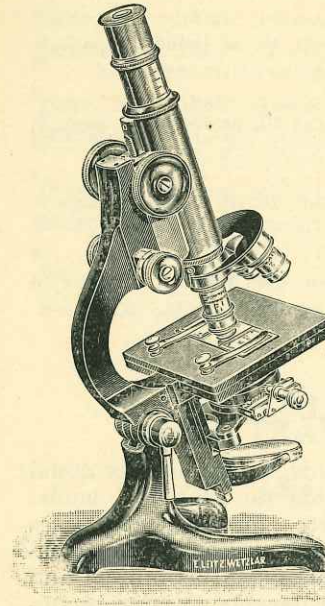
Microscope "D-10", as described, complete with optical equipment 10, as listed on page 9, in mahogany cabinet with lock and key. Code Word: ADEAZ.....\$

Microscope "D-20", as described, complete with optical equipment 20, as listed on page 9, in mahogany cabinet with lock and key. Code word: ADFBA.....\$

Microscope "D-30", as described, complete with optical equipment 30, as listed on page 9, and three-lens condenser N.A. 1.40, in mahogany cabinet with lock and key. Code Word: ADFCX.....\$

No. 22614. Mechanical Stage, large pattern, with worm-screw drive. Code Word: DECSV.....\$

No. 22160. Aplanatic-achromatic Condenser, N.A. 1.40, in place of three-lens condenser, additional.....\$
Code Word: ABDKY



MICROSCOPE MODEL "L"

This microscope represents the standard model for routine laboratory, school and student work, and is in use with practically no exception in all the leading Universities, Hospitals and other Institutions.

The microscope "L" is endowed with the same precision of constructive refinements and the same "Leitz Quality of Optical and Mechanical Workmanship," so rigidly identified with the Leitz research microscopes, from which follows, that instruments of such precision will offer continuous satisfaction and superior results to microscopes of other make.

The microscope "L" is equipped with a quick-screw substage, supplied with Abbe Condenser N.A. 1.20, iris diaphragm attached thereto, plano and concave mirror with universal joint, the complete substage mounted to a lateral screw for focussing within the optical axis.

Microscope "L-6", as described, complete with optical equipment 6, as listed on page 9, in cabinet with lock and key. Code Word: ABDLC.....\$

Ditto, but without cabinet. Code Word: ABDMO.....\$

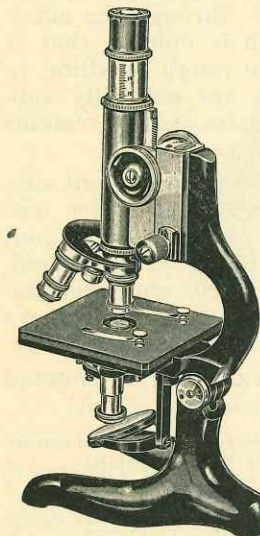
Microscope "L-8", as described, complete with optical equipment 8, as listed on page 9, in cabinet with lock and key. Code Word: ABDNI.....\$

Ditto, but without cabinet. Code Word: ABDOB.....\$

Microscope "L-9", as described, complete with optical equipment 9, as listed on page 9, in cabinet with lock and key. Code Word: ABDRA.....\$

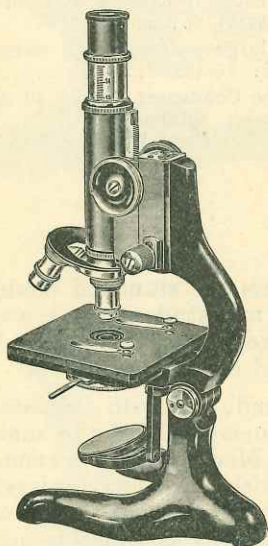
Ditto, but without cabinet. Code Word: ABDSU.....\$

Note: Various other equipments of microscope "L" will be found on page 14.



Microscope "L-9a", as described, complete with optical equipment 9a, as listed on page 9, in cabinet with lock and key. Code Word: ABDTF.....\$
 Ditto, but without cabinet. Code Word: ABDUX.....\$
 Microscope "L-10", as described, complete with optical equipment 10, as listed on page 9, in cabinet with lock and key. Code Word: ABDVS.....\$
 Ditto, but without cabinet. Code Word: ABDYZ.....\$
 Microscope "L-15", as described, complete with optical equipment 15, as listed on page 9, in cabinet with lock and key. Code Word: ABDZL.....\$
 Ditto, but without cabinet. Code Word: ABIAN.....\$
 Microscope "L-20", as described, complete with optical equipment 20, as listed on page 9, in cabinet with lock and key. Code Word: ABIBO.....\$
 Ditto, but without cabinet. Code Word: ABICF.....\$
 No. 22622. Mechanical Stage for above microscope. Code Word: DECHA.....\$

MICROSCOPE MODEL "LL"



In general construction this microscope is equal to the type "L" and represents the standard model for biology, zoology, botany, etc., for which purposes it is in use by most of the leading institutions of teaching. Its precision workmanship as well as optical and mechanical quality makes it preferable to microscopes of other manufacture.

Professors who have had an opportunity to judge the merits of the microscope "LL" through the many years of service, are united in their opinion that it withstands in an ideal manner the rough handling to which instruments of this nature are naturally subjected in students' hands, and that its quality remains unimpaired through many years of service.

Whenever this microscope is supplied without substage condenser, it is equipped with a cylinder iris-diaphragm. Model "LL" is available with or without the substage condenser and when the latter is ordered, we furnish Abbe Condenser N.A. 1.20, with iris diaphragm attached thereto, which slides into the sleeve mounted to the under-surface of the microscope stage.

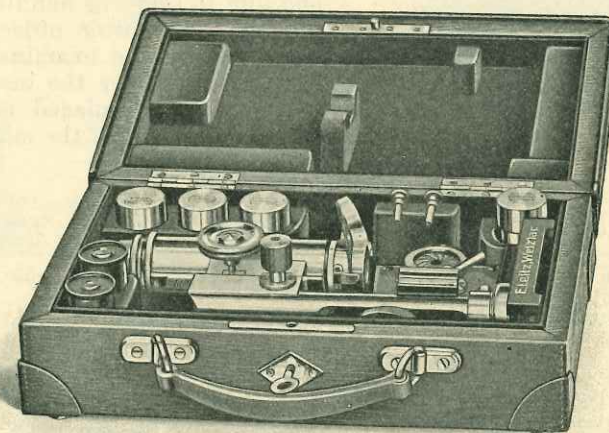
The microscope "LL" is equipped with plano and concave mirror, mounted to universal joint.

Microscope "LL-2", as described, without substage condenser, complete with optical equipment 2, as listed on page 9, in cabinet with lock and key. Code Word: ABIDG.....\$
 Ditto, but without cabinet. Code Word: ABIEH.....\$
 Microscope "LL-4", as described, without substage condenser, complete with optical equipment 4, as listed on page 9, in cabinet with lock and key. Code Word: ABIFI.....\$
 Ditto, but without cabinet. Code Word: ABIGJ.....\$
 Microscope "LL-6", as described, with substage condenser, complete with optical equipment 6, as listed on page 9, in cabinet with lock and key. Code Word: ABIHK.....\$
 Ditto, but without cabinet. Code Word: ABIJL.....\$
 Microscope "LL-7", as described, without substage condenser, complete with optical equipment 7, as listed on page 9, in cabinet with lock and key. Code Word: ABIKM.....\$
 Ditto, but without cabinet. Code Word: ABILO.....\$
 Microscope "LL-7a", as described, without substage condenser, complete with optical equipment 7a, as listed on page 9, in cabinet with lock and key. Code Word: ABIMP.....\$
 Ditto, but without cabinet. Code Word: ABINR.....\$

Microscope "LL-8", as described, with substage condenser, complete with optical equipment 8, as listed on page 9, in cabinet with lock and key. Code Word: ABIOS.....\$
 Ditto, but without cabinet. Code Word: ABIPT.....\$
 Microscope "LL-9", as described, with substage condenser, complete with optical equipment 9, as listed on page 9, in cabinet with lock and key. Code Word: ABIRU.....\$
 Ditto, but without cabinet. Code Word: ABISV.....\$
 Microscope "LL-9a", as described, with substage condenser, complete with optical equipment 9a, as listed on page 9, in cabinet with lock and key. Code Word: ABITX.....\$
 Ditto, but without cabinet. Code Word: ABIVZ.....\$
 Microscope "LL-10", as described, with substage condenser, complete with optical equipment 10, as listed on page 9, in cabinet with lock and key. Code Word: ACEAL.....\$
 Ditto, but without cabinet. Code Word: ACEBX.....\$
 No. 22622. Mechanical Stage for above microscope. Code Word: DECHA.....\$

SMALL TRAVELLING MICROSCOPE MODEL "ST"

(Size of leather case 27 x 17 x 9 $\frac{1}{2}$ cm.)



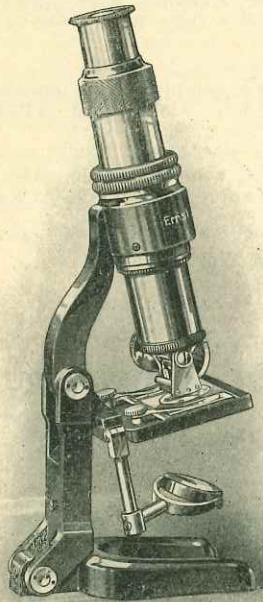
Due to its compact but rigid construction, the microscope "ST" represents the most ideal type of travelling stand. It is supplied with a special condenser of N.A. 1.00 with iris-diaphragm. The foot is of foldable pattern. The stage is mounted to a strong bracket supplied with joint to permit its folding parallel to the pillar stand. The case is made of strong leather, velvet lined, the corners being reinforced.

Microscope "ST-6", as described, without substage condenser, complete with optical equipment 6, as listed on page 9, in case with lock and key. Code Word: ACECW.....\$
 Microscope "ST-8", as described, with substage condenser, complete with optical equipment 8, as listed on page 9, in case with lock and key. Code Word: ACEFT.....\$
 Microscope "ST-10", as described, with substage condenser, complete with optical equipment 10, as listed on page 9, in case with lock and key. Code Word: ACEGS.....\$
 Microscope "ST-40", as described, with substage condenser, triple dust-proof nose-piece, without objectives and eyepieces, in case with lock and key. Code Word: ACEHI..\$

COMPOUND POCKET MICROSCOPE "MINOR"

Patented

Smallest Compound Pocket Microscope Made; Optics Are of Leitz Quality



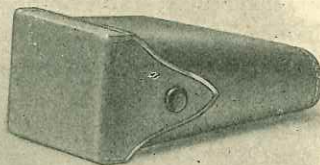
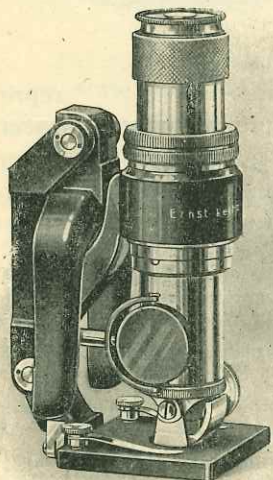
"Minor" is universally adapted for nature studies and recommended for the examination of a great variety of objects requiring a wide range of magnifications. It is especially desirable for field work in botany, entomology, mineralogy, geology, and at the same time most serviceable to chemists, industrial laboratories, student nurses, college and high school students. The magnifications are fully adequate for certain clinical examinations, including blood counting, and due to its extreme portability it is ideal for bedside use by physicians.

Aside for use as compound microscope it is likewise available as demonstration microscope. To utilize it in this manner the supporting pillar and foot are bent to one line to serve as handle, and in applying the low power objective it is then available for the examination of objects upon which either the instrument cannot be conveniently placed or the specimen between the foot of the microscope.

Magnification Table

Objective	Fully contracted tube	Fully extended tube	Numerical Aperture	Free Working Distance, mm
Single Objective of low power	7X	26X	0.05-0.08	124-74
Combination Objective, using one lens section only	100X	180X	0.28	3.6
Ditto, using both lens sections.....	150X	250X	0.37	0.8

Note: If the draw tube is placed between fully contracted and fully extended positions, magnifications between those indicated above will be available.



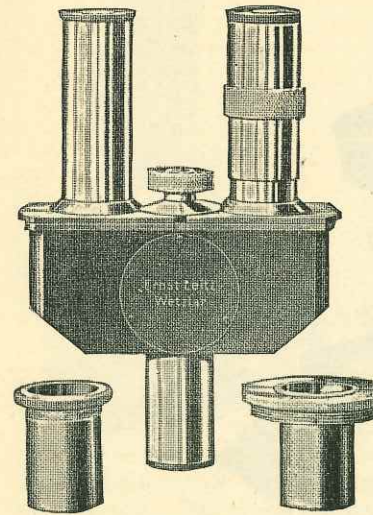
Microscope "Minor" folded for insertion into pocket case. Size of pocket case: 5 1/2 x 1 1/2 x 2 in. Weight without case: 12 oz., with case: 14 oz.

Directions are included with each microscope.

Compound Pocket Microscope, as described, with combination objective, single objective, in strong leather case, with directions for use. Code Word: MINOR\$

BINOCULAR STEREO ATTACHMENT

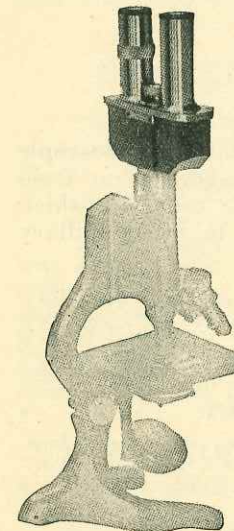
It converts Any of the Standard Models of Monocular Microscopes Into One for Binocular Vision



With the gaining popularity of using binocular microscopes in place of those adapted for use with one eye only, it has been thought advisable to offer a binocular stereo attachment, by means of which any available monocular microscope of standard design can be converted into one to utilize both eyes. Through the purchase of this attachment one is therefore enabled to still use his microscope and with little additional cost can avail himself of binocular vision and all the advantages offered with the more or less expensive models of binocular microscopes.

In removing the draw tube of the monocular microscope, the binocular attachment readily slips into the body tube and by means of the accompanying adapter it is held in place firmly.

When ordering the attachment for use with any other microscope than "Leitz" make, the name of the manufacturer should be mentioned in the order, so that the proper adapter can be supplied.



Monocular Microscope provided with Stereo Attachment.

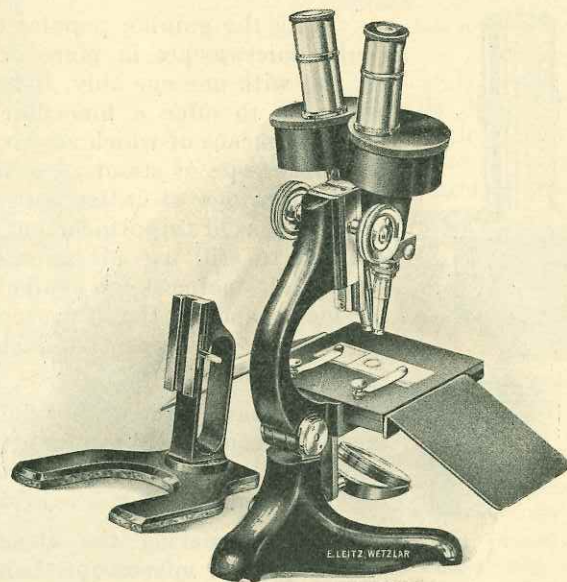
- No. 22699. Binocular Stereo Attachment, as described, with one screw ring for Leitz microscopes, but without eyepieces. Code Word: ACEJP.....\$
- No. 22701. Screw Ring, for other than Leitz microscopes. Code Word: ACEKO
- No. 22038. Pair of matched Huyghenian Eyepieces 0 (4X). Code Word: ACELR
- No. 22040. Ditto I (5X). Code Word: ACEMU.....\$
- No. 22042. Ditto II (6X). Code Word: ACEPK.....\$
- No. 22044. Ditto III (8X). Code Word: ACEQJ.....\$
- No. 22065. Pair of matched "Periplan" Eyepieces 4X. Code Word: ACERL.....\$
- No. 22066. Ditto 5X. Code Word: ACESH.....\$
- No. 22067. Ditto 6X. Code Word: ACETG.....\$
- No. 22069. Ditto 8X. Code Word: ACEUP.....\$

Table of Magnification, obtained with the Binocular Stereo Attachment, using above eyepieces in connection with those objectives most frequently employed:

Achromatic Objectives	Huyghenian Eyepieces				Apochromatic Objectives	"Periplan" Eyepieces			
	0	I	II	III		4X	5X	6X	8X
No. 3 (16mm)	82	102	124	164	16 mm	90	114	140	180
No. 6 (4mm)	380	480	580	770	4 mm	360	460	560	720
1/12 (1.8mm)	840	1050	1260	1680	2 mm.	720	920	1120	1440

BINOCULAR MICROSCOPE "GREENOUGH-LEITZ"

Stereoscopic and Image Erecting



Pillar Stand of Model "GLF".

Complete Model "GLE".

The "Greenough-Leitz" Binocular Microscope permits stereoscopic images with great relief and plastic within a range of magnification from 7.5X to 180X. It is composed of two complete microscope tubes in which "Porro" prisms are mounted. Both tubes are adjustable to interpupillary distance and therefore will suit the eyes of any observer.

Microscope "GLE-1", as described, with one pair objectives 40mm, one each pair Huyghenian eyepieces II (6X) and IV (10X), in wooden cabinet with lock and key. Code Word: ACEVE.....\$

Microscope "GLE-3", as described, with one each pair objectives 48mm and 32mm, one each pair Huyghenian eyepieces II (6X) and IV (10X), one pair Periplan eyepieces 15X, in wooden cabinet with lock and key. Code Word: ACEWD.....\$

Microscope "GLE-5", as described, with one each pair objectives 55mm, 40mm and 25mm, one each pair Huyghenian eyepieces I (5X), III (8X) and V (12X), one pair Periplan eyepieces 20X, in wooden cabinet with lock and key. Code Word: ACEXC....\$

The model "GLF" differs in its construction from "GLE" inasmuch as the prism tubes are mounted to a pillar stand with hardrubber foot in place of the complete microscope stand.

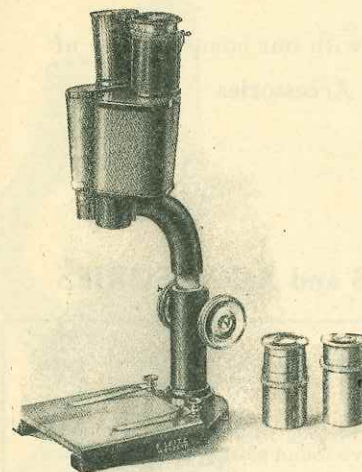
Microscope "GLF-1", as described, with one pair objectives 40mm, one each pair Huyghenian eyepieces II (6X) and IV (10X), in wooden cabinet with lock and key. Code Word: ACEYB.....\$

Microscope "GLF-3", as described, with one each pair objectives 48mm and 32mm, one each pair Huyghenian eyepieces II (6X) and IV (10X), one pair Periplan eyepieces 15X, in wooden cabinet with lock and key. Code Word: ACEZA.....\$

Microscope "GLF-5", as described, with one each pair objectives 55mm, 40mm and 25mm, one each pair Huyghenian eyepieces I (5X), III (8X) and V (12X), one pair Periplan eyepieces 20X, in wooden cabinet with lock and key. Code Word: ADFEU.....\$

BINOCULAR STEREO MAGNIFIER

Stereoscopic Vision; Large Field of View; Long Working Distance



This instrument represents a magnifier rendering magnifications from 3.5X to 30X under large field of view, and offers numerous features, so far lacking in any similar apparatus. In size it corresponds approximately to the dimensions of a standard microscope.

The prism bodies, comprising the upper part of the stand, are provided with one pair of stationary objectives. The prism tubes are rotatable and thus afford an adjustment to suit the interpupillary distance of the eyes of any observer.

In removing the glass plate from the base of the microscope, the stand can be placed directly upon specimens, and thus be used for large objects of extensive thickness and dimensions, likewise for specimens suspended in museum jars.

Eyepieces of various magnifying powers are offered for use with this microscope. These eyepieces are furnished in pairs, one ocular being of stationary type, the other is provided with an adjustable mounting, to equalize differences of refractive index between the observer's eyes.

BINOCULAR STEREO MAGNIFIER, MODEL "BSM"

The Model "BSM" is provided for use with special eyepieces of comparatively low magnifications, but offers the advantage of a free working distance of approximately 140mm.

No. 244. Binocular Stereo Magnifier "BSM", as described, consisting of vertical stand, prism body, one pair of stationary mounted objectives, without eyepieces, in wooden cabinet with lock and key. Code Word: AFOUV.....\$

The following pairs of eyepieces, or a selection thereof, are recommended for use with Model "BSM": (With each pair of eyepieces one ocular is provided with adjustable mounting)

Pair of Eyepieces, 3.5X, field of view 50mm diameter. Code Word: AFOWK.....\$

Pair of Eyepieces, 7X, field of view 33mm diameter. Code Word: AFOXN.....\$

Pair of Eyepieces, 10.5X, field of view 22mm diameter. Code Word: AFOYT.....\$

Pair of Eyepieces, 15X, field of view 20mm diameter. Code Word: AFOZR.....\$

BINOCULAR STEREO MAGNIFIER, MODEL "BSMA"

The Model "BSMA" differs from "BSM" through its slightly reduced dimensions, brought about on account of the eyepieces used with this microscope being of higher magnifications, and the shorter working distance of the objectives. Likewise in this model the objectives are mounted in a stationary manner to the prism bodies.

The model "BSMA" is given preference over "BSM" if it is considered to advantage to employ higher magnification.

No. 244-E. Binocular Stereo Magnifier "BSMA", as described, consisting of vertical stand, prism body, one pair of stationary mounted objectives, without eyepieces, in wooden cabinet with lock and key. Code Word: AFOPX.....\$

The following pairs of eyepieces, or a selection thereof, are recommended for use with Model "BSMA": (With each pair of eyepieces one ocular is provided with adjustable mounting)

Pair of Eyepieces, 10X, field of view 16mm diameter. Code Word: AFORO.....\$

Pair of Eyepieces, 20X, field of view 10mm diameter. Code Word: AFOSM.....\$

Pair of Eyepieces, 30X, field of view 7mm diameter. Code Word: AFOTW.....\$

We refrain from listing in this Catalog Extract **Metallurgical Microscopes**, since interest in these can safely be localized to metallographic departments, which most likely do not profess interest in those items as are listed in this Catalog Extract.

To those who wish to familiarize themselves with our complete line of

Metallurgical Microscopes and Accessories

we gladly forward our

Catalog I-B

PETROGRAPHICAL MICROSCOPES and ACCESSORIES

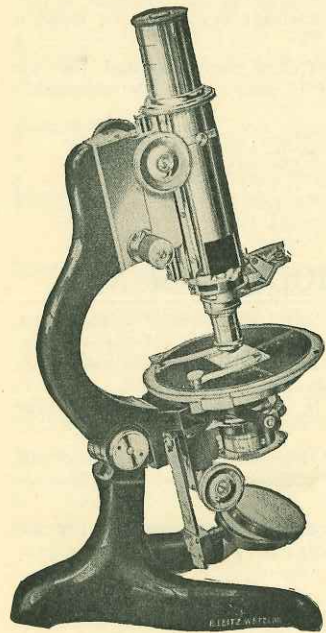
The complete line of **Petrographical Microscopes and Accessories** is listed in our

Catalog II-B.

This literature will be forwarded to those interested, while in the following we present a few models, which for school purposes have found most popular reception.

Note: For Petrographical Microscopes we furnish achromatic objectives only, since fluorite and apochromatic objectives on account of their mineral lenses will interfere with the polarizing effect and disturb the results of these microscopes. In general the achromatic objectives supplied with our petrographical microscopes are identical to those furnished with biological microscopes, except that they have been carefully selected to be free from polarizing effects.

PETROGRAPHICAL MICROSCOPE MODEL "KM"



This microscope is in particular favor for advanced class-room studies and at the same time very popular among laboratories of Mining Companies and Oil Refining Corporations.

Being equipped with a wide tube, it uses eyepieces of large diameter, with the result of offering an exceedingly wide field, very important to quickly overlook structural specimens.

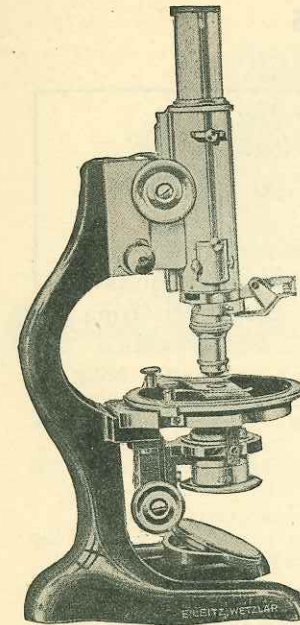
The objective clutch changer is of novel design and secures each objective permanently centered to the optical axis.

The illuminating apparatus consists of three lenses and carries in a rotatable mount a nicol-prism as polarizer. The upper lens can be swung aside by lever.

Model "KM" is furthermore provided with analyzer in microscope tube and Bertrand lens.

Petrographical Microscope "KM-3", as described, with illuminating apparatus No. 1504 and polarizer, tube-analyzer, Bertrand lens, objective clutch with three adapters, optical equipment 3, consisting of: Objectives No. 3 (16mm) and No. 6 (4mm); Eyepieces I (5X) and III (8X) with adjustable eyelens and crosswebs; Gypsum Plate, red, 1. order, No. 1567; Mica Plate, 1/4 und., No. 1568, Quartz Wedge, 1-4. order, No. 1549; in wooden cabinet with lock and key. Code Word: BBKEM.....\$

PETROGRAPHICAL MICROSCOPE MODEL "IIM"



This microscope is identical in construction to Model "KM" except for the following deviations:

It is provided with the standard size tube, and therefore eyepieces of regulation size are used;

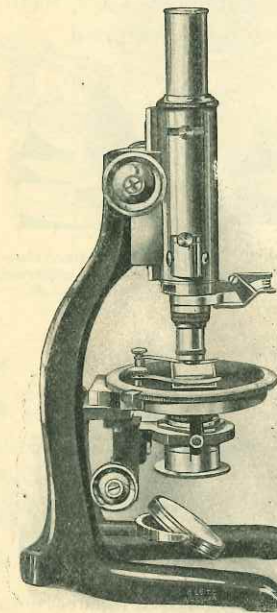
The mechanical stand has no inclination joint.

As a microscope of medium price, combined with utmost efficiency, this instrument has gained universal favor for student use.

Model "IIM", aside from the deviations mentioned, is equal in equipment to the microscope "KM" and for this reason we refrain from repeating the details of construction herewith.

Petrographical Microscope "IIM-3", as described, with illuminating apparatus No. 1504 and polarizer, tube-analyzer, Bertrand lens, objective clutch with three adapters, optical equipment 3, consisting of: Objectives No. 3 (16mm) and No. 6 (4mm); Eyepieces I (5X) and III (8X) with adjustable eyelens and crosswebs; Gypsum Plate, red, 1. order, No. 1567; Mica Plate, 1/4 und., No. 1568; Quartz Wedge, 1-4. order, No. 1549; in wooden cabinet with lock and key. Code Word: BBTRM\$

PETROGRAPHICAL MICROSCOPE MODEL "VIM"



In general construction and equipment this microscope is similar to the model "KM", while in the following we itemize the points in which it deviates:

Its size is smaller;

Fine adjustment micrometer screw has been eliminated, while it is provided with a finely gauged rack and pinion focussing device;

It is supplied with the standard narrow tube and utilizes the eyepieces of regulation size;

The mechanical stand has no inclination joint.

The model "VIM" represents our smallest and least expensive student microscope and for class room work it fully suffices. On account of its moderate price it enjoys an extensive demand.

Petrographical Microscope "VIM-3", as described, with illuminating apparatus No. 1504 and polarizer, tube-analyzer, Bertrand lens, objective clutch with three adapters, optical equipment 3, consisting of: Objectives No. 3 (16mm) and No. 6 (4mm); Eyepieces I (5X) and III (8X) with adjustable eyelens and crosswebs; Gypsum Plate, red, 1. order, No. 1567; Mica Plate, 1/4 und., No. 1568; Quartz Wedge, 1-4. order, No. 1549; in wooden cabinet with lock and key. Code Word: BBSIX\$

No. 1512. Mechanical Stage for petrographical microscopes. Code Word: BBMEK.....\$

For larger models of Petrographical Microscopes, optical equipments, accessories and detailed description of various instruments for petrographical studies, we refer to our complete

Catalog II-B.

MICROSCOPE ACCESSORIES

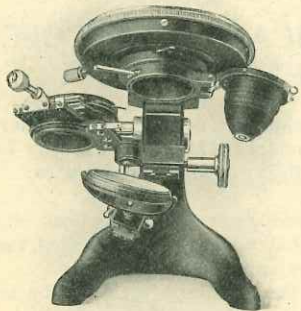
The complete line of Microscope Accessories is listed in our

Catalog D.

In the following we list, however, only those accessories which are most frequently in use, and relative to those not listed in this catalog extract, we suggest to write for complete catalog D, from which to make selection.

SUBSTAGE CONDENSERS

The illuminating apparatus "a" as illustrated to the left represents the one with which the microscopes models "ABM", "AA", "C", and "D", as listed herein, are equipped.



Two-lens Condenser "Abbe"
N.A. 1.20



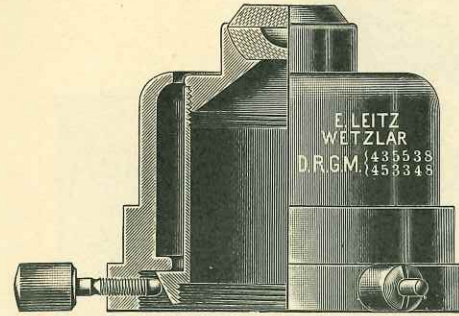
Three-lens Condenser
N.A. 1.40



Aplanatic-Achromatic Condenser
N.A. 1.40

- No. 22536. Abbe Condenser, N.A. 1.20, without iris diaphragm. Code Word: ADFGT...\$
- No. 22528. Abbe Condenser, N.A. 1.20, with iris diaphragm. Code Word: ADFHS.....\$
- No. 22516. Abbe Condenser, N.A. 1.20, with iris diaphragm, mounted in sleeve with joint, to swing down. Code Word: ADFIR.....\$
- No. 22538. Three-lens Condenser, N.A. 1.40, without iris diaphragm. Code Word: ADFJQ...\$
- No. 22530. Three-lens Condenser, N.A. 1.40, with iris diaphragm. Code Word: ADFKP...\$
- No. 22518. Three-lens Condenser, N.A. 1.40, with iris diaphragm, mounted in sleeve with joint, to swing down. Code Word: ADFLO.....\$
- No. 22540. Aplanatic-Achromatic Condenser, N.A. 1.40, without iris diaphragm. Code Word: ADFME.....\$
- No. 22532. Aplanatic-Achromatic Condenser, N.A. 1.40, with iris diaphragm. Code Word: ADFOF.....\$
- No. 22520. Aplanatic-Achromatic Condenser, N.A. 1.40, with iris diaphragm, mounted in sleeve with joint, to swing down. Code Word: ADFPI.....\$

DARKFIELD CONDENSERS



Through use of these condensers it is possible to examine objects not visible with ordinary illumination. Darkfield condensers are particularly valuable in medical and biological research since through these is offered a rapid and reliable method for examining unstained and living organisms.

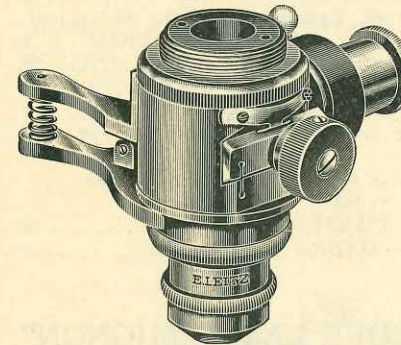
(Directions for use accompany each Darkfield Condenser.)

- No. 22558. Concentric Darkfield Condenser, Model A, in centring mount, to be attached in place of substage condenser. Code Word: DABAD.....\$
- No. 22560. Concentric Darkfield Condenser, Model B, to be attached to the stage of the microscope of any make. Code Word: DABBZ.....\$
- No. 22564. Funnel Stop, for oilimmersion objective, to be used with Darkfield Condenser. Code Word: DABCF.....\$

Note: A strong source of light is needed in connection with the Darkfield Condensers and for the selection of a suitable lamp we refer to pages 23-25.

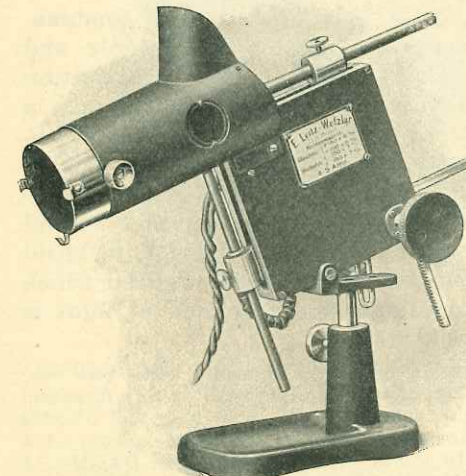
The various Darkfield Condensers and accessories are described in detail in Pamphlet No. 1013.

VERTICAL ILLUMINATORS



Vertical Illuminators are used in connection with the microscope for the examination of opaque specimens, such as metals, ores, etc., which naturally cannot be viewed by means of trans-illumination. Those described are attached directly to the microscope tube or nosepiece respectively.

The reflector within the illuminator housing directs the light, received through the side tube, to the surface to be examined and thereby illuminates the specimen brightly.



Model I.

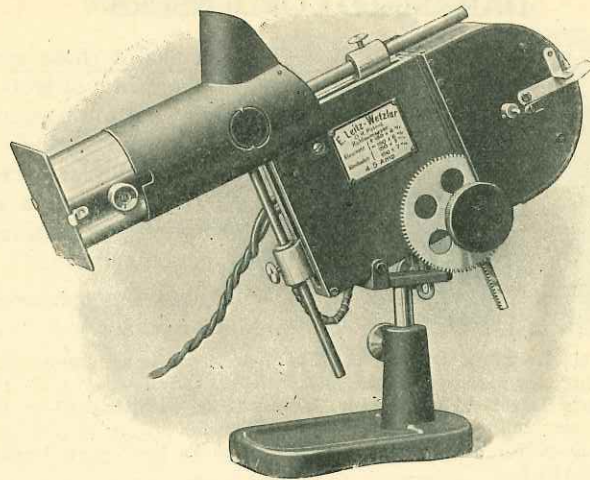
- No. 107. Vertical Illuminator, supplied with two interchangeable fittings, one carrying a reflecting prism, the other a reflecting glass plate, with condensing lens in tube and iris diaphragm, complete in case. Code Word: DABDU...\$

- No. 509. Vertical Illuminator, simple model, with reflecting prism and iris diaphragm (without lamp), complete in case. Code Word: BACBA.....\$

"LILIPUT" ARCLAMPS

We offer two different types of arc-lamps viz:

- Model I, of hand-feed pattern;
- Model II, of automatic-feed pattern, the carbons of which are fed by clockwork mechanism.



Model II.

These arclamps are especially recommended for purposes when a strong illumination is desired, such as Photomicrography, Darkfield, etc.

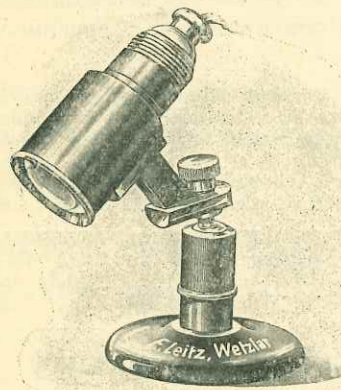
- No. 22582. "Liliput" Arclamp, Model I, Handfeed Pattern, 4-5 amp., on adjustable support, with illuminating lens in focussing mount. Code Word: DABEB.....\$
- No. 22588. "Liliput" Arclamp, Model II, Automatic-feed Pattern, 4-5 amp., on adjustable support, with illuminating lens in focussing mount. Code Word: DABFO.....\$
- No. 22597. Carbons, cored, 150 x 6mm, for above, per 10. Code Word: DABGI.....\$
- No. 22598. Carbons, cored, 150 x 7mm, for above, per 10. Code Word: DABHR.....\$
- No. 22599. Carbons, cored, 150 x 8mm, for above, per 10. Code Word: DABIL.....\$
(For alternating current carbons 150 x 7mm only are used; for direct current 150 x 6mm and 150 x 8mm in pairs are used.)

Note: It is essential to utilize in connection with the above arclamps a rheostat, as listed below.

- No. 22594. Rheostat, 110 volts, 4-5 amp. Code Word: DABJK.....\$
- No. 22596. Rheostat, 220 volts, 4-5 amp. Code Word: DABKP.....\$

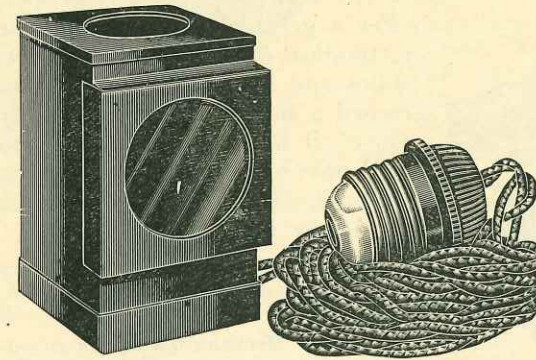
MICROSCOPE LAMP "MIGNON"

It is the ideal illuminant of combination type for regular microscopic and darkfield work. Being used in connection with a special rheostat, which permits a wide range of regulation, the light obtained with the "Mignon" lamp can be varied in intensity to serve first for regular microscope illumination and second by increasing its brightness for darkfield investigations or other purposes for which an exceedingly large volume of light is required.



- No. 22581. Microscope Lamp "Mignon", combination or universal model, with two condensing lenses, mounted to foot by ball socket, affording adjustment in any direction and arresting its position by clamping screw, complete with wire, plug and 1 extra lamp bulb. Code Word: DABLA.....\$
- No. 22587. Adjustable Rheostat, for above, for 110 and 220 volts. Code Word: DABMC..\$
- No. 22590. Lamp Bulb, extra. Code Word: DABNG.....\$
(Complete description of the "Mignon" Lamp is given in Pamphlet No. 1044.)

"ELEI" MICROSCOPICAL SUBSTAGE LAMPS

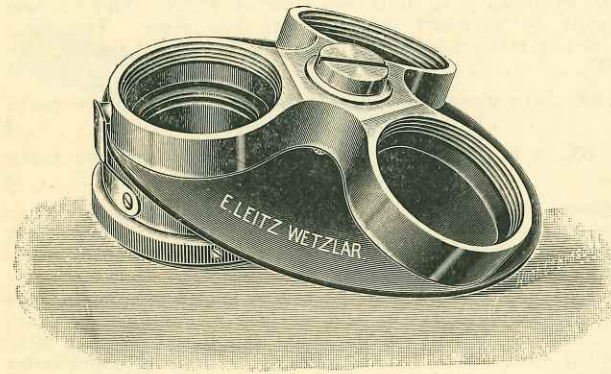


These lamps are of compact design and small enough to be placed between the foot of the microscope beneath the substage condenser while at the same time they can be used with the microscope mirror, if placed in front of same. In light intensity these lamps are fully sufficient for ordinary microscopical examinations.

- No. 3840. "Elei" Substage Lamp, with blue and white ground filters, 6 ft. cord and plug, for 110 volts. Code Word: DABOY....\$

- No. 3845. "Elei" Substage Lamp, with Corning-Daylite glass, 6 ft. cord and plug, for 110 volts. Code Word: DABPE.....\$
- No. 3850. Resistance Unit for use with either of above lamps on 220 volt circuit. Code Word: DABRX.....\$
- No. 3855. Bulb only, for above lamps, 15 watt, 110 volts. Code Word: DABST.....\$
- No. 3857. Corning-Daylite Glass, only, for above lamps. Code Word: DABTH.....\$

REVOLVING DUSTPROOF NOSEPIECES

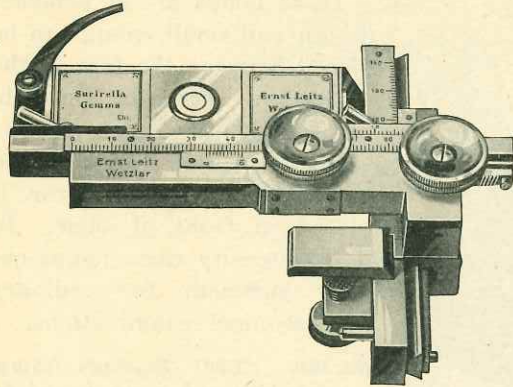


These nosepieces are of utmost precision, to be first absolutely dust-proof and secondly to retain the objectives in a perfectly centred condition. If the microscope objectives, to be used on these nosepieces, are ordered to be parfocal to each other, the user can change from one to the other and still retain the objectives in proper focus, a slight

amount of refocussing by means of the micrometer screw only being necessary.

- No. 22602. Nosepiece for two objectives. Code Word: DABUS.....\$
- No. 22604. Nosepiece for three objectives. Code Word: DABXN.....\$
- No. 22606. Nosepiece for four objectives. Code Word: DABZJ.....\$

MECHANICAL STAGES



No. 22622

Mechanical stages, to be clamped to the stage of the microscopes, offer a great convenience for the methodical examination of object-slides and furthermore permit to record a point of interest in any object, it being only necessary to take note of the vernier readings, since thereby the spot of interest can easily be found again.

No. 22611. **Mechanical Stage, Rotary Type**, for microscopes ABM, AA, A. Code Word: ABDJE

No. 22612. **Mechanical Stage, large pattern**, accommodating slides up to the size of 2x4 in., for microscopes ABM, AA. Code Word: DECAZ

No. 22614. **Mechanical Stage**, for microscopes BIN, C, D. Code Word: DECSV

No. 22622. **Mechanical Stage**, as illustrated, for microscopes LB, L, LL. Code Word: DECHA

No. 22622a. **Mechanical Stage**, identical to No. 22622, but simplified in dispensing with the scales and verniers. Code Word: DECCI

MICROMETER MEASURING DEVICES

No. 22642. **Filar Screw Micrometer Eyepiece**. This micrometer ocular is intended for the most accurate measurements. A micrometer screw with divided drum is attached to a slider which carries a movable index line. One complete revolution of the drum displaces the index line by 0.5mm and since the drum is divided into 100 intervals it follows that the displacement by one interval is equal to 0.005mm, while 0.001mm can easily be estimated. The eyepiece is of Ramsden type of 12.5X. The eye-lens being adjustable, it can easily be focussed sharply upon the scale. The Filar Micrometer can be attached to any microscope inasmuch as it fits into the draw tube of same. Code Word: DECDX

No. 22644. **Micrometer Eyepiece, 6X**, with movable scale of 10mm divided into 100 parts. Code Word: DECET

No. 22646. **Micrometer Eyepiece, 6X**, with fixed scale of 10mm divided into 100 parts. Code Word: DECFO

No. 22648. **Step Micrometer Eyepiece**. In this micrometer the intervals are arranged in groups of ten, each group being indicated in an unmistakable manner by a black echelon rising from the first to the tenth interval. This micrometer is one of novel design and possesses the great advantage that the lines can always be seen distinctly whether the object is light or dark. The intervals of the scale are gauged in such a manner as to give for each objective at a specific tube length, micrometer values and thereby an exceedingly easy method of measurement is offered. (Each Step Micrometer Eyepiece is supplied with a set of directions and a table of micrometer constants.) Code Word: DECIP

No. 22650. **Eyepiece Micrometer Disc**, to be inserted into standard eyepieces and to rest upon the diaphragm of same, 5mm divided into 100 parts. Code Word: DECJM

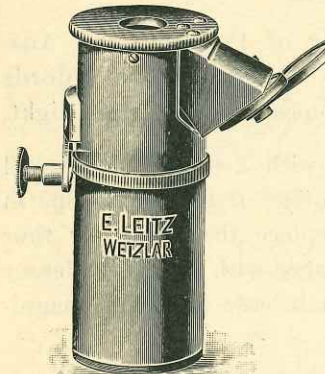
No. 22652. **Eyepiece Micrometer Disc**, as before, but 10mm divided into 100 parts. Code Word: DECKU

No. 22654. **Eyepiece Micrometer Disc**, ruled in 0.5mm squares. Code Word: DECLN

No. 22658. **Stage Micrometer**, 1mm divided into 100 parts. Code Word: DECME

No. 22660. **Stage Micrometer**, 2mm divided into 200 parts. Code Word: DECNH

DRAWING APPARATUS

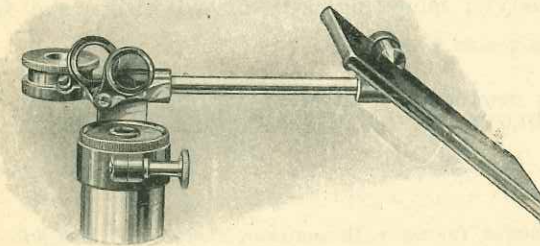


No. 22670

No. 22670. **Drawing Eyepieces, 6X**, for use with microscope in inclined position (45°), projecting the image to be traced upon the microscope table, a special drawing stage is not required. This drawing eyepiece is considered a most ideal instrument for rapid and accurate microscope tracings. Complete with two light moderating glasses, in case. Code Word: DECOJ

No. 22672. **"Abbe" Camera Lucida**, with double prism, inclinable mirror and two light moderating glasses. The double prism is mounted to a swinging arm, by which the prism can be turned aside to clear the eyepiece for direct observation. Complete in case. Code Word: DECPK

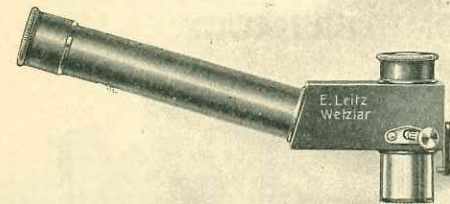
No. 22674. **"Abbe" Camera Lucida**, identical in construction to No. 22672, except that the mirror is of larger dimensions (125 x 80mm), to permit drawings of increased size. Complete in case. Code Word: DECRF



No. 22672

Note: We furthermore offer an assortment of drawing apparatus for drawing of macroscopic objects in magnified or minified character. We refrain from listing these instruments in this catalog extract due to lack of space, but will be glad to forward descriptive literature upon request.

DOUBLE DEMONSTRATION EYEPIECE



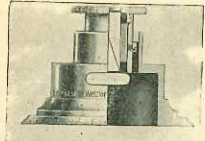
No. 22696. **Double Demonstration Eyepiece, 6X**, can be attached to the draw tube of any microscope. It is so arranged that **two observers** can view the same object and still be at a convenient distance apart. The teacher in using the vertical eyepiece and manipulating the pointer, provided, can indicate to the student the desired portion of the object slide, the student looking through the horizontal eyepiece. The horizontal tube is equipped with a separate focussing device to permit an adjustment if the eyes of the observers differ. Complete in case. Code Word: DECTW



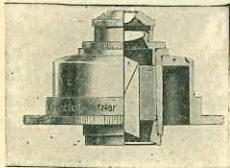
No. 22690

No. 22690. **Object Marker with diamond point**. It serves to mark a spot of interest within an object slide in such a manner that it can be easily found at any future occasion. In turning the knurled ring, it draws a circle, which can be varied in size as may be desired, by increasing the distance of the diamond point from center by means of the screw provided. Code Word: DECUG

MICRO POLARIZING APPARATUS



Analyzer



Polarizer

This instrument, consisting of Polarizer and Analyzer, can be attached to any microscope and affords means to utilize these microscopes with polarized light.

The Polarizer is provided with a spring sleeve and thereby is inserted into the substage of the microscope in place of the condenser. To replace the condenser thus disposed of, the polarizer is equipped with simple condenser to permit sufficient illumination in case that high magnifications are to be employed.

The Analyzer, which attaches to the draw tube above the eyepiece by means of a clamping screw with socket, on which the Analyzer is to rest, is provided with a divided circle for reading the degrees of rotation. The Analyzer mounting is furnished with a slot for the insertion of compensators.

No. 22704. Polarizing Apparatus, as described, consisting of Polarizer and Analyzer, complete in case. Code Word: DECVS.....\$

No. 22708. Selenite and Mica Films, for attachment to polarizer. Set of eight. Code Word: DECWB\$

No. 22710. Selenite Plate, in sliding mount, for use with analyzer. Code Word: DECCR..\$

No. 22706. Polarizing Apparatus, simple form, consisting of simplified polarizer and simplified analyzer, complete in case. Code Word: DECYA.....\$

COVERGLASS MICROMETER GAUGE

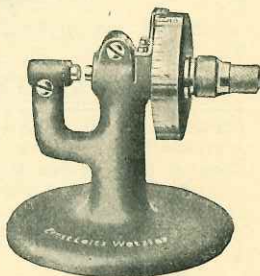
No. 22714. Micrometer Gauge, especially constructed for convenient measurements of the thickness of coverglasses and slides. Each interval on the drum equals 0.01mm. Code Word: DIMES\$



No. 22712

TURNTABLE

No. 22712. Turntable, for ringing coverglasses upon slides, with stage clips. Code Word: DECZL\$



No. 22714

No. 520. "Elei" Cedarwood Oil Bottle, for immersion oil, with ground-glass cap and wooden dropper. Code Word: DEDGY.....\$



MICRO COVERGLASSES

Coverglasses play an important role in the optical correction of objectives and for this reason we pay particular attention to supplying coverglasses of superior quality and this in respect to uniformness in thickness and color, trueness of size and smoothness of edges. Our coverglasses are supplied in circular, square and rectangular size and in three different thicknesses, viz.:

Thickness No. 0 (less than 0.12mm thick)

Thickness No. 1 (about 0.13 to 0.17mm thick)

Thickness No. 2 (about 0.18 to 0.25mm thick)

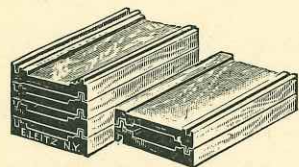
Cat. No.	Code Word	Size	Thickness	Price per oz. (Packed 1/2 oz. in box)
				\$
Circular Coverglasses				
4010-A	MACAW	18mm diam.	No. 0	
4010-B	MACBQ	18mm diam.	No. 1	
4010-C	MACCT	18mm diam.	No. 2	
4010-D	MACDL	22mm diam.	No. 0	
4010-E	MACEZ	22mm diam.	No. 1	
4010-F	MACFO	22mm diam.	No. 2	
Square Coverglasses				
4015-A	MACHI	18 x 18mm	No. 0	
4015-B	MACIM	18 x 18mm	No. 1	
4015-C	MACJC	18 x 18mm	No. 2	
4015-D	MACKR	22 x 22mm	No. 0	
4015-E	MACLS	22 x 22mm	No. 1	
4015-F	MACMB	22 x 22mm	No. 2	
Rectangular Coverglasses				
4020-A	MACNY	22 x 35mm	No. 1	
4020-B	MACOP	22 x 35mm	No. 2	
4020-C	MACPE	22 x 40mm	No. 1	
4020-D	MACQH	22 x 40mm	No. 2	
4020-E	MACRU	22 x 45mm	No. 1	
4020-F	MACSN	22 x 45mm	No. 2	
4020-G	MACTX	24 x 32mm	No. 1	
4020-H	MACUF	24 x 32mm	No. 2	
4020-I	MACVA	24 x 50mm	No. 1	
4020-K	MACWJ	24 x 50mm	No. 2	
4020-L	MACXD	35 x 50mm	No. 1	
4020-M	MACYK	35 x 50mm	No. 2	
4020-N	MACZG	35 x 60mm	No. 1	
4020-O	MCOAQ	35 x 60mm	No. 2	
4020-P	MCOBA	45 x 50mm	No. 1	
4020-Q	MCOCK	45 x 50mm	No. 2	
4020-R	MCODR	45 x 72mm	No. 1	
4020-S	MCOEG	45 x 72mm	No. 2	

MICRO OBJECT SLIDES

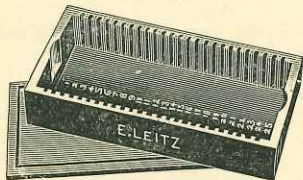
We offer two grades of slides, one of **half-white** and the other of **thoroughly white** quality, but both with completely ground and smooth edges. These slides are packed 1/2 gross in box. No. 4025-B and No. 4035-B represent slides especially selected as to thickness for Darkfield work. The slides we furnish are of superior quality and not to be confused with the average product in the market.

Cat. No.	Code Word	Size	Quality	Price per Gross (Packed 1/2 Gross in Box)
				\$
4025-A	MCOFE	3 x 1 in.	half-white	
4025-B*	MCOGU	3 x 1 in.	half-white	
4035-A	MCOHM	3 x 1 in.	white	
4035-B*	MCOLZ	3 x 1 in.	white	
4036	MCOJI	3 x 1 1/2 in.	white	
4037	MCOKL	3 x 2 in.	white	
4038	MCOLJ	25 x 45mm	white	

* Especially selected as to thickness for Darkfield work.



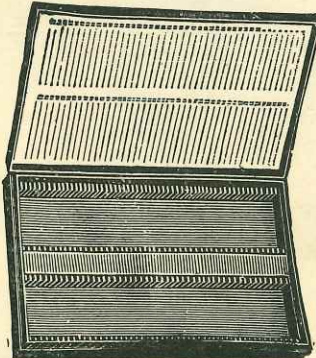
No. 4060



No. 4065



No. 4070



No. 4075

SLIDE BOXES

No. 4060. Microscopical Slide Boxes (Mailing Cases).
Code Word: MCOMF. Per doz.....\$

No. 4065. Microscopical Slide Box, of white wood, with cover fitting inside, to hold 25 slides 3 x 1 in., numbered. Code Word: MCOND. Per doz.....\$

No. 4066. Microscopical Slide Box, same as No. 4065, but to hold 25 slides 3 x 2 in. Code Word: MCOOS. Per doz.\$

No. 4070. Microscopical Slide Box, of white wood, with cover overlapping, to hold 25 slides 3 x 1 in., numbered. Code Word: MCOFY. Per doz.....\$

No. 4075. Microscopical Slide Box, wooden frame, pasteboard covered, grooved to hold 100 slides 3 x 1 in. in two rows, with hinged cover and two catches, with index. Code Word: MCOQV.....\$

No. 4076. Microscopical Slide Box, same as No. 4075, but for 100 slides 3 x 1 1/2 in. Code Word: MCOB.....\$

No. 4077. Microscopical Slide Box, same as No. 4075, but for 100 slides 3 x 2 in. Code Word: MCOST.....\$

HAEMACYTOMETER

with
"ELEI" COUNTING CHAMBER

New ONE-PIECE Construction

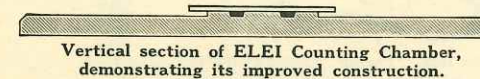
U. S. Patent No. 1,313,962



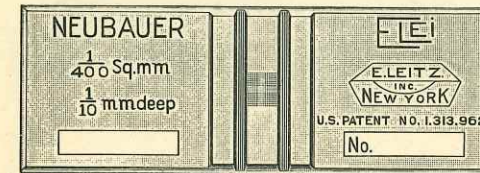
In the development of the "ELEI" Blood Counting Apparatus, a great deal of time and effort have been exerted to finally produce these instruments in accuracy and perfection to prove most satisfactory in physical strength and visibility of the ruled lines.

The characteristic features are as follows:

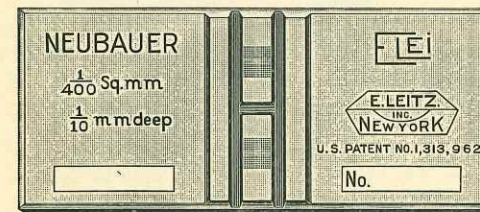
1. Its **one-piece** construction eliminates all possibilities of any part becoming loose and at the same time its cleaning is greatly facilitated.
2. Inasmuch as the specimen can be introduced through capillary attraction, an even distribution over the entire surface is insured.
3. Through the supporting surfaces for the coverglass being elevated above the level of the slide, the coverglass can be easily removed.
4. Due to a new method of ruling, the lines show a maximum visibility.



Vertical section of ELEI Counting Chamber, demonstrating its improved construction.



No. 3020. ELEI Counting Chamber with single "Neubauer" ruling.



No. 3035. ELEI Counting Chamber with double "Neubauer" ruling.

The counting chambers with "Neubauer" ruling are those used for blood-counting and for this purpose have a depth of 0.1mm.

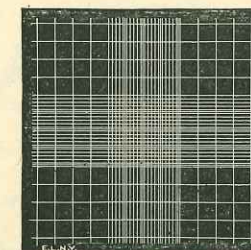
The counting chamber with "Fuchs-Rosenthal" ruling is recommended for the examination of cerebro-spinal fluids and has a depth of 0.2mm.

All "ELEI" Counting Chambers are guaranteed to meet the specifications of the U. S. Bureau of Standards.

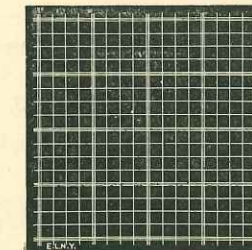
The "ELEI" Blood Mixing Pipettes are most accurate and each of these is likewise guaranteed to be according to the specifications of the U. S. Bureau of Standards.

Each Counting Chamber is supplied with two plano-parallel coverglasses, in pasteboard case.

Each Haemacytometer consists of one counting chamber, two plano-parallel coverglasses, one each pipette for red and white corpuscles, in strong leather case, velvet lined, with lock.



Neubauer Ruling



Fuchs-Rosenthal Ruling

- No. 3020. "FEI" Counting Chamber with single "Neubauer" ruling. Code Word: EBLAW...\$
- No. 3035. Ditto, but with double "Neubauer" ruling. Code Word: EBLBU.....\$
- No. 3080. Ditto, with single "Fuchs-Rosenthal" ruling. Code Word: EBLCX.....\$
- No. 3020a. Ditto, Same as No. 3020, but certified by the U. S. Bureau of Standards. Code Word: EBLDI
- No. 3035a. Ditto, Same as No. 3035, but certified by the U. S. Bureau of Standards. Code Word: EBLEY
- No. 3055. "FEI" Haemocytometer, with single "Neubauer" ruling. Code Word: EBLFO...\$
- No. 3070. Ditto, but with double "Neubauer" ruling. Code Word: EBLGR.....\$
- No. 3055a. Ditto, Same as No. 3055, but certified by the U. S. Bureau of Standards. Code Word: EBLHA
- No. 3070a. Ditto, Same as No. 3070, but certified by the U. S. Bureau of Standards. Code Word: EBLIF

BLOOD COUNTING ACCESSORIES



No. 3100. "Thoma" Diluting Pipette for Red Blood Corpuscles. No. 3105. "Thoma" Diluting Pipette for White Blood Corpuscles.



Precision Pipette "Pappenheim."

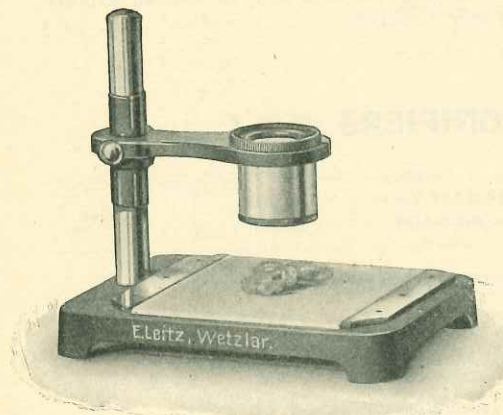
- No. 3100. "FEI" Blood Diluting Pipette "Thoma" for red corpuscles, diluting 1 to 100 and 1 to 200, with rubber tubing and mouthpiece. Code Word: EBLJS.....\$
- No. 3100a. Ditto, but certified by the U. S. Bureau of Standards. Code Word: EBLKZ....\$
- No. 3105. "FEI" Blood Diluting Pipette "Thoma" for white corpuscles, diluting 1 to 10 and 1 to 20, with rubber tubing and mouthpiece. Code Word: EBLLV.....\$
- No. 3105a. Ditto, but certified by the U. S. Bureau of Standards. Code Word: EBLMD...\$
- No. 3120. Blood Diluting Pipette, Precision Model "Pappenheim", with all-glass syringe attachment, for red corpuscles, diluting 1 to 100 and 1 to 200. This pipette is specially recommended in contagious cases to prevent infection. The syringe attachment furthermore allows the blood or diluting fluid to be exactly drawn up to the mark desired. Code Word: EBLNG.....\$
- No. 3125. Ditto, but for white corpuscles, diluting 1 to 10 and 1 to 20. Code Word: EBLDM.....\$
- No. 3135. Cover Glass, 20 x 26mm, 0.4mm thick, with optically plano surface. Code Word: EBLPH
- No. 3135a. Ditto, but certified by the U. S. Bureau of Standards. Code Word: EBLQT...\$
- No. 3136. Cover Glass, reinforced with heavy glass ring, thickness of cover glass 0.18mm. Code Word: EBLRK
- No. 3140. Case, of leather, velvet lined, for "ELEI" counting chamber with single or double ruling. Code Word: EBLSE.....\$
- No. 3145. Case, of leather, velvet lined, for complete haemocytometer with single or double ruled counting chamber. Code Word: EBLUB.....\$

DISSECTING MICROSCOPES and ACCESSORIES

The complete line of these instruments is listed in our

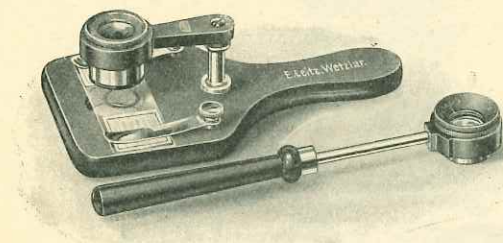
Catalog C.

In the following we list, however, only those which are most frequently in use, and relative to the balance of instruments not listed in this catalog extract, we suggest to write for complete Catalog C, from which to make selection.



No. 214

- No. 214. Dissecting Lens Stand, with opal glass plate attached to foot and movable lens holder, without magnifiers. Code Word: CALAG.....\$



No. 216 and No. 217

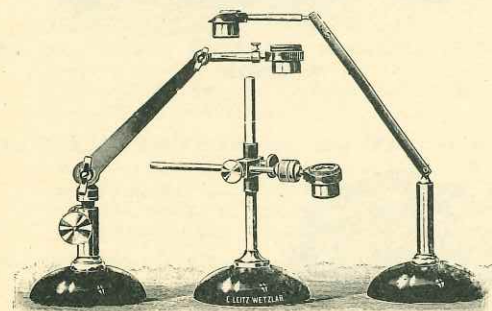
- No. 215. Ditto, with simple magnifier No. 220a-10X. Code Word: CALBU.....\$

- No. 215a. Ditto, with simple magnifier No. 222b-8X. Code Word: CALCF.....\$

- No. 216. Demonstration Lens Stage, consisting of vulcanite plate with handle, adjustable lens holder and two stage clips, without magnifiers. Code Word: CALDI

- No. 217. Lens Handle, with spring ring for accommodation of magnifiers, without magnifiers. Code Word: CALEQ...\$

- No. 218. Lens Stand consisting of iron foot, swinging arms with arresting screws, rack and pinion for focusing, without magnifiers. Code Word: CALFX



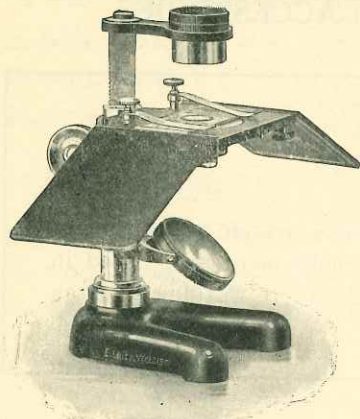
No. 218

No. 219

No. 220

- No. 219. Lens Stand, consisting of iron foot, rotatable and adjustable socket for lens holder, lens holder with ball-socket clamp for magnifier, without magnifier. Code Word: CALGY...\$

- No. 220. Lens Stand, consisting of iron foot, with lens arm jointed, adjustable in all directions, clamp for magnifier, without magnifier. Code Word: CALHV.....\$



No. 208

No. 208. Dissecting Microscope, with rack and pinion focussing movement for the magnifier, metal stage with circular glass plate, adjustable mirror with one clear and one matt surface, without magnifiers, and without hand rests, in wooden cabinet. Code Word: CALIJ\$

No. 208a. Pair of Hand Rests, leather covered, to be attached to microscope, extra. Code Word: CALJA. \$

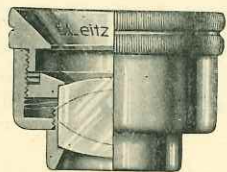
No. 209. Dissecting Microscope, same as No. 208, complete with two "Steinheil" triple aplanatic magnifiers No. 226-10X and No. 229-20X, in wooden cabinet. Code Word: CALKD.....\$

No. 210. Dissecting Microscope, same as No. 208, complete with three simple magnifiers No. 222d-4X, No. 222c-6X, and No. 222a-10X, in wooden cabinet. Code Word: CALLO.....\$

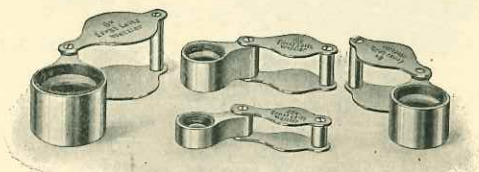
SIMPLE MAGNIFIERS

Cat. No.	Code Word	Diameter of Lenses	Field of View diameter	Magnification	Price
A. In Mounting for Dissecting Microscopes					
222a	CALMP	15mm	15mm	10X	\$
222b	CALNS	20mm	20mm	8X	\$\$
222c	CALOB	20mm	20mm	6X	\$\$
222d	CALPH	20mm	35mm	4X	\$
B. In Pocket Mounting					
222AA	CALQL	15mm	15mm	10X	\$
222BB	CALRC	20mm	20mm	8X	\$\$

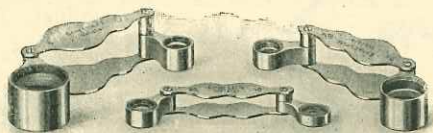
"STEINHEIL" TRIPLE APLANATIC MAGNIFIERS



No. 225a-231



No. 232a-238



No. 239b-239d

Cat. No.	Code Word	Diameter of Lenses	Free Working Distance	Field of View diameter	Magnification	Price
A. In Mounting for Dissecting Microscopes						
225a	CALSE	22mm	32mm	30mm	6X	\$\$
225	CALTM	17mm	25mm	22mm	8X	\$\$
226	CALUT	13mm	20mm	15mm	10X	\$\$
227	CALVN	11mm	17mm	11mm	12X	\$\$
228	CALWZ	8mm	12mm	7mm	16X	\$\$
229	CALXR	6mm	10mm	5mm	20X	\$\$
230	CALYW	4mm	6mm	3.5mm	30X	\$\$
231	CALZK	3mm	5mm	2mm	40X	\$\$
B. In Pocket Mounting—One Magnifier in One Mounting						
232a	COBAC				6X	\$\$
232	COBBA				8X	\$\$
233	COBCX				10X	\$\$
234	COBDY				12X	\$\$
235	COBEZ				16X	\$\$
236	COBFS				20X	\$\$
237	COBGO				30X	\$\$
238	COBHR				40X	\$\$
C. In Pocket Mounting—Two Magnifiers in One Mounting						
239b	COBIL				8 and 16X	\$\$
239c	COBJU				10 and 20X	\$\$
239d	COBKJ				16 and 30X	\$\$

SIMPLE POCKET MICROSCOPES



No. 241 and 241a



No. 242

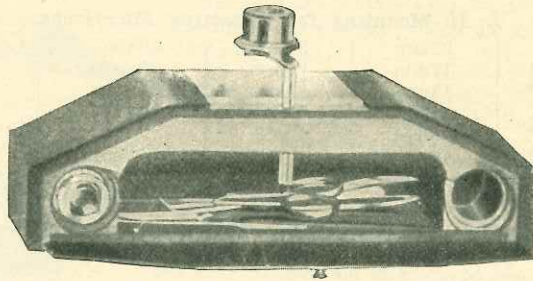
No. 241. Pocket Microscope, magnifying 40X, provided with slot for the insertion of object slide, clamping device holds the slide rigidly in place; the top lens is in focus upon the object placed on the slide; complete in case with two object slides. Code Word: COBLV.....\$

No. 241a. Pocket Microscope, magnifying 40, 80 and 120X respectively; the varying magnifications are obtained through the use of different top lenses, to be interchanged in accordance to the magnification desired; this microscope is one used very extensively in field work; in general design it is identical to No. 241; complete in case with two object slides. Code Word: COBMI.....\$

No. 242. Pocket Microscope, so-called "Algoscope", magnifying 100X; it is particularly serviceable for the examination of Algae and Infusoria; the inner tube, having on its top a glass plate for the accommodation of the specimen, is focussable to obtain a sharp image; complete in case. Code Word: COBNT.....\$

SIMPLE DISSECTING MICROSCOPE

"Barnes" Model



- No. 220A. "Barnes" Dissecting Microscope, consisting of wooden block 250 x 90mm, inclined sides form hand rests, provided with convenient space to store dissecting instruments, holder for magnifier on swinging arm, glass stage which is removable, metal stage for black background, plano mirror which is mounted in proper position and removable, without magnifiers. Code Word: COBOW.....\$
- No. 220A-1. Ditto, with simple magnifier No. 222a-10X. Code Word: COBPE.....\$
- No. 220A-2. Ditto, with simple magnifiers No. 222c-6X and No. 222a-10X. Code Word: COBQN.....\$
- No. 220A-3. Ditto, with simple magnifiers No. 222c-6X, No. 222b-8X and No. 222a-10X. Code Word: COBRD.....\$



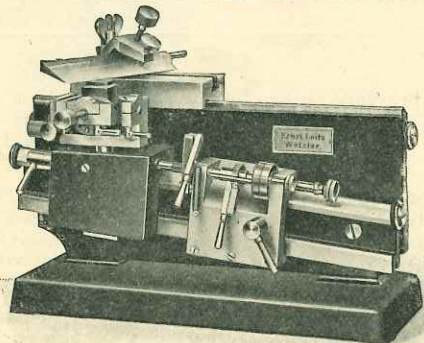
TRIPOD DISSECTING MAGNIFIER

- No. 220B. Tripod Dissecting Magnifier, giving a large and clear field, with magnification sufficient for elementary purposes; the lens mount being provided with a thread for focussing. Code Word: COBSF.....\$

MICROTOMES

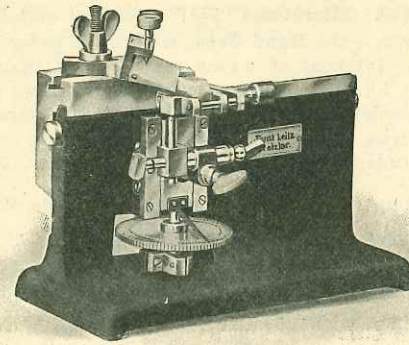
The complete line of microtomes is listed in our
Catalog F and Pamphlet No. 138.

In the following we list, however, only those microtomes which are most frequently in use. As far as those microtomes and accessories, knives, etc., are concerned, not listed in this catalog extract, we suggest to write for complete literature, from which to make selection.



No. 23005

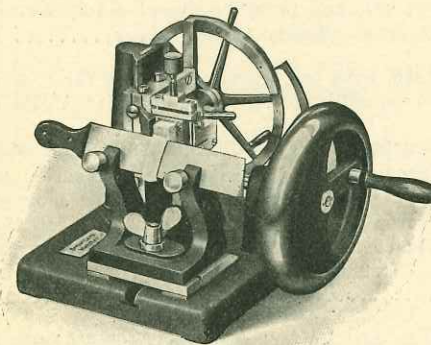
- No. 23005. Large Automatic Sledge Microtome, with inclined surface for micrometer adjustment and new improved knife block movement, length of track 32cm; the object is raised automatically by a micrometer screw with lever transmission; the thickness of the section can be adjusted within the limits of 1-20 microns; with ball-socket object clamp (without knife clamp and knife). Code Word: FADAW.....\$
- No. 23005A. Ditto, but with knife clamp and knife 20cm. Code Word: FADBX.....\$



No. 23020

- No. 23020. Small Sledge Microtome, length of track 26cm, the object being raised by turning the dial disc by hand; the disc has 100 teeth and each tooth represents 5 microns; the object clamp is provided with a universal movement; complete with object clamp (without knife clamp and knife). Code Word: FADCY..\$

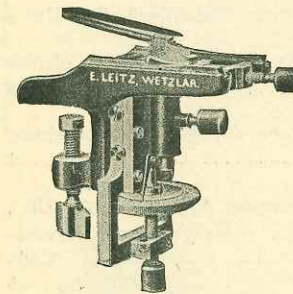
- No. 23020A. Ditto, but with knife clamp and knife 14 cm. Code Word: FADDO.....\$



No. 23030

- No. 23030. Automatic Rotary Microtome "Minot", permitting a range of adjustment of thickness of section from 0-25 microns within steps of 2½ microns; the object clamp is of ball-socket type; the knife block is provided with universal adjustment; complete with object clamp and knife block (without knife). Code Word: FADEQ.....\$

- No. 23030A. Ditto, but with knife 15 cm. Code Word: FADFI.....\$

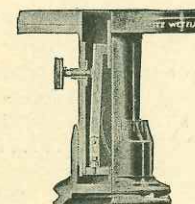


No. 23032

- No. 23032. Table Microtome, with object clamp, screw to fasten to table; each interval of the micrometer dial represents a displacement of object by 10 microns; two glass benches serve as track for the knife, complete (without knife). Code Word: FADGE.....\$

- No. 23032A. Ditto, with Chisel Knife No. 23092. Code Word: FADHC.....\$

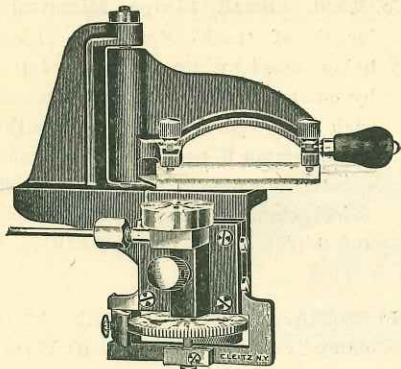
- No. 23032B. Ditto, with Razor Knife No. 23095. Code Word: FADIG.....\$



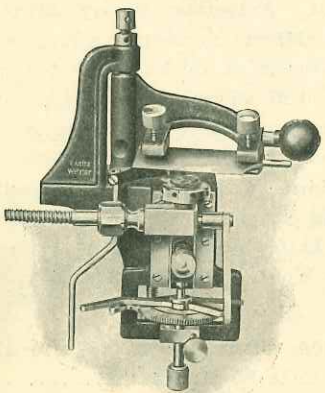
No. 23035

- No. 23035. Cylinder Microtome, with object clamp; the round stage of 70mm diameter is provided with a glass plate; in turning the knurled micrometer dial the object is raised, each interval representing 10 microns; complete (without knife). Code Word: FADJL.....\$

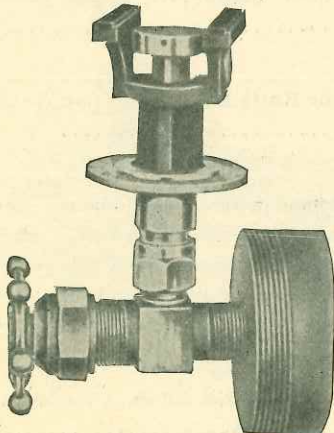
- No. 23035A. Ditto, with Razor Knife No. 23095. Code Word: FADKU.....\$



No. 4145



No. 4160



No. 4176

No. 4140. Microtome "FLEI"—Clinical and Diagnostic—for Hand Feed, with micrometer dial, one interval of which represents 5 microns; the knife is manipulated by a swinging arm; complete with object clamp for paraffine blocks 30 x 22mm (without knife). Code Word: FADLS.....\$

No. 4140A. Ditto, with knife 9 cm. Code Word: FADMB.....\$

No. 4145. Same as No. 4140, but with freezing chamber for CO₂ in place of paraffine object clamp (without knife). Code Word: FADNA.\$

No. 4145A. Ditto, with knife 9cm. Code Word: FADOD.....\$

No. 4150. Same as No. 4140, but with both freezing chamber for CO₂ and paraffine object clamp (without knife). Code Word: FADPH.....\$

No. 4150A. Ditto, with two knives, 9cm, one for frozen and one for paraffine sections. Code Word: FADQJ.\$

No. 4155. Microtome "FLEI"—Clinical and Diagnostic—With Automatic Feed, similar in construction to No. 4140, but with automatic device for moving the feed screw as the knife is returned for the next stroke; complete with object clamp for paraffine blocks 30 x 22mm (without knife). Code Word: FADRN.....\$

No. 4155A. Ditto, with knife 9cm. Code Word: FADSK.\$

No. 4160. Same as No. 4155, but with freezing chamber for CO₂ in place of paraffine object clamp (without knife). Code Word: FADTM.....\$

No. 4160A. Ditto, with knife 9cm. Code Word: FADUP.\$

No. 4165. Same as No. 4155, but with both freezing chamber for CO₂ and paraffine object clamp (without knife). Code Word: FADVR.....\$

No. 4165A. Ditto, with two knives 9cm, one for frozen and one for paraffine sections. Code Word: FADWZ.....\$

No. 4170. Microtome Freezing Apparatus, for CO₂, for above microtomes, complete with flexible metal tubing and screw connections. Code Word: FADXF.....\$

No. 4175. Microtome Object Clamp, for above microtomes. Code Word: FADYV.....\$

No. 4176. Freezing Microtome for CO₂ "Bardeen", to be directly attached to the CO₂ cylinder by means of a revolving clamp nut; the knife slides on glass guides; adjustment of thickness of sections within 20 microns, complete (without knife). Code Word: FADZT.....\$

No. 4176A. Ditto, with Chisel Knife No. 23092. Code Word: FEBAG.....\$

No. 23085. Microtome Knives "Jung", Original Walb Make.

Length of cutting edge, cm:..	24	20	16	14	12	9
With Case:	\$	\$	\$	\$	\$	\$
Code Word:	FEBBO	FEBCH	FEBDA	FEBEB	FEBFK	FEBGD
Without Case:	\$	\$	\$	\$	\$	\$
Code Word:	FEBHU	FEBIJ	FEBJC	FEBKL	FEBLQ	FEBMS

No. 23090. Microtome Knife, "Minot Pattern", for Minot Rotary Microtomes, 15cm cutting edge, 13mm back, wooden handle permanently attached. With Case: \$ Without Case: \$ Code Word: FEBNI Code Word: FEBOY

No. 23092. Chisel Knife, for Microtomes No. 23032 and 4176. Code Word: FEBPX.....\$

No. 23095. Razor Knife, for Microtomes No. 23032 and 23035. Code Word: FEBQE....\$

No. 23100. Sharpening Backs, for microtome knives.

Length, cm:	24	20	16	14	12	9
	\$	\$	\$	\$	\$	\$
Code Word:	FEBRW	FEBSN	FEBTP	FEBUT	FEBVZ	FEBWR

No. 23105. Sharpening Handle. Code Word: FEBXT.....\$

No. 23107. Block Strop, Coarse-Red Finish, size 15 x 2½ in., covered with finest leather. Code Word: FEBYM.....\$

No. 23108. Ditto, but Fine. Code Word: FEBZV.....\$

No. 23109. Razor Strop, "Emerson", Elastic, with handle. Code Word: FILAC.....\$

No. 23110. Bow Strop, 36cm. long. Code Word: FILBR.....\$

No. 23120. Hones, Yellow, Belgian, selected quality, in wooden box.

Length, cm:	18	20	23	25
	\$	\$	\$	\$
Code Word:	FILCN	FILDE	FILEP	FILFU

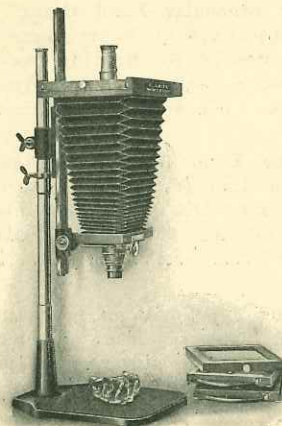
No. 23125. Hones, Blue-Green, selected quality, in wooden box. Length, cm: 20 25 \$ \$ Code Word: FILGS FILHJ

Code Word: FILGS FILHJ

PHOTO-MICROGRAPHIC APPARATUS

The complete line of Photo-Micrographic Apparatus is listed in our **Catalog G.**

In the following we list, however, only those apparatus which are most frequently in use. As far as those Photo-Micrographic Apparatus are concerned, not listed in this catalog extract, we suggest to write for complete catalog G, from which to make selection.



"MAIVa"

Photo-Micrographic Apparatus "MAIV", consisting of heavy iron foot plate with vertical steel rod, to which is fastened a vertical camera bed, supporting the bellows of 250mm length; the bellows extension can be varied in sliding the camera rider support upon the camera bed; the camera bed is adjustable in height on the vertical steel rod; the camera can be swung backward to clear the microscope for visual observation and adjustment; apparatus complete with two plate holders for plates 7 x 5 and 4¼ x 3¼ in., one each ground and clear focussing screen, light excluding funnel, adapters with thread for objectives and focussing magnifier. Code Word: GAFAP.....\$

Photo-Micrographic Apparatus "MAIVa", identical in construction to Model "MAIV", except that it is supplied with a camera having bellows extension of 500mm length, with the identical equipment as the apparatus "MAIV". Code Word: GAFBU.....\$

PROJECTION APPARATUS

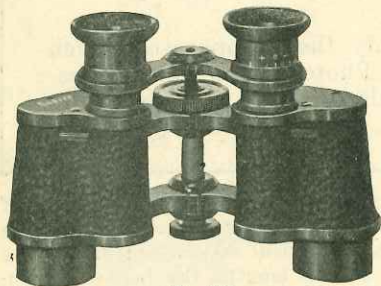
Due to the great variety of instruments we offer, we consider the space in this catalog extract not sufficient to do justice to these apparatus and for this reason we refrain from listing these instruments herewith. In the following we refer to several separate pamphlets in which the Leitz Projection Apparatus are described in detail and ask, when interested, to write for any or all of these publications:

- Pamphlet No. 1019: "Edinger" Drawing, Projection and Photo-micrographic Apparatus, Model VI.
- Pamphlet No. 1031: Large Universal Projection Apparatus "Kaiserling", Model I.
- Pamphlet No. 1032: School Universal Projection Apparatus, Model IIIa.
- Pamphlet No. 1033. Small Projector for opaque specimens, lantern slides and large transparent objects, Models V and Va.
- Pamphlet No. 1034. Micro-Projector for Biological and Petrological slides as well as lantern slides.

PRISM BINOCULAR FIELD GLASSES

The complete line of Prism Binocular Field Glasses is listed in our
Pamphlet No. 1020.

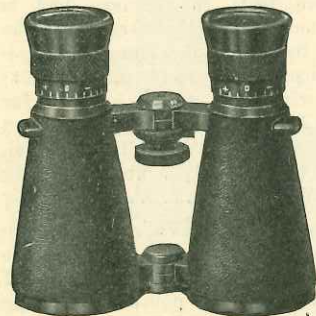
In the following we list, however, only those glasses which are most frequently in use. As far as those glasses are concerned, not listed in this catalog extract, we suggest to write for complete pamphlet No. 1020, from which to make selection.



No. 630

No. 624. Prismatic Binocular Field Glass, 6X magnification, objectives of 24mm diameter, especially recommended for travel, sport and nature study, in stiff leather case. Code Word: JAGAX.....\$

No. 630. Prismatic Binocular Field Glass, 6X magnification, objectives of 30mm diameter, especially recommended for hunting, sports, races and nature, as well as bird study, in stiff leather case. Code Word: JAGBA....\$



No. 640

No. 830. Prismatic Binocular Field Glass, 8X magnification, objectives of 30mm diameter, especially recommended for long distance land observations, mountain scenery, aviation, nature and bird study, in stiff leather case. Code Word: JAGDU.....\$

No. 640. Binocular "Galilean" Type, without prisms, 6X magnification, objectives 40mm diameter, characteristic through its high luminosity. It is recommended for observation in cloudy atmosphere and as a night glass, in stiff leather case. Code Word: JAGEP....\$

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60 EAST



10th ST.

Price List for Catalog Extract "L"

Page	Cat. No.	Price	Page	Cat. No.	Price
6	22000	\$4.00	8	22082	18.00
"	22002	6.50	"	22084	20.00
"	22005	6.50	"	22086	20.00
"	22006	6.50	"	22088	20.00
"	22008	8.00	"	22090	24.50
"	22010	10.00	11	ABM-10	310.00
"	22012	12.00	"	ABM-20	331.50
"	22014	12.00	"	ABM-30	424.90
"	22016	13.50	"	22611	44.00
"	22017	13.50	"	22160	Additional 15.00
"	22018	13.50	"	LB-6	148.25
"	22020	35.00	"	LB-8	150.00
"	22022	40.00	"	LB-9	154.00
"	22024	20.00	"	LB-9a	156.50
"	22026	20.00	"	LB-10	190.00
"	22030	20.00	"	LB-15	205.00
"	22032	31.00	"	LB-20	211.50
"	22031	32.50	"	22622	30.00
"	22033	55.00	12	AA-10	280.00
"	22034	55.00	"	AA-20	301.50
"	22036	69.00	"	AA-30	390.70
"	22050	31.00	"	22160	Additional 15.00
"	22052	41.00	"	Without Rotary Stage,	
"	22054	53.00	"	Deduct	44.00
"	22056	63.00	"	Without Plain Stage,	
"	22058	84.00	"	Deduct	14.00
"	22060	125.00	"	C-10	199.00
"	22062	84.00	"	C-20	220.50
"	22064	125.00	"	C-30	311.70
			"	22614	37.50
			"	22160	Additional 15.00
			13	D-10	192.00
			"	D-20	213.50
			"	D-30	304.70
			"	22614	37.50
			"	22160	Additional 15.00
			"	L-6	93.00
			"	L-6 Without Case	88.80
			"	L-8	94.75
			"	L-8 Without Case	90.55
			"	L-9	98.75
			"	L-9 Without Case	94.20
			14	L-9a	101.25
			"	L-9a Without Case	96.70
			"	L-10	125.00
			"	L-10 Without Case	120.45
			"	L-15	140.00
			"	L-15 Without Case	135.45
			"	L-20	146.50
			"	L-20 Without Case	141.95

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Page	Cat.No.	Price	Page	Cat.No.	Price
39	23090 With Case.....	14.00	39	23110	6.00
"	23090 Without Case.....	13.00	"	23120—18cm	4.50
"	23092	8.00	"	23120—20cm	6.00
"	23095	2.50	"	23120—23cm	9.00
"	23100—24cm	1.75	"	23120—25cm	14.00
"	23100—20cm	1.50	"	23125—20cm	3.00
"	23100—16cm	1.25	"	23125—25cm	4.00
"	23100—14cm	1.15	"	MAIV	88.00
"	23100—12cm	1.00	"	MAIVa	105.00
"	23100—9cm80			
"	23105	2.25	40	624	52.00
"	23107	3.50	"	630	63.00
"	23108	3.50	"	830	65.00
"	23109	2.50	"	640	25.00

Note: Prices are subject to change without notice.

C M = = 379