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OPTICAL CATALOGUE

34TH. EDITION

JAMES W. QUEEN & CO.

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San Francisco
Microscopical Society

From W. H. Walcott

Nov 27, 1874



San Francisco
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Nov 27, 1874



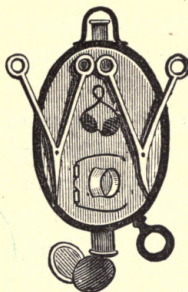
San Francisco Microscopical Society,

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PRICED AND ILLUSTRATED CATALOGUE

OF

OPTICAL INSTRUMENTS,



MADE, IMPORTED AND SOLD, WHOLESALE AND RETAIL,

BY

JAMES W. QUEEN & CO.

No. 924 CHESTNUT ST., & 925 Sansom St., PHILADELPHIA.

AND

No. 601 BROADWAY, NEW YORK.

PHILADELPHIA, *April 11, 1870.*

On retiring from the business which I established in 1853, and have been conducting at No. 924 Chestnut Street since that year, it gives me pleasure to recommend to my friends and former patrons, my successors, and solicit for them a continuance of the favors so freely bestowed upon myself.

The present firm propose dividing their business into three departments, each partner giving one of those departments his special care and attention.

SAMUEL L. FOX, my former partner, will devote himself to the Mathematical Department, which will comprise Drawing Instruments, of every description, Surveying Compasses, Engineer's Transits and Levels, Surveying Chains, Tape Measures, Drawing Papers, and materials of all kinds used by engineers and draughtsmen.

JESSE S. CHEYNEY, formerly Principal of Friends' Select School, in this city, will take the Department of Philosophy, which will comprise Magic Lanterns, Oxy-Calcium and Oxy-Hydrogen Stereopticons, with Pictures and Illustrations from all countries and upon all scientific subjects; Thermometers, Barometers, Globes, Air Pumps, Electric Machines, Magnetic Apparatus, &c., &c.

WILLIAM H. WALMSLEY, well known throughout the country as a Microscopist, and also a preparer of Microscopic Specimens, will take the Department of Optics, which will comprise Spectacles, Microscopes, Microscopic Objects and Accessories, Opera Glasses, Spy Glasses, Telescopes, Ophthalmoscopes, &c., &c.

The new firm will continue to issue Priced and Illustrated Catalogues as follows:—Part 1st. MATHEMATICS; Part 2d. OPTICS; Part 3d. MAGIC LANTERNS AND STEREOPTICONS; Part 4th. PHILOSOPHICAL INSTRUMENTS.

Care will be taken in each department of the business that the instruments manufactured by the firm shall be well made, and accurate for the purposes intended; and that all new instruments and improvements, of both European and American manufacture, shall be introduced with as little delay as possible.

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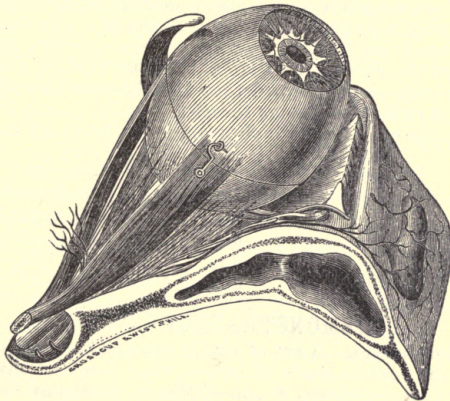
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CATALOGUE

OF

OPTICAL INSTRUMENTS.

MODEL OF THE EYE, FOR SCHOOLS AND COLLEGES.



1200.

No.		PRICE.
1200.	Auzoux's Dissected Model of the Eye: the most perfect and accurate ever made. The material is Papier-Mache, and the whole is accurately dissected so as to be taken apart, showing successively the <i>Sclerotic and Choroid coats, the Cornea, Retina, Iris, Pupil, Crystalline Lens, Aqueous and Vitreous Humors, the Muscles, Nerves, and Blood-Vessels</i> , colored as in the natural eye, with full descriptive pamphlet,	\$40 00
1201.	The same, cut vertically,	40 00
1202.	The same as 1200, but of German manufacture,	30 00
1203.	The same, cut vertically,	30 00
1205.	Map or Diagram of the Eye, (22 by 15 inches,) handsomely colored, with descriptive letter-press,	1 00

COSMORAMA LENSES.

1209.	Double or Plano-Convex Lens, 8 inches diameter, and either 30, 36, 48 or 72 inches focus, each,	5 00
1210.	Double or Plano-Convex Lens, 7 inches diameter, same foci as 1209, each,	4 00
1211.	Double or Plano-Convex Lens, 6 inches diameter, of either 24, 30, 36, 48 or 72 inches focus, each,	3 00
1212.	Double or Plano-Convex Lens, 5 inches diameter, of either 18, 20, 24, 30, 36, 48 or 72 inches focus, each,	2 50
1213.	Double or Plano-Convex Lens, 4 inches diameter, of either 12, 14, 16, 18, 20, 24, 30, 36, 48 or 72 inches focus, each,	1 50
1214.	Double or Plano-Convex Lens, 3 in. diam., any focus 6 to 36 in., each,	1 00
1215.	Double or Plano-Convex Lens, 2 in. diam., any focus 6 to 36 in., each,	75
1216.	Double or Plano-Convex Lens, 1½ in. diam., any focus 5 to 48 in., each,	50

MICROSCOPE AND TELESCOPE LENSES.

1217.	Double or Plano-Convex Lens, 1 inch diameter, 2 inches focus,	75
1218.	Do. do. $\frac{3}{4}$ do. 1½ do.	75
1219.	Do. do. $\frac{1}{2}$ do. 1¼ do.	75
1220.	Do. do. $\frac{1}{2}$ do. 1 do.	75
1221.	Do. do. $\frac{3}{8}$ do. $\frac{3}{4}$ do.	75
1222.	Do. do. $\frac{1}{4}$ do. $\frac{1}{2}$ do.	75
1223.	Do. do. $\frac{3}{16}$ do. $\frac{1}{4}$ do.	75
1224.	Do. do. $\frac{1}{8}$ do. $\frac{1}{8}$ do.	75

ACHROMATIC OBJECT-GLASSES for SPY-GLASSES and TELESCOPES.

Achromatic lenses are formed by a combination of a double convex lens of crown glass and a plano-concave or a concavo-convex lens of flint glass. The advantages of a lens formed in this manner are freedom from spherical aberration or distortion, and the rays of light are not decomposed into the primary colors; in other words, the light passes through the lens and suffers no change thereby.



1225.

1225.	Achromatic Object-Glass, 1½ inches diameter, 18 to 30 inches focus,	2 00
1226.	Do. do. 1¾ do. 18 to 30 do.	3 50
1227.	Do. do. 2 do. 18 to 30 do.	4 50
1228.	Do. do. extra fine finish, 2 in. diam., 36 inches focus,	7 00
1229.	Do. do. do. 2½ do. 44 do.	13 00
1230.	Do. do. do. 3 do. 48 do.	37 00
1231.	Do. do. do. 3½ do. 54 do.	50 00
1232.	Do. do. do. 4 do. 60 do.	90 00

DEMONSTRATION LENSES.

1206.	Demonstration Lenses. A set of six, 1¾ inches diameter, showing the forms of the various kinds of lenses, viz.: Double Convex, Double Concave, Plano-Convex, Plano-Concave, Meniscus Convex, and Meniscus Concave. Per set,	2 50
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PRISMS.

1235.	Solid Flint Glass Prisms, 3 inches long, each,	65
1236.	Do. do. 4 do.	75
1237.	Do. do. 5 do.	1 00
1238.	Do. do. 6 do.	1 25
1239.	Do. do. 7 do.	1 50
1240.	Do. do. 8 do.	2 00

1241.	Metal Stands for Prism, each,	1 50 to 3 00
1242.	Prisms for Stereoscopes, 1½ inches square, per pair,	75
1243.	Polyprism, making many heads out of one,	25
1244.	A Set of two Prisms, to illustrate the principle of the Achromatic Object-glass,	3 00



1206.

SPECTACLES AND EYE-GLASSES.

HINTS AS TO THEIR SELECTION.

To select Spectacles for improving the Sight when Age is the Cause of Failure.

At the age of forty, most ladies begin to experience some difficulty in threading a fine needle and reading very fine print, but gentlemen do not notice this change until about the age of fifty. These ages do not hold good in all cases, but as an average they can be relied upon.

Among the indications that the eyes are beginning to be impaired by age, and that spectacles are required, are, the necessity of putting a book farther from the eyes than a natural distance in order to read fine print distinctly; a greater care to have a strong light upon the reading or sewing; as, for instance, going close under the window or holding the light between the eyes and the reading; on looking at a near object, in a short time it becomes confused and appears to have a kind of a mist before it, and the letters of a book run one into another or appear double, and after a little use the eyes have an over-taxed wearied look.

In selecting Spectacles to remedy these defects of vision, it is desirable to consult an experienced Optician, and with his advice and assistance to procure those best suited to the condition of the eye. But in case an Optician is not readily accessible, persons wanting Spectacles, instead of picking up and using any kind which may happen to be at hand, regardless of the power or quality of the glasses, would do well to send to us for a pair; and if the following data is carefully given us, we will have no difficulty in sending Spectacles to suit the sight: — The age of the person; and state, if lady or gentleman, whether spectacles have been worn; if not, give the number of inches — very small printing must be held from the eyes in order to read it distinctly in a good light — and send a sample of the printing: but if spectacles have been worn, send a glass or piece of a glass from the Spectacles last worn; state the age and sex of the person; how long the last pair of Spectacles had been used, and at what number of inches from the eyes with these Spectacles on very small printing must be held in order to see it distinctly, and send sample of the printing.

Persons, after having used Spectacles for ten or twelve years to assist them in reading, begin to notice a change in their sight with regard to distant objects, a little want of clearness. When Spectacles are wanted to remedy this defect, if a glass from a pair of Spectacles which suits for reading small printing is sent us, we can send a pair of Spectacles that will correct the defect, and give clear vision for distant seeing.

To select Spectacles for Near- or Short-Sighted Persons.

Near-sighted persons, or those who do not wear glasses to assist them in reading, yet are unable to see distant objects clearly, in order to have the proper glasses sent them, should give us the number of inches they are obliged to hold very small printing from their eyes, and send sample of the printing.

Colored glasses — blue, green, and smoke — may be worn to protect the eyes from intensely bright light, such as sunshine, or blazing fire; but it is not advisable to use them for reading or working. The habitual using of them, where there is only a moderate light, is found to have an injurious effect in rendering the eyes too sensitive.

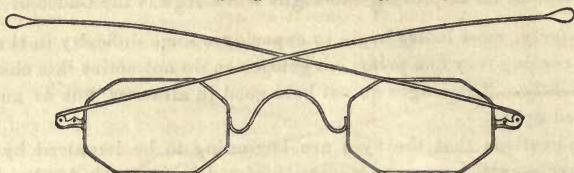
Spectacles can be transmitted through the mail with safety to and from us. The postage on a single pair is nine cents.

All orders for Spectacles will receive our prompt and careful attention. And if those sent are not found to be quite right, they will be exchanged for others without additional cost. In ordering Spectacles, it will only be necessary to give the catalogue number of the kind wanted and the information about the sight before alluded to.

GOLD SPECTACLES.

Of either Octagon or Oval-Shaped Eyes, and fitted with either Double or Periscope Convex or Concave Lenses.

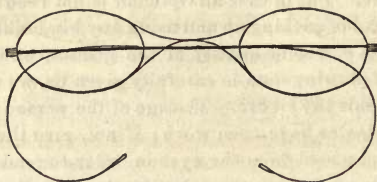
SINGLE TEMPLES.



1255-1259. Octagon.



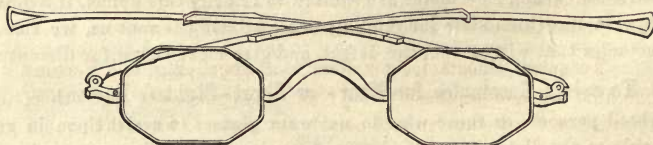
1255-1259. Oval.



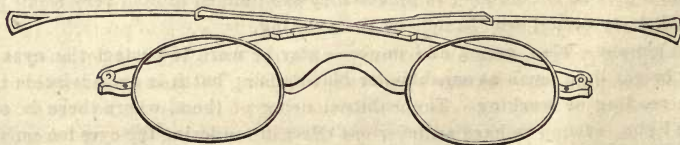
1260. Invisible.

1255. Single Temples,	10 carat gold,	per pair,	.	.	.	.	.	\$8 00
1256. do.	12 do.	do.	.	.	.	.	.	10 00
1257. do.	14 do.	do.	.	.	.	.	.	14 00
1258. do.	16 do.	do.	.	.	.	.	.	15 00
1259. do.	18 do.	do.	.	.	.	.	.	16 00
1260. Invisible,	14 do.	do.	.	.	.	.	.	12 00

SLIDING TEMPLES.



1261-1265. Octagon.



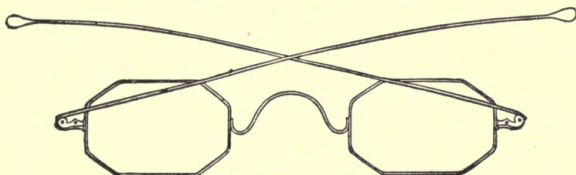
1261-1265. Oval.

1261. Sliding Temples,	10 carat gold,	per pair,	.	.	.	.	.	11 00
1262. do.	12 do.	do.	.	.	.	.	.	13 00
1263. do.	14 do.	do.	.	.	.	.	.	15 00
1264. do.	16 do.	do.	.	.	.	.	.	18 00
1265. do.	18 do.	do.	.	.	.	.	.	20 00

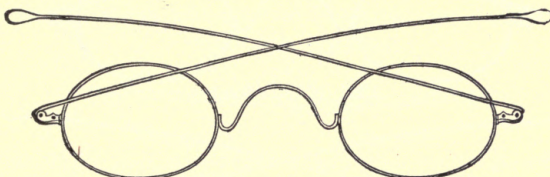
PURE SILVER SPECTACLES.

Of either Octagon or Oval-Shaped Eyes, and fitted with either Double or Periscopic Convex or Concave Lenses.

SINGLE TEMPLES.



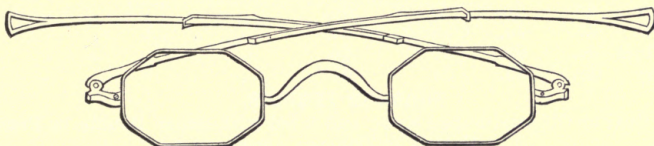
1275. Octagon.



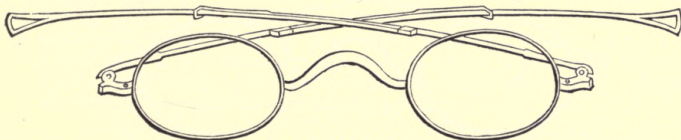
1276. Oval.

1275.	Single Temples, octagon, per pair,	.	.	.	.	.	.	\$2 50
1276.	do. oval, do.	.	.	.	.	.	.	2 50
1277.	do. octagon, with divided glasses, for far and near sights,	.	.	.	.	.	.	4 00
1278.	do. oval, do. do. do. do.	.	.	.	.	.	.	4 00

SLIDING TEMPLES.



1280. Octagon.



1281. Oval.

1280.	Sliding Temples, octagon, per pair,	.	.	.	.	.	.	3 50
1281.	do. oval, do.	.	.	.	.	.	.	3 50
1282.	do. octagon, with divided glasses, for far and near sights,	.	.	.	.	.	.	4 50
1283.	do. oval, do. do. do. do.	.	.	.	.	.	.	4 50

PEBBLES.

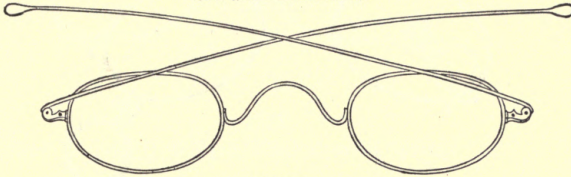
Convex or Concave Pebbles fitted to any of the foregoing frames at an additional cost per pair of \$4 00.

1303. Finest-finished frames, Oblong, per pair,	\$2 50
1304. Medium do. do. do. do.	1 75
1305. Heavy do. do. do. do.	1 50

Colored Glasses fitted to any of the foregoing frames for an extra charge per pair of 50 cents.

PULPIT SPECTACLES.

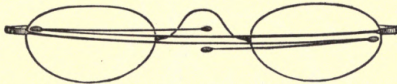
SINGLE TEMPLES.



1308.

1308. Finest-finished frames, with double or periscopic convex glasses, per pair, 2 00

TURN-PIN TEMPLES.



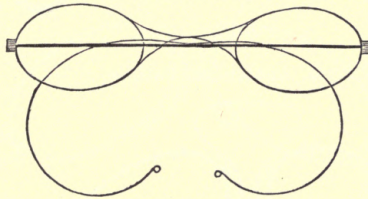
1309. Finest-finished frames, with double or periscopic convex glasses, per pair, 2 50

The Pulpit Spectacles are very convenient for public speakers who require spectacles to read their notes: the tops of the glasses being made straight or nearly so, allow the wearer to look over them when the eyes are directed to the audience.

PEBBLES.

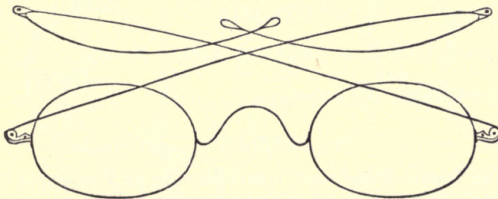
Any of the foregoing frames fitted with pebbles, complete, per pair, 5 00

INVISIBLE SPECTACLES.



1310. Hook Sides.

1310. Invisible Spectacles, Hook Sides, with the frames set in the glasses, that they may not be seen. These spectacles are particularly adapted to the comfort of near-sighted persons when riding on horseback, as the sides are made with hooks passing behind the ears, thus preventing the spectacles being jolted off the face. They are the lightest articles ever made, per pair, 3 00

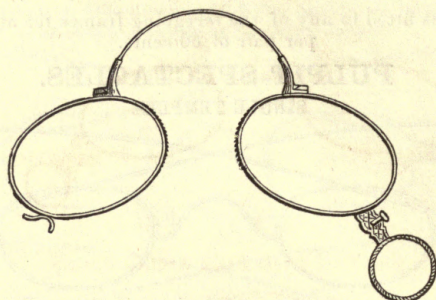


1311. Turn-Pin Sides.

1311. Invisible Spectacles, Turn-Pin Sides, 4 00

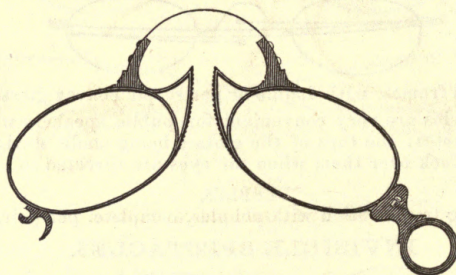
1313. Miller's or Turner's Spectacles, heavy frames, with large eyes, and plain white glasses to guard the eyes from chips, per pair, 75

GOLD EYE-GLASSES.



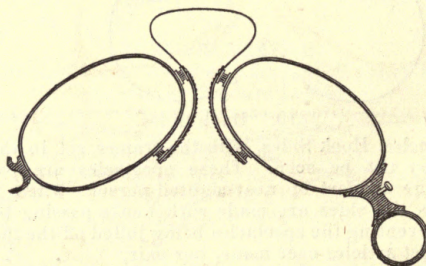
1315.

1315. Gold Eye-Glasses, Oval Eyes, Plain Arched Spring, . . . \$5 00



1316.

1316. Gold Eye-Glasses, Oval Eyes, Anatomical Pattern, . . . 10 00



1317-1318.

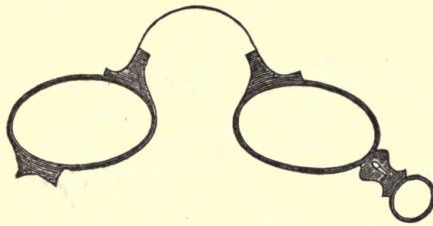
1317. Gold Eye-Glasses, Oval Eyes, Improved Arched Spring, . . . 8 00
 1318. do. do. do. do. do. Heavy, . . . 10 00
 1319. Frameless Eye-Glasses, Gold Springs, . . . 7 50

PEBBLES.

Any of the foregoing frames fitted with either Double or Periscopic Convex or Concave Pebbles, at an additional cost per pair of . . . 4 00

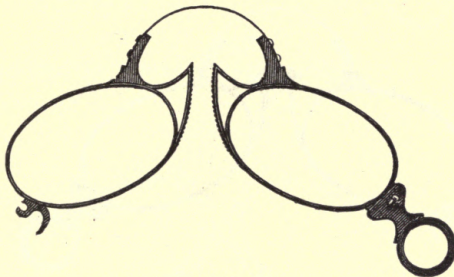
Any desired pattern of gold frames not in this list will be made to order.

TORTOISE-SHELL EYE-GLASSES.



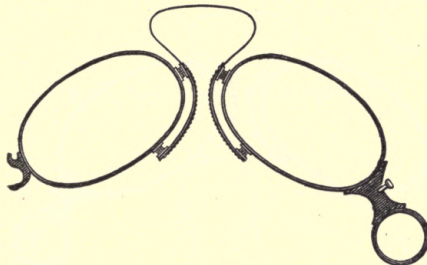
1325.

1325. Tortoise-Shell Frames, Oval Eyes, Plain Arched Spring, . . . \$2 00



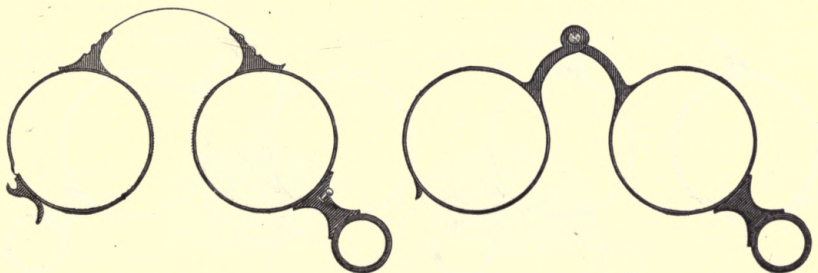
1326.

1326. Tortoise-Shell Frames, Oval Eyes, Anatomical Pattern, . . . 2 50



1327.

1327. Tortoise-Shell Frames, Oval Eyes, Improved Arched Spring, . . . 2 50

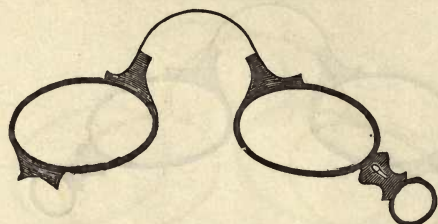


1328.

1329.

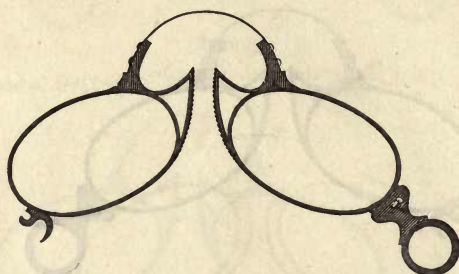
1328. Tortoise-Shell Frames, Round Eyes, Plain Arched Spring, . . . 2 00
 1329. do. do. do. without Spring, . . . 2 00

HARD RUBBER EYE-GLASSES.



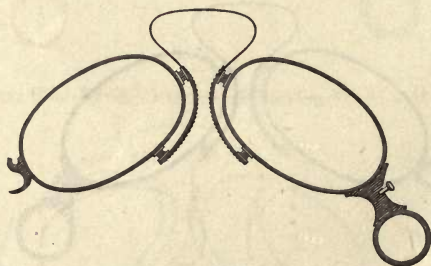
1330.

1330. Hard Rubber Frames, Oval Eyes, Plain Arched Spring, . . . \$1 00



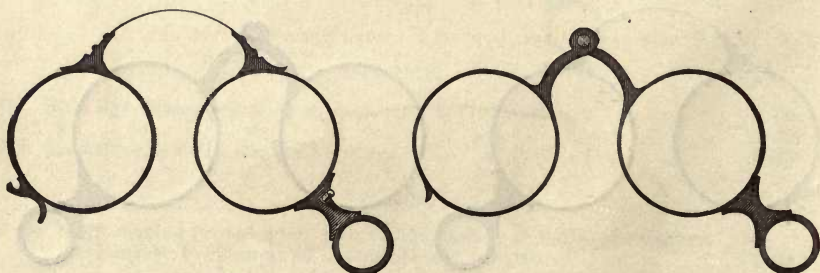
1331.

1331. Hard Rubber Frames, Oval Eyes, Anatomical Pattern, . . . 1 50



1332.

1332. Hard Rubber Frames, Oval Eyes, Improved Arched Spring, . . . 1 50

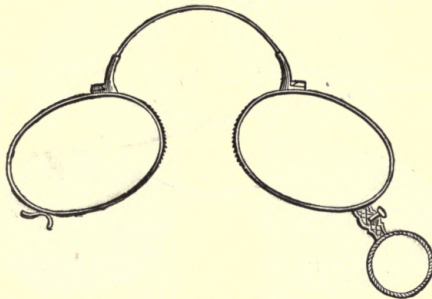


1333.

1334.

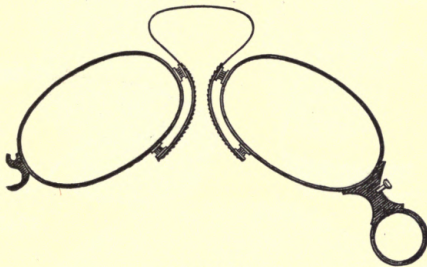
1333. Hard Rubber Frames, Round Eyes, Plain Arched Spring, . . . 1 00
 1334. do. do. do. without Spring, . . . 1 00

STEEL EYE-GLASSES.



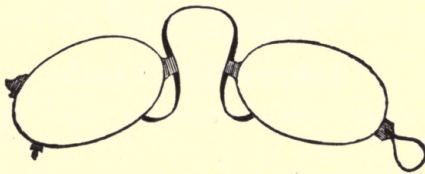
1335.

1335. Steel Frames, Oval Eyes, Plain Arched Spring, \$1 25



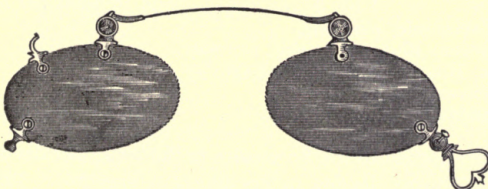
1336.

1336. Steel Frames, Oval Eyes, Improved Arched Spring, 2 00



1337.

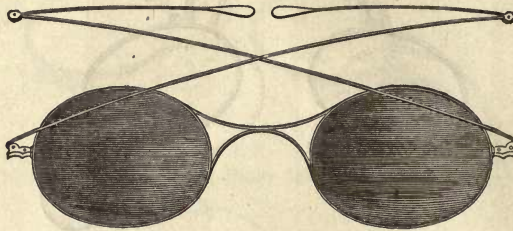
1337. Steel Frames, Oval Eyes, Improved Arched Spring, Very Light, 2 50
1337½. " " " " " Extra " 3 00



1338.

1338. Frameless, Oval Eyes, Steel Springs, 3 00

EYE PROTECTORS.



1340.

1340. French Coquille Spectacles, steel frames, fitted with either blue or smoke glasses, \$1 50



1341.



1342.

1341. Wire Gauze Eye Protectors, with green, blue, smoke, or white glasses, and elastic band; an excellent article for railroad travelling, per pair, 50
 1342. Wire Gauze Eye Protectors, with green, blue, smoke, or white glasses, and steel sliding Temples, as spectacles, per pair, 1 50
 1343. Silk Shades, with elastic bands, for weak eyes, each, 1 00
 1344. Artificial Human Eyes, a large assortment of sizes and colors, each, 15 00

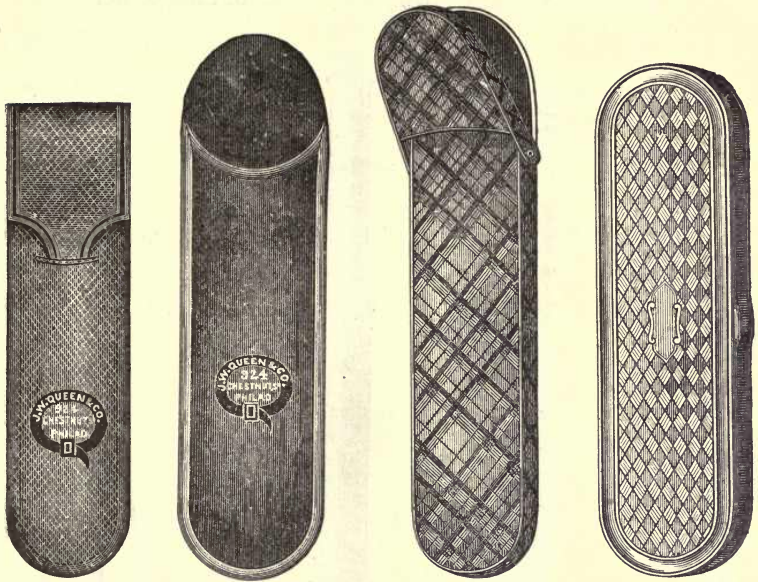
SPECTACLE GLASSES,

OF BEST QUALITY, FITTED TO FRAMES AT THE FOLLOWING PRICES:

- | | |
|--|------|
| 1350. Convex, White, per pair, | 75 |
| 1351. Do. Cataract, per pair, | 1 25 |
| 1352. Do. Periscopic, per pair, | 75 |
| 1353. Do. Green, Blue, or Smoke, per pair, | 1 50 |
| 1354. Do. Divided glasses, per pair, | 1 50 |
| 1355. Concave, White, from 6 to 36 inches focus, per pair, | 75 |
| 1356. Do. do. 1 to 6 do. add 10 cents per number. | |
| 1357. Do. Periscopic, per pair, | 75 |
| 1358. Do. Green, Blue, or Smoke, per pair, | 1 50 |
| 1359. Plain Green, Blue, or Smoke, per pair, | 1 00 |
| 1360. Pebbles, Convex, per pair, | 4 00 |
| 1361. Do. Concave, per pair, | 4 00 |

The Prices attached to the Spectacles in the foregoing list are what they will cost with the usual Convex Glasses, unless otherwise specified. They will cost more with high numbers of Convex or Concave, Cataract, Green or Blue Convex or Concave, and Periscopic Glasses, or with Pebbles.

SPECTACLE AND EYE-GLASS CASES.

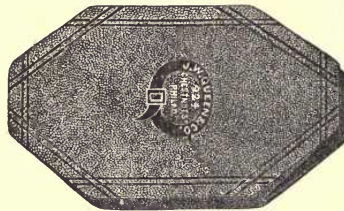


1362.

1363.

1367.

1370.



1371.

1362.	Spectacle Case, morocco, with tuck,	25
1363.	Do. do. do. open end,	25
1364.	Do. do. fine English leather,	75
1365.	Do. do. papier mache, sliding top,	75 to 1 00
1366.	Do. do. do. frog mouth,	\$1 00 " 1 25
1367.	Do. do. Scotch plaid, do.	1 50
1368.	Do. do. do. sliding top,	1 50
1369.	Do. do. planished tin,	25
1370.	Do. do. German silver, plated,	1 25 to 1 75
1371.	Eye-glass do. morocco, open end,	15
1372.	Do. do. do. frog mouth,	35

TO DEALERS.

The prices given on pages 5 to 14, for Spectacles, Eye-Glasses, &c., are our lowest retail prices. Dealers who buy Spectacles to retail again, will find our prices by the dozen very low indeed, and they can always have the dozens made up of any Sights they may happen to be in want of; the advantage of which is that they will never get too many of any one number, while they have none of some very important numbers. We have Steel Spectacles, from \$1 50 per dozen to \$25 per dozen. Eye-glasses, from \$3 50 to \$20 per dozen.

ACHROMATIC SPY-GLASSES AND TELESCOPES.



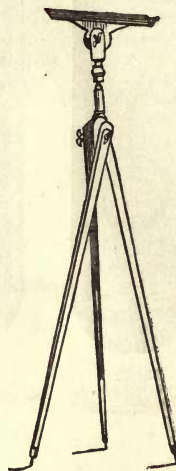
1375.



1381.



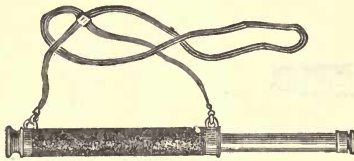
1385.



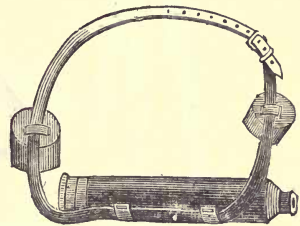
1393.

No.	PRICE.
1375. Achromatic Spy-glass, with wood body, and three draws, 15 inches long when drawn out, 6 inches long when shut up; object-glass 1 inch in diameter. Power 15 times,	\$3 00
1376. Achromatic Spy-glass, with wood body, and three draws, 16 inches long when drawn out, 6 inches long when shut up; object-glass 1½ inches diameter. Power 20 times,	4 00
1377. Achromatic Spy-glass, with wood body, and three draws, 23 inches long when drawn out, 8 inches long when shut up; object-glass 1¾ inches in diameter. Power 25 times,	6 00
1378. Achromatic Spy-glass, with wood body and three draws, 30 inches long when drawn out, 10 inches long when shut up; object-glass 1⅝ inches diameter. Power 30 times,	8 00
1379. Achromatic Spy-glass, with wood body and four draws, 37 inches long when drawn out, 11 inches long when shut up; object-glass 1⅞ inches diameter; a very superior glass. Power 35 times,	14 00
1380. Achromatic Spy-glass, with wood body, and four draws, 42 inches long when drawn out, 11½ inches long when shut up; object-glass 2⅓ inches in diameter, with sun-glass. Power 40 times,	25 00
1381. Achromatic Spy-glass, with wood body, and four draws, 48 inches long when drawn out, 13½ inches long when shut up; object-glass 2⅝ inches diameter, with sun-glass. Power 50 times,	36 50

No.	PRICE.
1382. Achromatic Spy-glass, with wood-body, and five draws, 28 inches long when drawn out, 7 $\frac{3}{8}$ inches long when shut up; object-glass 1 $\frac{3}{8}$ inches diameter; about the same power as No. 1378, but more portable. Power 35 times,	\$12 00
1383. Achromatic Spy-glass, with wood body and six draws, 17 inches long when drawn out, 4 $\frac{3}{4}$ inches long when shut up; object-glass 1 $\frac{1}{2}$ inches diameter. Power 20 times,	6 50
1384. Achromatic Spy-glass, with wood body and six draws, 16 inches long when drawn out, 4 $\frac{1}{2}$ inches long when shut up; object-glass $\frac{7}{8}$ inch diameter; a very portable pocket spy-glass. Power 15 times,	6 00
1385. Achromatic Spy-glass, brass body, covered with cord or leather; has shade to keep off the sun and rain; one draw, 36 inches long when drawn out, 20 inches long when shut up; object-glass 1 $\frac{3}{8}$ inches diameter. Power 25 times,	13 00
1386. Same as 1385, but with two or three draws; 15 inches long when shut up,	13 00



1387.



1389.

1387. Rifle Spy-glasses, 10 $\frac{3}{4}$ inches long; object-glass $\frac{1}{2}$ inch diameter,	3 00
1388. Naval Achromatic Spy-glass, tapering wood body and one draw, 55 inches long when drawn out, 45 inches long when shut up; rack and pinion for adjusting the focus. Power 50 times,	45 00
1389. Tourist's Achromatic Spy-glass, with brass body, covered with black Turkey morocco; three draws, 17 inches long when drawn out, 6 inches long when shut up; object-glass 1 $\frac{1}{4}$ inches diameter; sun shade to slip beyond the object-glass; heavy leather caps to cover both the eye-glass and object-glass; strong leather strap to sling over the shoulder. Power 20 times,	12 00
1390. Same as No. 1389, but is 21 inches long when drawn out, 7 inches long when shut up; object-glass 1 $\frac{3}{8}$ inches diameter. Power 25 times,	15 50
1391. Same as No. 1389, but is 24 inches long when drawn out, 9 inches long when shut up; object-glass 1 $\frac{3}{8}$ inches diameter. Power 30 times,	21 00
1392. Same as 1389, but has four draws, and is 36 inches long when drawn out, 10 inches long when shut up; object-glass 1 $\frac{7}{8}$ inches diameter. Power 35 times,	30 00
1393. Wooden Tripod Stand, with vertical and horizontal motion, upon which to place a spy-glass; an exceedingly useful article, as a glass of much power cannot be held in the hand with sufficient steadiness to produce the best effect,	5 00
1394. German-Silver Clamp with Gimlet Screw, to fasten a spy-glass to a post or tree, three sizes to fit any of the foregoing spy-glasses, \$3 50, 4 50 & 5 50	

ASTRONOMICAL TELESCOPES.



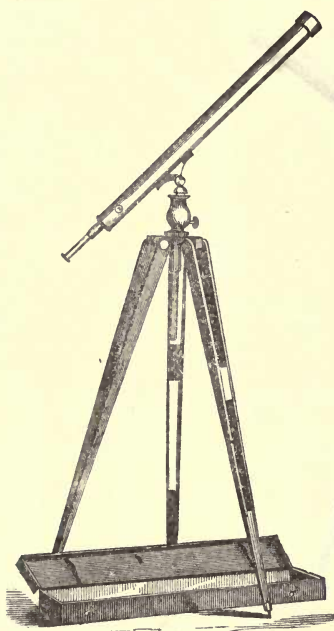
1395.

No.		PRICE.
1395.	Astronomical Telescope. Body all brass on highly finished brass tripod stand, rack adjustment for focus, object-glass 2 inches in diameter, one terrestrial and one celestial eye-piece; packed in a strong walnut wood case, with lock and key,	\$60 00
1396.	The same instrument, with object-glass 2½ inches in diameter, and sun-glass,	80 00
1397.	The same, with object-glass 3 inches in diameter, two celestial and two terrestrial eye-pieces,	125 00
1398.	The same, with object-glass 3½ inches in diameter, and two celestial eye-pieces,	200 00
1399.	The same, with object-glass 4 inches in diameter, and three celestial eye-pieces,	300 00

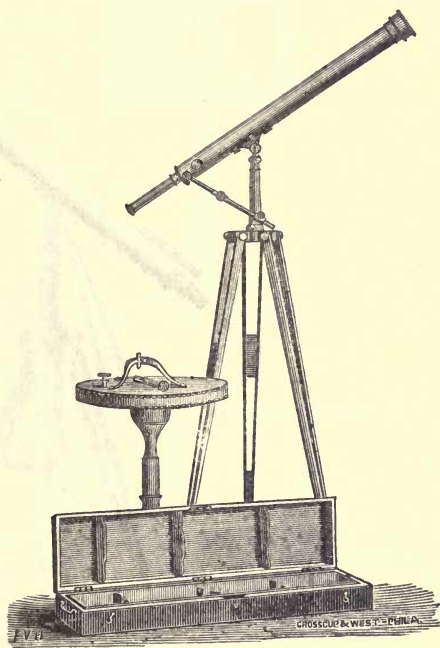
Instruments of larger size imported to order.

The object-glasses of all our Telescopes are achromatic, and of the best quality.

ASTRONOMICAL TELESCOPES.



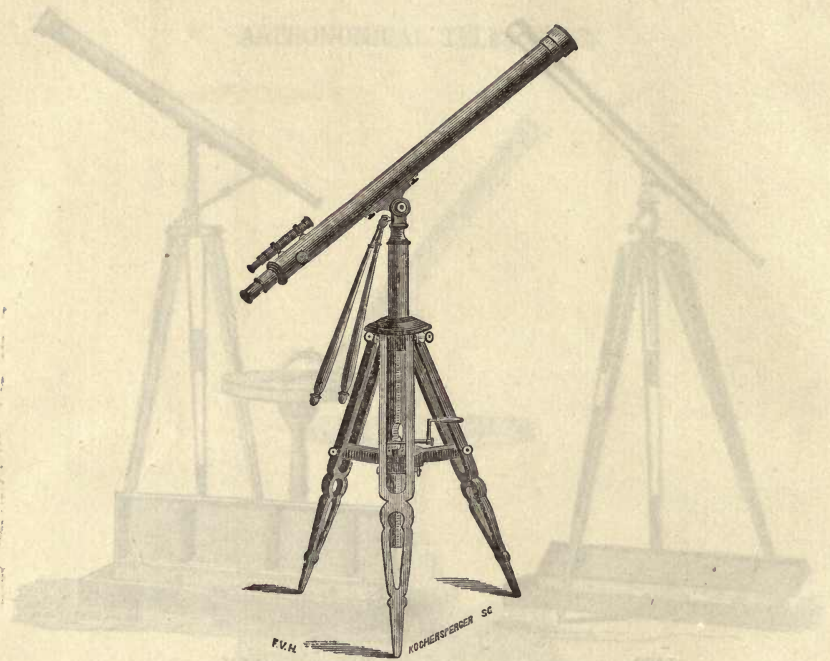
1400.



1405.

No.		PRICE.
1400.	Astronomical Telescope, body and movements all brass, with rack adjustment for focus, object-glass $2\frac{1}{4}$ inches diameter, one terrestrial and one celestial eye-piece, and sun-glass, packed in strong walnut wood case, with lock and key. The body is mounted upon a firm tripod stand of mahogany, affording every facility for observation,	\$60 00
1401.	The same with object-glass $2\frac{1}{2}$ inches diameter,	70 00
1402.	The same with object-glass 3 inches diameter,	110 00
1403.	The same with object-glass $3\frac{1}{2}$ inches diameter,	200 00
1404.	The same with object-glass 4 inches diameter,	275 00
1405.	Astronomical Telescope, body and movements all brass, with rack adjustment for focus, and ditto for vertical movement of body, mounted on brass tripod similar to 1395, and in addition has a fine tripod stand of mahogany for out-door use, object-glass 3 inches diameter, two terrestrial and two celestial eye-pieces, and sun-glass, in strong walnut case with lock,	150 00
1406.	The same with object-glass $3\frac{1}{2}$ inches diameter, and two celestial eye-pieces,	225 00
1407.	The same with object-glass 4 inches diameter, and three celestial eye-pieces,	850 00

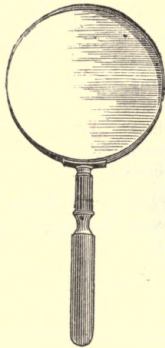
ASTRONOMICAL TELESCOPES.



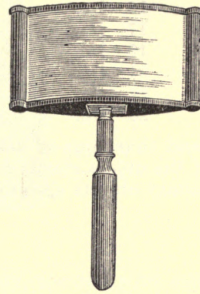
1410.

No.		PRICE.
1410.	Astronomical Telescope, body and movements all brass, with most complete movements by Bagnettes, rack work for adjustment of focus. The stand is a tripod of highly finished mahogany, very strong and firm, with rack work for adjusting the instrument at any desired height, object-glass $3\frac{1}{4}$ inches diameter, two terrestrial and two celestial eye-pieces, and sun-glass, in a strong walnut case, with lock,	\$850 00
1411.	The same instrument, with object-glass $3\frac{1}{2}$ inches in diameter,	400 00
1412.	The same instrument, with object-glass 4 inches in diameter, and three celestial eye-pieces,	550 00
	Any of the foregoing instruments can be supplied with finders at an additional cost of \$20.	
1413.	Terrestrial eye-pieces for Telescopes made to order of any power,	18 00
1414.	Celestial eye-pieces for Telescopes made to order of any power,	12 00
1415.	Sun-glasses for eye-pieces,	2 00

READING AND PICTURE LENSES.



1424.



1440.

No.						PRICE.
1424.	Reading Glass,	oxidized metal frame,	double convex lens,	2 inch diameter,		\$1 00
1425.	Do.	do.	do.	do.	2½ do.	1 50
1426.	Do.	do.	do.	do.	3 do.	2 00
1427.	Do.	do.	do.	do.	3½ do.	2 50
1428.	Do.	do.	do.	do.	4 do.	3 25
1429.	Do.	do.	do.	do.	4½ do.	4 50
1430.	Do.	do.	two plano-convex lenses,	2½ do.		2 25
1431.	Do.	do.	do.	do.	3 do.	3 00
1432.	Do.	do.	do.	do.	3½ do.	4 25
1433.	Do.	do.	do.	do.	4 do.	5 00
1434.	Reading Glass,	gilt metal frame,	ivory handle,	one double convex lens,	2 inches diameter,	2 25
1435.	Reading Glass,	gilt metal frame,	ivory handle,	one double convex lens,	2½ inches diameter,	2 75
1436.	Reading Glass,	gilt metal frame,	ivory handle,	one double convex lens,	3 inches diameter,	3 75
1437.	Reading Glass,	gilt metal frame,	ivory handle,	double convex lens,	4 inches diameter,	5 50
1438.	Reading Glass,	gilt metal frame,	ivory handle,	double convex lens,	4½ inches diameter,	7 00
1439.	Reading Glass,	gilt metal frame,	ivory handle,	double convex lens,	5 inches diameter,	8 50
1440.	Reading Glass,	black metal frame,	wood handle,	double convex lens,	3 inches long by 1½ inches wide,	1 50
1441.	Reading Glass,	black metal frame,	wood handle,	double convex lens,	3½ inches long by 1¾ inches wide,	2 00
1442.	Reading Glass,	black metal frame,	wood handle,	double convex lens,	4 inches long by 2 inches wide,	2 50
1443.	Picture Glasses,	wood frames and handle,	double convex lens	5 inches diameter,		5 00
1444.	Picture Glasses,	wood frame and handle,	double convex lens	6 inches diameter,		7 00

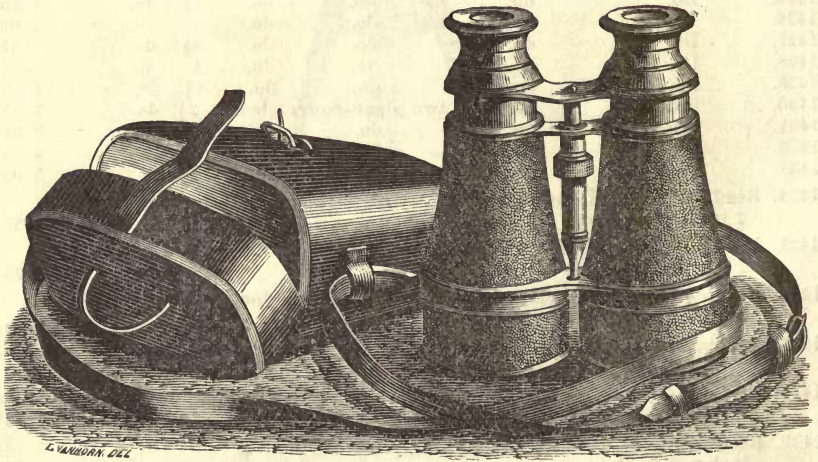
ACHROMATIC MARINE, FIELD AND OPERA GLASSES.

These Glasses are designated and priced according to the diameter of the object-glasses in French lines, as follows:

11 Lines, which is equal to 1 inch.			
13 Do.	do.	$1\frac{3}{8}$ inches.	
15 Do.	do.	$1\frac{5}{8}$ inches.	
17 Do.	do.	$1\frac{7}{8}$ inches.	
19 Do.	do.	$1\frac{9}{8}$ inches.	
21 Do.	do.	$1\frac{11}{8}$ inches.	
24 Do.	do.	$2\frac{1}{8}$ inches.	
26 Do.	do.	$2\frac{3}{8}$ inches.	

The power and sharpness of definition of an Opera or Field Glass depends upon the diameter of the object-glass, the greater the diameter the higher the power, and more clearly distant objects are seen.

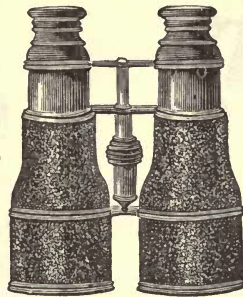
MARINE AND FIELD GLASSES.



1448.

No.					PRICE.
1448.	U. S. Army Signal Service Six Lens Achromatic Marine or Field Glass, metal body, covered with Turkey morocco, sun shade to extend over the object-glasses, and heavy leather case, with strap; very superior.				
	Body $5\frac{3}{8}$ inches long; object-glasses 21 lines in diameter,				\$17 00
	Do. $5\frac{7}{8}$ do.	do.	24 do.		20 00
	Do. $6\frac{1}{4}$ do.	do.	26 do.		22 00

MARINE AND FIELD GLASSES.



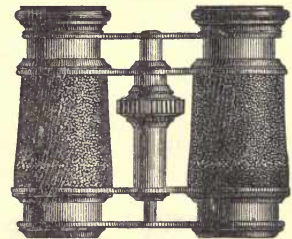
1449.

1449. Six Lens Achromatic Field Glass, metal body, covered with morocco, sun shades to extend over the object-glasses, and Leather case with strap.

Body	4 $\frac{3}{4}$ inches long,	Object-glasses	21 lines in diameter,	. . .	\$10 50
Do.	5 $\frac{3}{4}$ do.	do.	24 do.	. . .	13 00
Do.	6 $\frac{1}{4}$ do.	do.	26 do.	. . .	15 00



1450.



1451.

1450. Six Lens Achromatic Glass, with three adjustable Eye-pieces of different powers for Field, Marine, or Opera, metal bodies, covered with finest Turkey morocco, sun shades to extend over the object-glasses, and fine Leather cases, with strap.

Body	3 $\frac{1}{2}$ inches long,	Object-glasses	17 lines in diameter,	. . .	18 00
Do.	4 $\frac{1}{4}$ do.	do.	19 do.	. . .	22 00
Do.	5 do.	do.	21 do.	. . .	27 00
Do.	5 $\frac{3}{4}$ do.	do.	24 do.	. . .	32 00

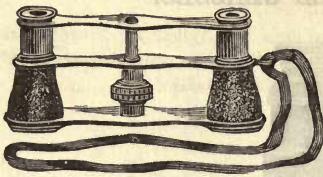
1451. Six Lens Achromatic Field Glass, Rock Crystal Lenses, double adjustment of focus, so that, when closed, the instrument can be conveniently carried in the pocket, in morocco case, without strap; very powerful.

Body	2 inches long,	Object-glasses	10 lines in diameter,	. . .	18 00
Do.	2 $\frac{3}{4}$ Do.	do.	11 do.	. . .	20 00
Do.	2 $\frac{3}{4}$ Do.	do.	15 do.	. . .	22 00

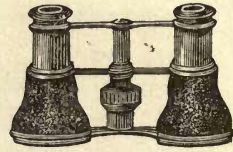
1452. Bardou's Six Lens Achromatic Marine or Field Glass, body covered with Turkey morocco, sun shades to extend over the object-glasses, in fine Leather case, with strap; the best article made.

Body	6 $\frac{1}{2}$ inches long,	Object-glasses	26 lines in diameter,	. . .	30 00
Do.	Do.	do.	do.	with hinge adjustment for different widths of eyes,	33 00

OPERA GLASSES.

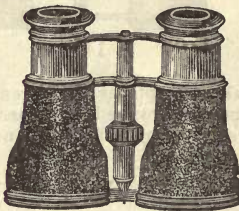


1453-1455.



1456-1458.

1453. Opera Glass, for the vest pocket, six lens, achromatic, black leather body, and cross pieces, \$8 00
1454. Opera Glass, for the vest pocket, six lens, achromatic, white pearl body, gilt cross pieces, 10 00
1455. Opera Glass, for the vest pocket, six lens, achromatic, colored pearl body, gilt cross pieces, 16 00
1456. Opera Glasses, six lens, achromatic, metal bodies, covered with black imitation Turkey morocco, cross pieces, and tubes all black.
- | | |
|--|------|
| Body 2 $\frac{1}{4}$ inches long, object-glasses 13 lines in diameter, each, . | 5 00 |
| Do. 2 $\frac{1}{2}$ do. do. 15 do. do. | 6 00 |
| Do. 3 do. do. 17 do. do. | 7 00 |
| Do. 3 $\frac{1}{4}$ do. do. 19 do. do. | 8 00 |
1457. Opera Glasses, six lens, achromatic, metal bodies, covered with fancy colored morocco, cross pieces, and tubes japanned black.
- | | |
|--|------|
| Body 2 $\frac{1}{4}$ inches long, object-glasses 13 lines in diameter, each, . | 7 50 |
| Do. 2 $\frac{1}{2}$ do. do. 15 do. do. | 8 00 |
| Do. 3 do. do. 17 do. do. | 8 50 |
| Do. 3 $\frac{1}{4}$ do. do. 19 do. do. | 9 50 |
1458. Opera Glasses, the same as 1457, but with the tubes and cross pieces gilt.
- | | |
|--|-------|
| Body 2 $\frac{1}{4}$ inches long, object-glasses 13 lines in diameter, each, . | 8 00 |
| Do. 2 $\frac{1}{2}$ do. do. 15 do. do. | 9 00 |
| Do. 3 do. do. 17 do. do. | 10 00 |
| Do. 3 $\frac{1}{4}$ do. do. 19 do. do. | 11 00 |



1459-60.



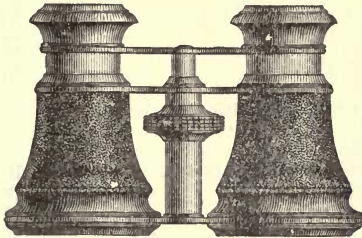
1461.

1459. Opera Glasses, six lens, achromatic, metal bodies, covered with imitation Turkey morocco, the bars connecting the two bodies curved, and every part very substantially made.
- | | |
|--|-------|
| Body 2 $\frac{1}{4}$ inches long, object-glasses 13 lines in diameter, each, . | 7 50 |
| Do. 2 $\frac{1}{2}$ do. do. 15 do. do. | 8 50 |
| Do. 3 do. do. 17 do. do. | 9 50 |
| Do. 3 $\frac{1}{4}$ do. do. 19 do. do. | 10 50 |
1460. Opera Glasses, twelve lens, achromatic, metal bodies, covered with black imitation Turkey morocco, tubes and cross pieces all black; very superior.
- | | |
|--|-------|
| Body 2 $\frac{1}{4}$ inches long, object-glasses 13 lines in diameter, each, . | 12 00 |
| Do. 2 $\frac{1}{2}$ do. do. 15 do. do. | 13 50 |
| Do. 3 do. do. 17 do. do. | 15 50 |
| Do. 3 $\frac{1}{4}$ do. do. 19 do. do. | 16 50 |

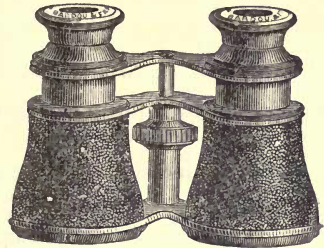
OPERA GLASSES.

1461. Opera Glasses, six lens achromatic, aluminium bodies, covered with fine black Turkey morocco; tubes and cross pieces japanned black; these are the lightest articles ever made.

Bodies	2 $\frac{1}{2}$	inches long;	object-glasses	15	lines in diameter, each,	. \$22 00
Do.	3	do.	do.	17	do. do. .	27 00
Do.	3 $\frac{1}{2}$	do.	do.	19	do. do. .	31 00



1462-1463.



1464-1469.

1462. Opera Glasses, six lens achromatic; bodies, tubes and cross pieces all black, bodies of a new and elegant shape, covered with finest Turkey morocco.

Body	2 $\frac{1}{2}$	inches long;	object-glasses	12	lines in diameter, each,	. 10 50
Do.	2 $\frac{3}{4}$	do.	do.	13	do. do. .	11 00
Do.	2 $\frac{3}{4}$	do.	do.	15	do. do. .	12 00

1463. Opera Glasses, the same as 1462, but with gilt tubes, and bodies covered with fancy colored leather, and oxidized ornaments at top and base.

Body	2 $\frac{1}{2}$	inches long;	object-glasses	12	lines in diameter, each,	. 12 00
Do.	2 $\frac{3}{4}$	do.	do.	13	do. do. .	13 00
Do.	2 $\frac{3}{4}$	do.	do.	15	do. do. .	14 00

BARDOU'S OPERA GLASSES.

1464. Bardou's Opera Glasses, six lens achromatic; bodies, tubes and cross pieces all black; bodies covered with best Turkey morocco; cross pieces curved.

Body	2 $\frac{1}{2}$	inches long;	object-glasses	13	lines in diameter, each,	. 8 50
Do.	2 $\frac{3}{4}$	do.	do.	15	do. do. .	9 00
Do.	3	do.	do.	17	do. do. .	11 50
Do.	3 $\frac{1}{4}$	do.	do.	19	do. do. .	13 50

1465. Bardou's Opera Glasses, the same as 1464, but with eight lenses.

Body	2 $\frac{1}{2}$	inches long;	object-glasses	13	lines in diameter, each,	. 10 50
Do.	2 $\frac{3}{4}$	do.	do.	15	do. do. .	11 50
Do.	3	do.	do.	17	do. do. .	13 50
Do.	3 $\frac{1}{4}$	do.	do.	19	do. do. .	16 00

BARDOU'S OPERA GLASSES.

1466. Bardou's Opera Glasses. The same as 1465, but with twelve lenses.

Body	2 $\frac{1}{4}$ inches long; object-glasses	13 lines in diameter, each,	.	\$15 00
Do.	2 $\frac{1}{2}$	do. do.	15 do. do.	16 00
Do.	3	do. do.	17 do. do.	18 00
Do.	3 $\frac{1}{4}$	do. do.	19 do. do.	20 00

1467. Bardou's Opera Glasses, six lens, rock crystal, achromatic; bodies, tubes, and cross pieces all black; bodies covered with best Turkey morocco; cross pieces curved.

Body	2 $\frac{1}{4}$ inches long; object-glasses	13 lines in diameter, each,	.	10 50
Do.	2 $\frac{1}{2}$	do. do.	15 do. do.	11 00
Do.	3	do. do.	17 do. do.	13 00
Do.	3 $\frac{1}{4}$	do. do.	19 do. do.	16 00

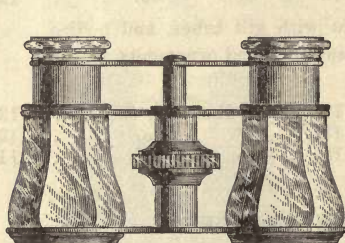
1468. Bardou's Opera Glasses. The same as 1467, but with eight lenses, rock crystal.

Body	2 $\frac{1}{4}$ inches long; object-glasses	13 lines in diameter, each,	.	13 00
Do.	3	do. do.	15 do. do.	13 75
Do.	3 $\frac{1}{2}$	do. do.	17 do. do.	16 00
Do.	4	do. do.	19 do. do.	18 00

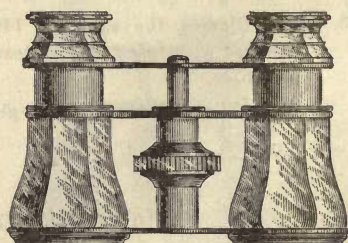
1469. Bardou's Opera Glasses. The same as 1407, but with twelve lenses, rock crystal.

Body	2 $\frac{1}{4}$ inches long; object-glasses	13 lines in diameter, each,	.	18 00
Do.	2 $\frac{1}{2}$	do. do.	15 do. do.	19 00
Do.	3	do. do.	17 do. do.	20 00
Do.	3 $\frac{1}{4}$	do. do.	19 do. do.	22 00

PEARL OPERA GLASSES.



1470.



1471.

1470. Opera Glasses, six lens achromatic; white pearl bodies, gilt tubes and cross pieces, low eye-pieces.

Body	1 $\frac{7}{8}$ inches long; object-glasses	13 lines in diameter, each,	.	12 00
Do.	2 $\frac{1}{8}$	do. do.	15 do. do.	13 00
Do.	2 $\frac{3}{8}$	do. do.	17 do. do.	15 00
Do.	2 $\frac{5}{8}$	do. do.	19 do. do.	17 00

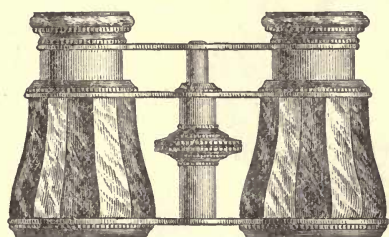
1471. Opera Glasses, six lens achromatic; white pearl bodies, gilt tubes and cross pieces, raised eye-pieces.

Body	2 $\frac{5}{8}$ inches long; object-glasses	13 lines in diameter, each,	.	16 00
Do.	3	do. do.	15 do. do.	17 00
Do.	3 $\frac{1}{4}$	do. do.	17 do. do.	19 00
Do.	3 $\frac{1}{2}$	do. do.	19 do. do.	21 00

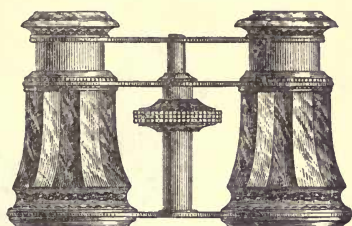
PEARL OPERA GLASSES.

1472. Opera Glasses, six lens achromatic; bodies, tubes, and cross pieces all of pure white pearl, no metal showing, very beautiful and appropriate for bridal presents.

Body $2\frac{1}{4}$ inches long; object-glasses 13 lines in diameter, each,	.	\$33 00
Do. $2\frac{1}{2}$ do. do. 15 do. do.	.	38 00
Do. 3 do. do. 17 do. do.	.	42 50



1473.



1474.

1473. Opera Glasses, six lens achromatic; bodies of alternate stripes, black and white pearl, pearl top, gilt cross pieces and tubes, very beautiful.

Body $5\frac{1}{4}$ inches long; object-glasses 13 lines in diameter, each,	.	16 00
Do. $2\frac{1}{2}$ do. do. 15 do. do.	.	18 00
Do. 3 do. do. 17 do. do.	.	22 00

1474. Opera Glasses, six lens achromatic; bodies of alternate stripes, black and white pearl, entirely new design, with oxidized ornaments at top and bottom, pearl tops, gilt tubes and cross pieces.

Body $2\frac{1}{4}$ inches long; object-glasses 13 lines in diameter, each,	.	25 00
Do. $2\frac{1}{2}$ do. do. 15 do. do.	.	27 00
Do. 3 do. do. 17 do. do.	.	29 00

1475. Opera Glasses, six lens achromatic. The same as 1474, excepting that the pearl is all white.

Body $2\frac{1}{4}$ inches long; object-glasses 13 lines in diameter, each,	.	22 50
Do. $2\frac{1}{2}$ do. do. 15 do. do.	.	25 00
Do. 3 do. do. 17 do. do.	.	27 00

1476. Opera Glasses, six lens achromatic; bodies enameled dead black, with medallion heads painted on them, tubes gilt.

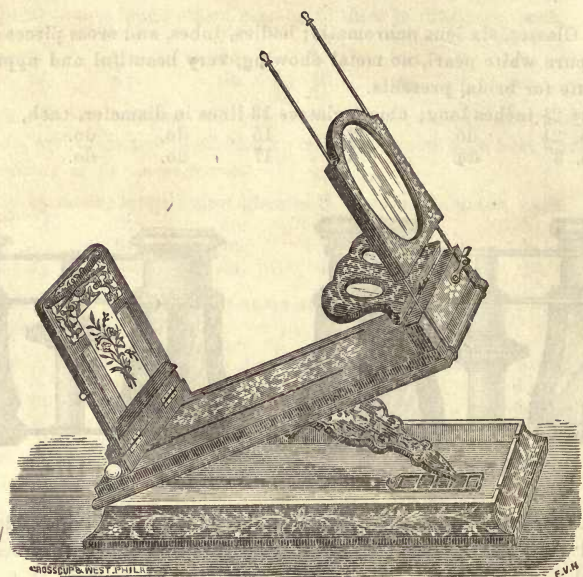
Body $2\frac{1}{2}$ inches long; object-glasses 15 lines in diameter, each,	.	17 50
Do. 3 do. do. 17 do. do.	.	19 00

1477. Opera Glasses, six lens achromatic; bodies elegantly enameled in brilliant landscape and figures, tubes and cross pieces gilt.

Body $2\frac{1}{2}$ inches long; object-glasses 15 lines in diameter, each,	.	35 00
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In addition to the foregoing list of opera glasses, which we always keep in stock, we are constantly receiving new and handsome designs, suited to all tastes.

GRAPHOSCOPES.

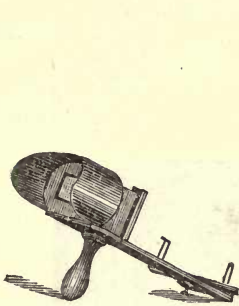


1487.

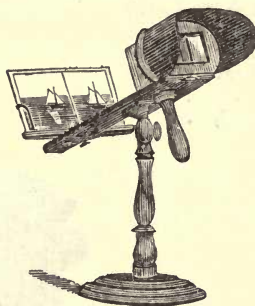
These new, beautiful, and extremely useful instruments are growing steadily in public favor, so that of late it has been almost impossible to meet the demand for them. We have, however, made arrangements with two eminent foreign manufacturers, by which, in addition to our own make, we shall be enabled to keep all sizes in stock, and thus fill orders promptly. Combining a perfect stereoscope with a large lens for viewing single photographs, and engravings of almost any size, so constructed as to give a stereoscopic appearance to them, the graphoscope realizes a want often felt but never before attained, whilst its beautiful proportions and elegant finish make it a handsome addition to the furniture of the library or drawing-room.

1480.	Graphoscope, with stereoscope attachment, in walnut wood, $4\frac{1}{2}$ inch lens,	\$10 00
1481.	Graphoscope, with stereoscope attachment, in walnut wood, very handsomely finished, 5 inch lens,	20 00
1482.	Graphoscope, same as 1481, but lined with satinwood,	25 00
1483.	Graphoscope, with stereoscope attachment, in rosewood, elegantly carved and finished, 5 inch lens,	30 00
1484.	Graphoscope, same as 1483, but more elegantly finished, and lined with satin, holly, or maple wood,	35 00
1485.	Graphoscope, same as 1484, but with 6 inch lens,	40 00
1486.	Do. do. do. do. 7 do.	50 00
1487.	Do. do. 1486, but very elegantly ornamented with inlaid figures, &c.,	65 00

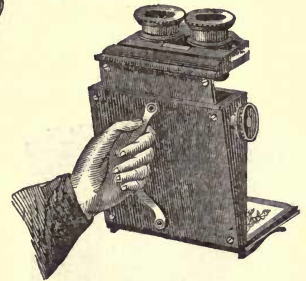
STEREOSCOPES.



1492 to 1496.

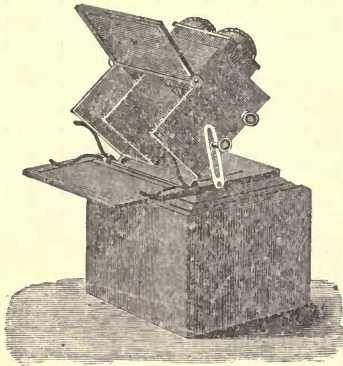


1499 to 1501.

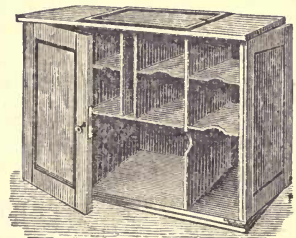


1502 and 1503.

No.					PRICE.
1490.	Holmes' Stereoscope,	walnut frame,	round cloth hood,	.	\$ 75
1491.	Do.	do.	do.	do. embossed cloth hood,	1 00
1492.	Do.	do.	do.	do. walnut do.	1 50
1493.	Do.	do.	do.	do. embossed morocco hood,	1 75
1494.	Do.	do.	do.	do. do. velvet do.	1 75
1495.	Do.	do.	do.	do. rosewood, do.	2 00
1496.	Do.	do.	mahogany frame,	round mahogany do.	3 00
1497.	Do.	do.	rosewood	do. rosewood do.	3 50
1498.	Do.	do.	ebony	do. French walnut do.	5 00
1499.	Stand for holding any of the above in	oiled walnut,	.	.	1 25
1500.	Do.	do.	do.	polished mahogany,	1 75
1501.	Do.	do.	do.	do. rosewood,	2 00
1502.	Beck's Patent Achromatic Mirror Stereoscope;	mahogany,	.	.	17 50
1503.	Do.	do.	do.	walnut,	20 00



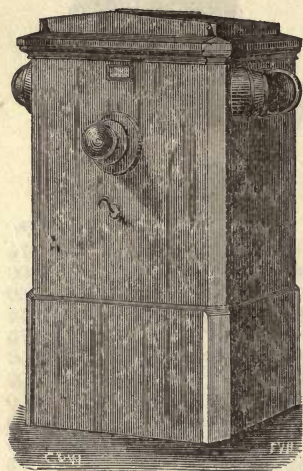
1504 to 1506.



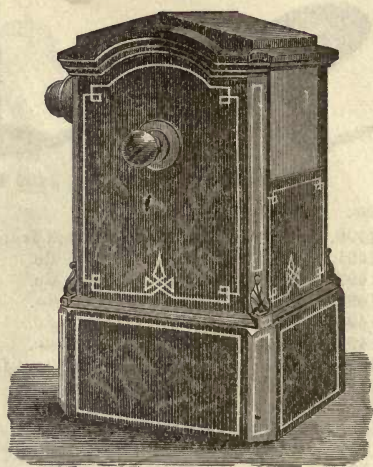
1509.

1504.	Beck's Patent Achromatic Table Stereoscope;	mahogany,	.	.	27 50
1505.	Do.	do.	do.	do. walnut,	33 00
1506.	Do.	do.	do.	do. walnut or mahogany;	
	extra finish,	.	.	.	55 00
1507.	Beck's Cabinet Stand for Table Stereoscope, fitted up to hold the instrument and slides;	in mahogany or walnut,	.	.	40 00
1508.	The same, of very finest finish,	.	.	.	75 00
1509.	Beck's Pedestal Stand, fitted up to hold the instrument and slides;	in mahogany or walnut,	.	.	27 50

No.		PRICE.
1510.	Leather Case to hold 1502 or 1503, and a few views,	\$5 50
1511.	Cottage Stereoscope, in plain black walnut, with one set of lenses on top, that swing so as to view the pictures on either side of the axle; revolving chain to hold 48 paper views,	15 00
1512.	Library Stereoscope, 18 inches high, in highly finished black walnut, with one set of lenses, and revolving chain to hold 72 glass or paper pictures,	30 00
1513.	The same as 1512, in rosewood,	35 00



1515.



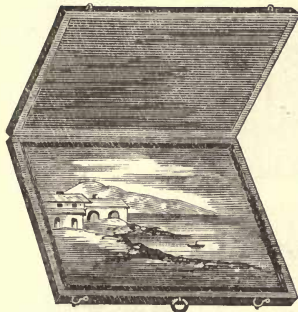
1516.

1514.	The same as 1512, but with two sets of lenses, and revolving chain to hold 72 glass or 144 paper pictures,	35 00
1515.	Parlor Stereoscope, in select rosewood, with improved shutter, and two sets of lenses to hold 72 glass or 144 paper pictures,	45 00
1516.	Parlor Stereoscope, in finest French walnut, or select rosewood; arched top, inlaid with gilt; ornaments very chaste; for 72 or 100 pictures,	60 00
1517.	The same, for 100 and 200 pictures,	70 00
1518.	Boudoir Stereoscope, in select rosewood; four feet high, on castors, with two sets of lenses, and revolving chain to hold 150 glass or 300 paper pictures,	105 00
1519.	The same as 1518, but will hold 300 glass or 600 paper pictures,	140 00
1520.	Brass Stand to hold either 1502 or 1503,	10 00
1521.	Carved Walnut Stand for holding Stereoscopic views. Will contain six dozen, and is a very handsome article,	1 50

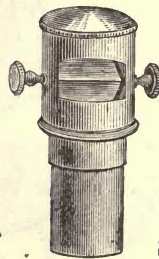
STEREOSCOPIIC PICTURES.

We have constantly on hand, and are receiving daily, an endless variety of views of all the most important cities and public buildings in the world, with every variety of landscape views in all regions. Statuary, monuments, colored groups from life, and celebrities, male and female. These range in price from \$1.00 to \$6.00 per dozen for paper pictures, and from 75 cts. to \$3.00 each for glass. The former can be sent safely by mail. American Views range from \$1.00 to \$3.00 per dozen, according to size, locality, or artist. Foreign views range from \$1.00 to \$6.00 per dozen. We have over 1000 different views in Germany, Holland, Switzerland, on the Rhine, Belgium, France, Italy, Egypt, &c., by the celebrated artist, Braun of Dornach, which are at least equal to any ever made, at the very low price of \$2.50 per dozen. Any quantity will be forwarded to parties giving satisfactory references for selection, and ample time allowed for the same.

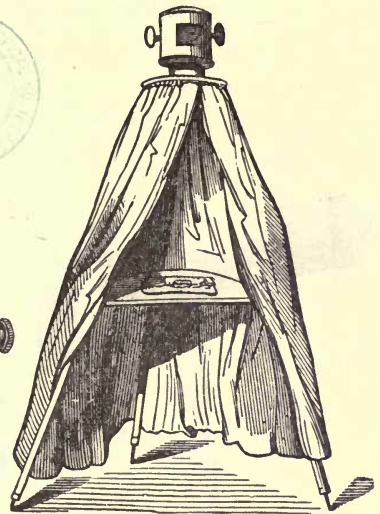
CAMERA OBSCURAS.



1540-45.



1533.



1534.



No.	PRICE.
1530. Plain Camera Obscura. In this the object is beautifully represented on a piece of ground glass about six inches square, affording a pleasing amusement to young persons, as representing a moving panorama of animated nature; neat card-board box,	\$2 50
1531. Camera Obscura Head or Lens, without box; a prismatic lens, mounted with brass. This is the best kind of lens for a Camera Obscura, as it forms both lens and mirror, prism $1\frac{5}{8}$ inches long,	5 00
1532. Camera Obscura head, prism $1\frac{1}{8}$ inches long,	7 50
1533. Do. do. $2\frac{1}{8}$ do.	10 00
1534. Improved Camera Obscura. This is recommended as the best drawing apparatus yet introduced: it is light and portable, and can be used to satisfaction by persons entirely unacquainted with drawing, each,	20 00

CLAUDE LORRAINE, or LANDSCAPE MIRROR.

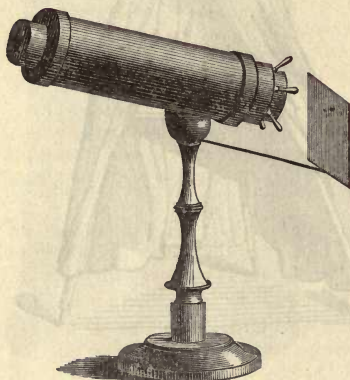
Claude Lorraine, or Landscape Mirror. A pleasing and beautiful instrument, for viewing clouds, landscapes, &c.; particularly adapted for use in the country and at the sea-shore. As the mirror condenses or diminishes the view into a true perspective effect, the instrument is invaluable to the artist, and a very desirable companion for tourists. The mirror produces, instantaneously, the most charming reflection of scenery, buildings, &c., 6 sizes, as follows:

1540. Mirror, $6\frac{1}{2}$ inches long by $5\frac{1}{4}$ inches wide, in strong morocco case, each,	6 25
1541. Do. $7\frac{1}{2}$ do. $5\frac{1}{4}$ do. do. do.	7 50
1542. Do. $7\frac{1}{2}$ do. $6\frac{1}{4}$ do. do. do.	8 75
1543. Do. $8\frac{1}{2}$ do. $6\frac{1}{4}$ do. do. do.	10 00
1544. Do. $8\frac{1}{2}$ do. $7\frac{1}{4}$ do. do. do.	11 25
1545. Do. $9\frac{1}{2}$ do. $7\frac{1}{2}$ do. do. do.	12 50

MIRRORS, IN BLACK WOOD FRAMES.

No.		PRICE.
1547.	Magnifying on one side, diminishing on the other, 6 inches diameter, each,	\$3 00
1548.	Cylindrical (elongating and shortening), 6 inches diameter, each,	2 50
1549.	Multiplying (producing several images), 6 inches diameter, each,	2 50
1550.	Magnifying on one side, plane on the other, 3½ inches diameter, each,	75
1551.	Do. do. do. 5 do. do.	1 25
1552.	Do. do. do. 6 do. do.	2 00

OPTICAL TOYS.



1555 and 1556.



1558.

1554.	Parlor Kaleidoscope, on tripod stand,	2 50
1555.	Do. do. on fine walnut stand, with brass front; the most perfect ever made,	3 50
1556.	Parlor Kaleidoscope, same as 1555, but covered with Turkey morocco, and finished in the best possible manner,	5 50
1557.	Anamoscope; or, Pillar and Twelve Distorted Pictures, which regain their true appearance when the reflection is seen on the pillar,	1 50
1558.	Zoetrope, or Wheel of Life,	3 00

A mechanical and optical toy, affording amusement to old and young. It is an exemplification of the persistence of vision, and is a valuable aid in illustrating the wonders of optics. The turning of the drum or cylinder brings into view the varying form or position of a figure in rapid succession, until they blend into a perfect image full of motion and natural action. By placing the apparatus in a suitable light, a number of persons can examine it at the same time.

1559.	Extra views for Zoetrope, per set of six,	1 00
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ENTOMOLOGICAL PINS.

—————●	1560. Entomological Pins, German make, 1½ inches long, five sizes of wire, per 100	15
—————●	Do. do. do. per 1000,	1 25
—————●	1561. Entomological Pins, English, ½ to 1 inch long, various sizes, per 100,	10 to 40
—————●	1562. Entomological Cabinet, bound in book form,	2 50

1560.

Orders for Pins must be accompanied by a sufficient remittance to cover the Postage.
A sheet of samples will be sent for ten cents

THE MICROSCOPE.

Within the last few years, the microscope has become so firmly rooted among us, that little need be said in its praise. The time has long passed away when it was held in no higher estimation than an ingenious toy; but it is now acknowledged that no one can attain even a moderate knowledge of any physical science without a considerable acquaintance with the microscope and the marvellous phenomena which it reveals. The geologist, the chemist, the mineralogist, the anatomist, or the botanist, all find the microscope a useful companion and indispensable aid in their interesting and all-absorbing researches, and, with every improvement in its construction, have discovered a corresponding enlargement and enlightenment of the field displayed by the particular science which they cultivate.

But even to those who aspire to no scientific eminence, the microscope is more than an amusing companion, revealing many of the hidden secrets of nature, and unveiling endless beauties which were heretofore enveloped in the impenetrable obscurity of their own minuteness.

No one who possesses even a pocket-microscope of the most limited powers can fail to find amusement and instruction even though he was in the midst of the Sahara itself. There is this great advantage in the microscope, that no one need feel in want of objects as long as he possesses his instrument and a sufficiency of light.

Many persons who are gifted with a thorough appreciation of nature in all her vivid forms are debarred by the peculiarity of their position from following out the impulses of their beings, and are equally unable to range the sea-shore in search of marine creatures or to traverse the fields and woods in the course of their investigations into the manifold forms of life and beauty which teem in every nook and corner of the country. Some are confined to their chambers by bodily ailments, some are forced to reside within the very heart of some great city, without opportunities of breathing the fresh country air more than a few times in the course of the year; and yet there is not one who may not find an endless series of Common Objects for his microscope within the limits of the tiniest city chamber. So richly does nature teem with beauty and living marvels, that even within the closest dungeon-walls a never failing treasury of science may be found by any one who knows how and where to seek for it.

There is little doubt but that if any one with an observant mind were to set himself to work determinedly merely at the study of the commonest weed or the most familiar insect, he would, in the course of some years' patient labor, produce a work that would be most valuable to science and enrol the name of the investigator among the most honored sons of knowledge. There is not a mote that dances in the sunbeam, not a particle of dust that we tread heedlessly under our feet, that does not contain within its form mines of knowledge as yet unworked. For if we could only read them rightly, all the records of the animated past are written in the rocks and dust of the present.

Microscopes may be divided into two classes, simple and compound. The former class may contain several lenses or glasses, but generally consists of a single lens; but the Compound Microscope must consist of at least two glasses, the one near the object to be examined, and commonly called the objective, the other near the eye, and called the eye piece. This class is subdivided into Monocular and Binocular instruments, in which the object is viewed with one or both eyes, as their names imply. The instruments enumerated in the following Catalogue are arranged under these several heads, beginning in each with the simple and inexpensive forms, and leading up to the most perfect yet devised by skill and science. We have of each kind always in stock so that we can fill orders without any vexatious delays, and our customers may depend upon having all mail orders attended to with as much care as though they made a personal selection for themselves.

A few hints as to the *selection* of a Microscope may not be amiss in this connection. Those who fortunately have unlimited means at their command, will find no difficulty in deciding this important question, since it was long ago settled that the highest grade of Binoculars are very near perfection, and leave little or nothing to be desired. But to the far larger class of intending purchasers, the question of cost is an important one; and for the benefit of these we beg to offer the following suggestions.

A common mistake with novices is to appreciate the excellence of a microscope by the amount of its magnifying power. Now, in truth, no object should be viewed with a power greater than sufficient to clearly show its structure, and if this can be done with twenty diameters, it is folly to apply a hundred. And this is especially the case with low-priced instruments, where the actual and angular apertures of the objectives are small, and the corrections not so exact as in those of higher grade, rendering them more liable to give false impressions of the object under examination. And it is impossible to view an opaque object by reflected light, satisfactorily, with any of the cheap forms of *Compound* Microscopes; the lenses approach the object too nearly, and are far too small to admit of a proper illumination of the object. For a child, just learning the use of a microscope, and who will naturally desire to examine the surface of any object he may pick up, or for those of riper years, who may possess or contemplate purchasing a *compound* instrument, but who will be obliged to dissect flowers, insects, &c., for minute examination, a *Simple* Microscope is the best form, and we know of no more satisfactory ones than 1649 or 1650 of this Catalogue. These are simple and compact in form and construction, easily managed by even the least experienced, give clear and distinct images of the object under examination, and are cheap enough to be within the reach of all.

After becoming familiar with the use of the *simple* microscope, and of the objects suited to its powers, the young student may properly supply himself with a *Compound* instrument wherewith to penetrate more deeply the structures of which he has until now viewed merely the surface; and in order to meet this want with a really good and reliable instrument, at a low price, we some years ago designed and brought out our *Universal Household Microscope*, No. 1660, which we believe to be the best low-priced microscope ever made, and which, by reason of its intrinsic merits, has grown so greatly in popular favor, that it is almost impossible for us to supply the great and growing demand for it. It is so fully described elsewhere in this Catalogue, that a further description here is unnecessary; but to those whose means will not allow an outlay of at least Twenty dollars for a Microscope, we would earnestly say, *The Household* is the best you can get for less than that sum, and when provided with an achromatic object-glass, No. 1660 $\frac{1}{2}$ is a better instrument than any one in the world possessed fifty years ago.

If the means at the disposal of the intending purchaser are sufficient to enable him to procure *The Educational Microscope*, No. 1669, we would single it out from among the cheap instruments as the one most worthy of his attention. It is compact and well built, of a graceful form, with plenty of room on the stage for any kind of an object, very delicate fine adjustment for focus, a considerable range of powers, and is admirably adapted to the examination of opaque objects as well as transparent ones. The beautiful phenomena of *Polarized Light* can be obtained with it at a trifling additional expense, whilst for the Young Medical Student, its compact form, moderate cost, and excellent performance on all classes of Anatomical and Pathological preparations, are cogent recommendations.

In the higher grades of moderate-priced instruments our Student's Microscope 1665 takes a front rank. The illustration gives a very accurate idea of the general appearance of the stand, which is all we claim it to be. Beck's Popular Monoculars and Binoculars, B 222 and B 220, are admirable instruments at very moderate cost, whilst for those who are not obliged to count this very closely, the larger and most complete stands of Beck or our own Mr. Zentmayer leave nothing to be desired. By many, the small, inexpensive stands of Hartnack and Nachett are preferred to all others, and they are certainly very compact and convenient. In the choice of object-glasses for the better stands, we shall not attempt to guide our readers in this place. All the leading makers have their votaries, and all make admirable lenses. We have them all in stock, and our customers have the advantage of comparison. It may not be amiss to remark in this connection, that one member of our firm has had a long experience, and some little reputation as a microscopist, and that no objective is ever accepted or offered for sale by us, which has not been inspected and approved by him. His services are always cheerfully at the command of any customer in the choice of an object-glass or stand.

Having thus briefly given some hints as to the selection of a Microscope, it may not be amiss to add a few on the preparation of objects for permanent observation. We cannot of course in the limited space at our disposal do more than give a few general directions; for further details the student is referred to almost any of the elaborate works on the subject, named in this Catalogue at page 80. The *indispensable* requisites are neither numerous nor costly. Forceps, 1788; Scissors, 1797 and 1809; Knives, 1801-1804; Needles, 1805, 1806; Turn-Table, 1814; Brass Table and Lamp, 1815; Glass Slips, 1821; Thin Circles, 1839; Ebonite Cells, 1833; Dropping Tubes, 1842; Bell Glass, 1845; Canada Balsam, 1847, 1848; the latter, contained in Capped Bottles, 1863; Glycerine, 1850; Ditto Jelly, 1851; Preservative Fluid, 1852; Asphalt, 1854; Gold Size, 1855; White Zinc Cement, 1859; Dropping Bottles, 1869; Labels, 1950: with a few Camel hair pencils, a soft linen cloth, chamois-skin, and three or four ounces of Liquor Potassa, will constitute a very respectable outfit, and be quite sufficient for mounting all the ordinary specimens which the beginner or more advanced student may desire to preserve.

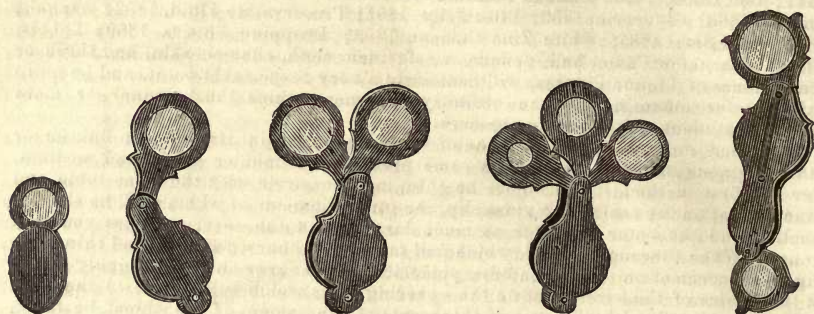
All objects must be mounted in one of three ways: *dry* in Air, *ditto* in Balsam or other resinous material, or *moist* in some preservative fluid or gelatinous medium. For the first method, if the object be thin, make a circle with the Turn-table and Zinc cement on the centre of a glass slip, the inner diameter of which shall be slightly smaller, and the outer diameter as much larger, than the covering glass you wish to use. When thoroughly hard, which will take a few hours, run a second thin coating of the cement on top of the first, place the object (previously thoroughly dried) in the centre of the circle, put on the covering glass which will adhere to the fresh cement, and finish with one or two thin coats of the same. If the object be thick, proceed as above, using Asphalt instead of Zinc cement, and an Ebonite ring of proper depth, in place of the covering glass at the second operation. This will give you a convenient cell in which the object must be placed and secured to the glass slip; a minute portion of Gold Size is the best cement for this purpose in most cases. The whole should be placed under a bell glass until thoroughly dry, when a fresh coating of Asphalt must be applied to the upper surface of the ring, a thin cover applied and pressed down, finishing with successive thin coats of Asphalt. Do not use paper cells in dry mountings; they always admit moisture, and the object is soon spoiled. Always apply your cement in thin layers. Have your glass slips and covers thoroughly clean.

For mounting in Balsam, the specimen must be entirely free from moisture, either by drying or by being passed through Absolute Alcohol and turpentine; in the latter case it is to be transferred directly from the turpentine to the slide. If pure Balsam 1847 is used, a drop must be pressed from the collapsible tube upon the centre of a glass slide, and the latter placed on the hot table 1815 until the Balsam spreads out, taking care not to overheat it. The object must now be placed on the Balsam, a fresh drop of the latter pressed on top of it, and a slightly warm cover laid upon it, in such a manner that the excess of Balsam will be forced out beyond the opposite edge of the cover from that which first comes in contact with the slide. The whole must then be laid in a warm place to harden, which may take some days or even weeks. Do not be annoyed by the presence of air-bubbles, they will all disappear before the Balsam becomes hard. If the *prepared* Balsam 1848 is used, place the object on the slide and arrange it properly, then drop a small quantity of the Balsam upon it, and apply the cover as before. A little practice will enable the young beginner to use the exact quantity of Balsam necessary to make a neat mounting. If any excess exudes from the edges of the covering-glass, it may be cleaned off when hard, and the slide finished with a layer of Prepared Balsam 1848, applied with a Camel-Hair pencil. Never use colored cements on Balsam mountings. They are certain to run in and spoil the slide.

For *fluid* mountings, almost the same operations as in *dry* mountings are necessary. After the second coating of cement is applied, however, the cell must be filled with the preservative fluid, the object (previously soaked in the same) laid in it and the cover applied at one edge, so as to drive out the excess of fluid as it comes down; this excess must then be soaked dry with blotting-paper or a soft towel, and a thin coating of cement at once applied, to be followed by others until the slide is quite finished. For mounting in Glycerine Jelly the same rules will apply, the jelly being first liquefied by gentle heat.

Do not be discouraged by failures at first; a little practice will make perfect. Be cleanly in all your operations. Dust and moisture are the microscopist's worst foes. Persevere, and success will speedily crown your efforts.

SIMPLE MICROSCOPES TO FOLD IN CASES.



1600. 1610. 1615. 1619. 1623.

No.							PRICE.
1600.	Hard rubber case and frame	round form,	1	double convex lens,	$\frac{3}{4}$	in diam.	\$0 50
1601.	Do.	do.	1	do.	1	do.	75
1602.	Do.	do.	1	do.	$1\frac{1}{4}$	do.	1 00
1603.	Do.	do.	1	do.	$1\frac{3}{4}$	do.	1 25
1604.	Do.	do.	1	do.	$1\frac{3}{4}$	do.	1 50
1605.	Do.	do.	1	do.	2	do.	2 25
1606.	Do.	do.	2	do.	$\frac{3}{4}$	do.	75
1607.	Do.	do.	2	do.	1	do.	1 25
1608.	Do.	do.	2	do.	$1\frac{1}{4}$	do.	2 00
1609.	Do.	do.	2	do.	$1\frac{3}{4}$	do.	2 50
1610.	Do.	do.	1	bellows form	$\frac{3}{4}$	do.	75
1611.	Do.	do.	1	do.	1	do.	1 00
1612.	Horn case, brass frame,	do.	1	do.	$\frac{3}{4}$	do.	85
1613.	do.	do.	1	do.	$1\frac{3}{4}$	do.	1 25
1614.	do.	German silver frame,	1	do.	$\frac{3}{4}$	do.	1 00
1615.	Hard rubber case and frame,	do.	2	do.	$\frac{3}{4}$	do.	1 00
1616.	do.	do.	2	do.	1	do.	1 25
1617.	Horn case, brass frame,	do.	2	do.	$\frac{3}{4}$	do.	1 25
1618.	do.	German silver frame,	2	do.	$\frac{3}{4}$	do.	1 50
1619.	Hard rubber case and frame,	do.	3	do.	$\frac{3}{4}$	do.	1 50
1620.	do.	do.	3	do.	1	do.	1 75
1621.	Horn case, brass frame,	do.	3	do.	$\frac{3}{4}$	do.	1 75
1622.	do.	German silver frame,	3	do.	$\frac{3}{4}$	do.	2 00
1623.	Horn case and frame, 1 double convex lens,	$\frac{1}{2}$	inch diameter, of high power at one end, and 1 double convex lens	$\frac{7}{8}$	inch diameter of medium power at the other end,		1 50
1625.	Linen Provers or Microscope, to count the threads in linen fabrics,	brass frame,					50
1626.	The same, German silver frame,						75
1627.	Do.	do.	do.	and achromatic lens,			1 25

WATCHMAKER'S AND ENGRAVER'S GLASSES.



1630.



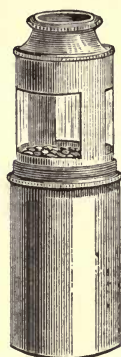
1631.



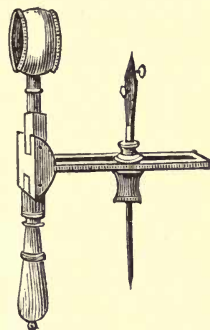
1632.



1634.



1636.



1638.

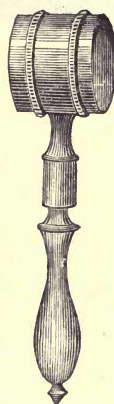
No.				PRICE.
1630.	Watchmaker's Glass,	horn frame,	1 double convex lens, $\frac{3}{4}$ inch diameter,	\$0 40
1631.	Watchmaker's Glass,	horn frame,	2 double convex lens, $\frac{3}{4}$ inch diameter, very high power.	1 00
1632.	Engraver's Glass,	horn frame,	1 double convex lens, 1 inch diameter,	50
1633.	Do.	wood frame,	1 do. do. $1\frac{1}{4}$ do.	50
1634.	Do.	horn frame,	2 plano-convex lenses, $1\frac{1}{4}$ do.	1 00
1635.	Do.	do.	do. do. 2 do.	1 50
1636.	Microscope,	with glass cage for seeds or live bugs,	small size,	1 00
1637.	Do.	do.	do. large size,	1 50
1638.	Jointed Microscope,	for flowers and insects; folds to carry in the pocket,		2 25



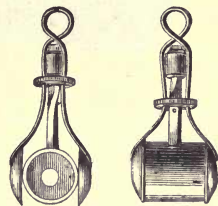
1639.



1640.



1642.



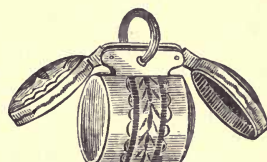
1645.



1625.



1644.



1647.

1639.	Microscope on Three Legs,	all brass, with screw adjustment for focus,	1 00
1640.	Microscope on Three Legs,	hard rubber frame,	1 00
1642.	Coddington Lens,	brass frame, three sizes,	\$1 50, \$2 00 and 2 50
1643.	Do.	silver frame,	2 50
1644.	Do.	do. with cover,	3 50
1645.	Do.	do. do. $\frac{1}{2}$ inch focus, very fine,	10 00
1646.	Do.	large size, with cover, plated,	4 50
1647.	Do.	do. do. and engraved,	5 50
1648.	Do.	do. do. gilt, and engraved,	6 50

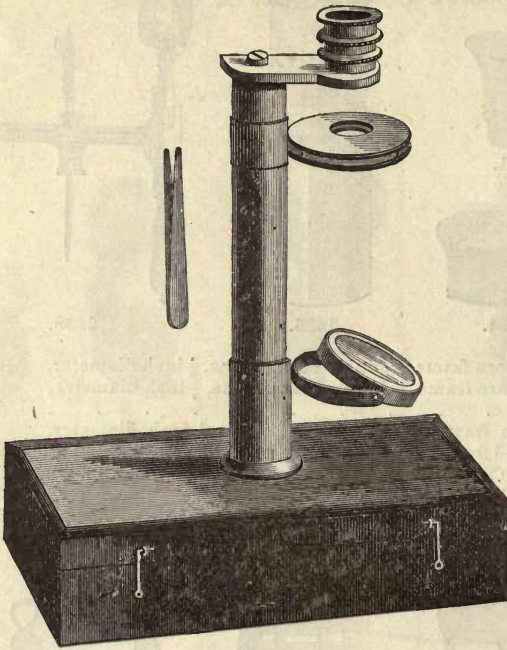
THE CHILD'S MICROSCOPE.

No.

1649. The Child's Microscope,

PRICE.

\$3 50



1649.

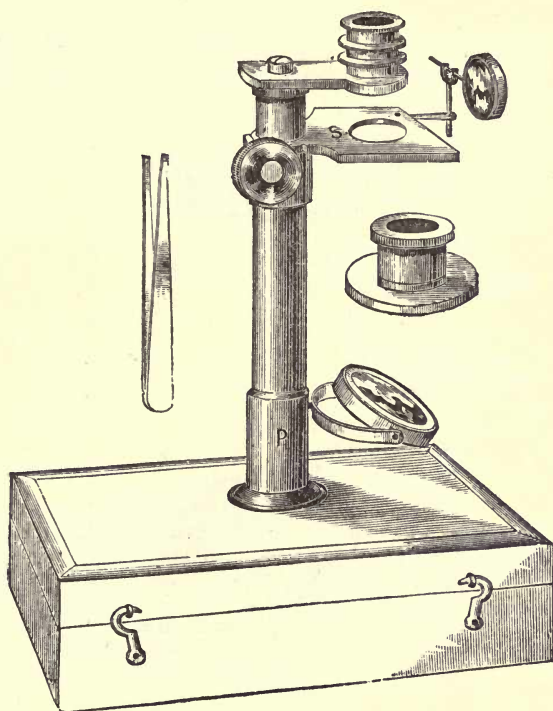
This simple, compact and perfect little instrument meets a want long felt, namely, that of a really good and efficient Microscope, at an extremely low price, and adapted by its simplicity to the understanding of a child. The magnifiers or lenses are three in number, and can be used separately or combined. With the lowest power, or largest single lens, a large insect, such as a bee or fly, can be examined without any further preparation than placing it in the insect box which accompanies the instrument. With the three lenses combined, a power of 700 times can be obtained, which is quite sufficient to show many of the larger animalculæ in pond or ditch water, the scales from a butterfly's wing, pollen grains of plants, and thousands of other interesting and easily obtained objects requiring considerable magnifying power.

The illustration gives a very good general idea of the instrument, which consists of a neat, flat mahogany box, as a base, into which the Microscope packs when not in use; an upright brass stem which screws into the lid of the box, and which carries the stage on a sliding tube; and at its top firmly fixed, the arm which holds the lenses. The focus is adjusted by sliding the stage up or down, so that the eye is not obliged to move its position as is the case with all instruments in which the focussing is effected by moving the lens. The mirror for reflecting the light through transparent objects is mounted on a universal joint, so as to be readily turned in any direction toward the source of light. A brass box with glass bottom and top, for confining insects whilst under examination, and a small pair of brass forceps for placing them within it, are furnished with the Microscope, which is thus a compact and complete instrument adapted equally to the comprehension of the youngest child, and to the wants of the more advanced scholar or botanist; interesting the one in the minute wonders of nature, and leading its infantile mind to examine into the mysteries it unfolds, and aiding the other in his various studies of botany, mineralogy or entomology.

It is much more readily managed by a novice than a Compound Microscope, and has, with the three lenses combined, almost as much magnifying power as the cheapest of the latter; whilst unlike it, "The Child's Microscope" is equally well adapted to the examination of large opaque objects, such as beetles, flies or flowers. It cannot be put out of order, excepting by considerable violence sufficient to break it, and any ordinary child can be trusted with its use.

Rev. Mr. Wood's excellent little work, "The Common Objects of the Microscope," No. 1980 of this Catalogue, is an excellent companion to the "Child's Microscope," giving full direction as to its use, and the collection and preparation of objects for examination.

THE SCHOOL MICROSCOPE.



1650.

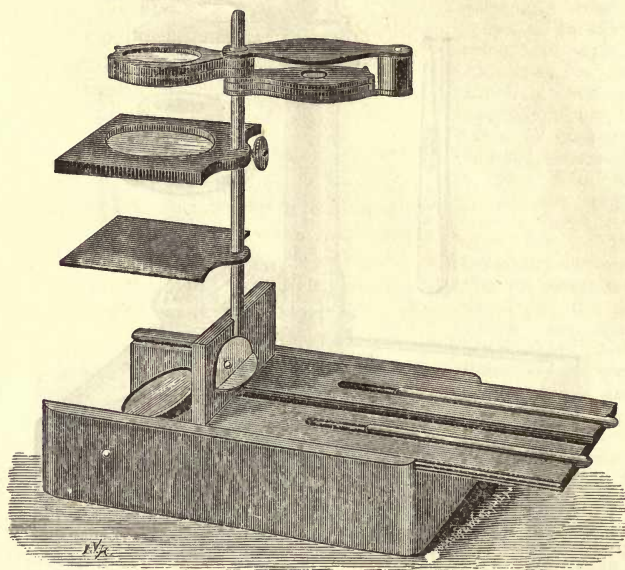
No.	PRICE.
1650. The School Microscope,	\$6 00

This instrument consists of a tubular stem about five inches high, the lower end of which screws firmly into the lid of the box wherein the instrument is packed when not in use. To the upper end of this stem the stage is firmly fixed; while the lower end carries a concave mirror. Within the tubular stem is a round pillar having a rack cut into it, against which a pinion works that is turned by a milled head: and the upper part of this pillar carries a horizontal arm which bears the lenses, so that by turning the milled head, the arm may be raised or lowered, and the requisite focal adjustment obtained. Three magnifiers are supplied, and by using them either separately or in combination, a considerable range of powers from about five to forty diameters is obtained. A condensing lens for opaque objects, a pair of brass forceps, and pliers, and an aquatic box for the examination of objects in water, are also supplied. This instrument is peculiarly adapted for educational purposes, being fitted in every particular for the examination of botanical specimens, small insects or parts of insects, water-fleas, the larger animalcules, and other such objects as young people may readily collect and examine for themselves: and those who have trained themselves in the application of it to the study of nature are well prepared for the advantageous use of the Compound Microscope. But it also affords to the scientific inquirer all that is essential to the pursuit of such investigations as are best followed out by the concurrent employment of a Simple and a Compound Microscope, the former being most fitted for the preparation, and the latter for the examination of many kinds of objects; and it may be easily adapted to the purposes of dissection by placing it between arm rests or blocks of wood, or books piled one on another so as to give a support for the hand on either side, at or near the level of the stage.

1650½. The School Microscope, with compound body, eye-piece and objective giving powers from 400 to 10,000 times,	10 00
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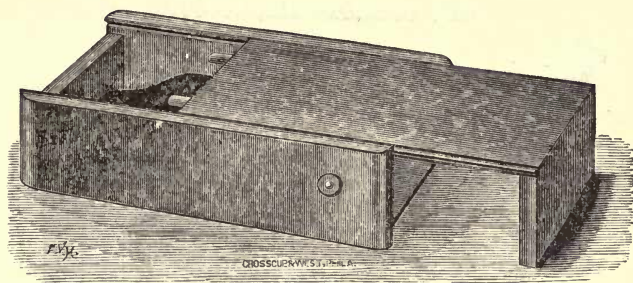
THE EXCELSIOR POCKET AND DISSECTING MICROSCOPE.

No.	PRICE.
1651. The Excelsior Microscope, with Three Lenses,	\$2 75
1652. Do. do. with Two Lenses,	2 50
Set of three hard rubber Slides, with openings of different kinds, to serve as linen provers,	25



1651-52. (Open.)

The construction and method of using this Microscope is very simple, and will be readily understood from an inspection of the engravings. It consists primarily of a small wooden case, the exact size of that shown in the engravings. To one end of the lid of this case is attached one of the ends of the box; and when the lid is reversed and turned upside down, it may be slid into the groove of the case, and then forms a stand for the lenses and glass stage, as shown in Fig. 1651-52. (Open.) The lenses and stage are supported by a steel rod, the lower end of which is hinged to the lid, so that it may be turned down and lie in a groove provided for it. When raised into the position shown in the figure, it is held very securely in place by means of a button; and this button also serves to retain it in the groove when it is turned down. The glass stage, which is fitted into a frame of hard rubber, slides easily on the stem, so as to be readily adjustable for focus, while at the same time it may be firmly fixed, by means of a set-screw, at any desired height, and will then serve as a stage for dissecting purposes. The frame which holds the lenses fits on to the top of the stem. A mirror is fitted into the case, and is readily adjustable by means of the button shown on the outside, so that light may be reflected up through the stage when the objects to be examined are transparent; and when they are to be viewed by reflected light, there is a dark ground of hard rubber, which is also carried by the stem, and may be turned under the stage, so as to cut off all transmitted light. Dissecting needles, with neat handles, fit into appropriate grooves.



1651-52. (Closed.)

As a dissecting microscope for botanical, entomological, and physiological work, this instrument is very efficient and convenient. The glass plate is fitted into the stage so as to form a cell capable of holding water, so that dissections may be carried on under that liquid, or aquatic animals may be kept alive and examined at leisure. The stage may also be turned, so that the flat side will be up when so desired. When the lenses and stage are removed, they are readily packed in the case, as shown in Fig. 1651-52 (Closed); the stem is then turned down and held in its groove by the button; the lid is drawn out of the groove, turned over, and replaced so that the vertical piece, to which the button is attached, closes the open end of the box, and the whole thing is packed into a compass which readily admits of its being carried in the vest pocket.

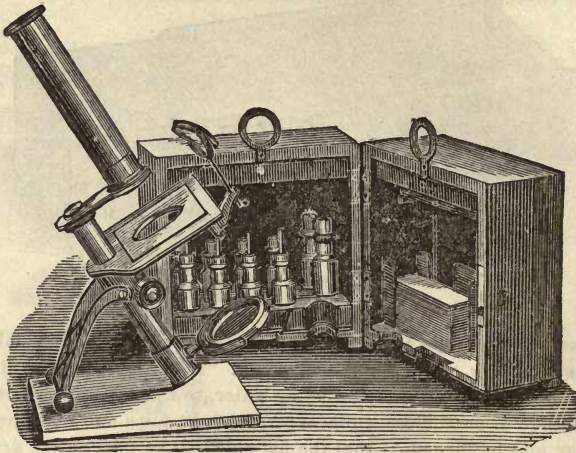
After reading this description, probably the first question that will rise to the lips of the reader is — What will such a microscope do?

The lenses being well made, and provided with a proper diaphragm, which secures distinctness of definition, may be used either singly or together. Some of the instruments are provided with three lenses, and some with but two. These lenses give a range of power of from five to thirty diameters, (twenty-five to nine hundred times the surface,) the first being admirably adapted to the examination of minerals, textile fibres and fabrics, the larger parts of flowers and insects, etc., while the latter is sufficiently powerful to enable the student to dissect flowers, and examine their more minute structure with great efficiency. Under good management, it will show the individual corpuscles in the blood of the frog.

Its applications are as follows: In the arts it may be applied to the examination of materials, to the measurement of minute spaces, and to an examination of the quality of the finer kinds of work. It is the more readily applicable to these purposes from the fact that the frame holding the lenses may be separated from the rest of the microscope, and used by itself. By the addition of a thin piece of hard rubber, which slides on the stem and is pierced with an opening of proper size, this microscope may be used as a most efficient linen prover. As a microscope for detecting counterfeit money, it cannot be surpassed.

On the farm it will enable the agriculturist to examine the various noxious insects and forms of fungi and blight, and thus aid him in identifying them and applying the proper remedy. In the examination of minute seeds, such as timothy, clover, etc., it will also prove a very valuable assistant to the farmer, enabling him to detect any inferiority in the quality or any impurity or adulteration. Frequently the seeds offered in market contain minute seeds of offensive weeds, many of which are so small that they are not easily discovered by the naked eye.

THE COLLEGE MICROSCOPE.



1653.

No.

PRICE.

1653. College Microscope, complete with all the apparatus described below, in fine mahogany case, \$40 00

The College Microscope has been designed for the use of students, likewise as a seaside, travelling, or working microscope. It is both compound and simple, and has a joint for inclining the instrument, and rack adjustment for focusing. It is fitted in a polished mahogany case, six inches cube, and so arranged that on opening the case the instrument stands on the table ready for use, and the appliances, though numerous, exposed to view and readily accessible.

The objectives of the compound microscope are achromatic, and useable separate or combined, giving powers of 200, 100, and 50 diameters. The body elongates to give extra power. For use as a simple microscope three simple objectives are sent, useable separately or combined, giving powers with No. 1, 5; No. 2, 7; No. 3, 11; No. 1, 2, and 13; No. 1 and 3, 16; No. 1, 2, and 3, 20 diameters.

The case contains a complete set of apparatus and materials required in mounting objects, including turn-table, hot-plate with spirit lamp, dissecting trough, a complete set of materials and implements ordinarily required, with a stock of glass slides, cover glasses, cells, and labels. The portability and compactness of this apparatus allows of its being conveniently taken into the country or sea-side for use on the spot, thus affording the valuable advantage of not only being able to examine but also readily to mount, whilst in fresh and perfect condition, objects that are liable to become useless or seriously injured in microscopic value if the mounting has to be deferred until returning home.

The *Dissecting Trough* is placed in the recess of the stage in place of the stage plate, for the purpose of examining or dissecting an object under water, pinned down upon the loaded cork or not, as required.

The *Turn-table* is carried upon a long spindle passed through a hole in the stage, giving a very steady and free motion, and the right hand is steadily supported by the microscope arm close over the turn-table whilst making varnish rings. The top of the turn-table is made only the size of a glass slide and the slide is held in its place by slipping it under an india rubber band, which holds it so firmly as to prevent any risk of shifting.

The *Hot-plate* is placed in the recess of the stage, the microscope arm being then reversed in position to be clear of the stage, and the stand placed in the opposite position to the one in which it is used as a microscope, the spirit lamp being placed in the position of the mirror. The heated slide, with ring of marine glue upon it, is readily and quickly shifted from the hot-plate into the recess in the bottom board, and centred there at once by pushing it home in the recess, for centering the cell whilst still hot enough to keep the marine glue melted.

In *Preparing Crystals* of salts as polarizing objects, the microscope arm is used as a retort stand for holding the watch glass for evaporating over the spirit lamp: the stage plate being left in its place for warming the slide and coverglass at same time. The microscope arm serves also as a stand for filtering the liquids used in mounting by placing a small folded funnel of blotting paper in the ring of the arm, and setting the bottle to be filled below the stage.

The following *Materials for Mounting* are contained in the set of bottles. The rack containing them can be taken out of the case when in use, or any single bottle is accessible whilst remaining in the case.

Asphalte Varnish, for finishing off slides, and making varnish cells.

Gold Size, for fixing cover-glasses, &c.

Liquid Marine Glue, for making cells and cementing cells on slides.

[These are in bottles having a small camel hair brush fixed through the cork, and always immersed in the liquid and ready for use without risk of the fingers getting touched with the varnish. The asphalte and goldsize are kept diluted by occasional addition of benzole, so as to drop freely from the brush.]

Turpentine, for cleaning off waste, slides, &c., in similar bottle, with brush fixed in the cork.

[These four bottles are fitted tightly into the rack, so that the brush and cork is readily taken out by one hand whilst the other hand is occupied.]

Canada Balsam diluted with benzole sufficiently for dropping freely from the lipped bottle; the cork is readily removed after being carefully loosened, and the diluted balsam is used cold, the cover-glass of an object being kept down by a spring clip: the slide being then left in a slightly warm situation, as upon a chimney piece, all the air bubbles become removed in a few hours beyond the edge of the cover-glass, in the course of the evaporation of the benzole, and the superfluous balsam can be scraped off after a few days.

Alcohol, in lipped bottle, for cleaning off cells fixed by marine glue, and cleaning objects for mounting, &c. In cleaning off marine glue, after removing it with the scraper to nearly the edge of the cell, working under the microscope with light from below, the cleaning is carefully finished at the edge with alcohol and the scraper.

Chloroform, for cleaning cover-glasses and slides, diluting varnish, &c., and for killing and cleaning insects, &c.

Liquor Potassæ, for softening and bleaching the hard coverings and antennæ, &c. of insects.

Goadby's Fluid, for mounting animal objects.

Glycerin and Carbolic Acid Water, for mounting vegetable objects consisting of glycerin mixed with thirty times the quantity of distilled water in which carbolic acid has been soaked, the whole being filtered.

Distilled Water, in larger bottle, for washing objects for mounting. The contents of these bottles are filtered with advantage after remaining in use for some time, to remove particles of dust, &c.

Needles, Forceps, large and small, dissecting knife, scraper, stage forceps, and spring clips, are contained in one drawer.

Dipping Tubes and Brushes in the opposite drawer; kept separate to prevent any risk of rusting the needles, &c.

Cover-glasses, Cells, and Labels in the smaller drawer; and two dozen glass slides in the bottom of case, with watch glasses and a small wiper for finishing the cleaning of cover-glasses and slides, to be kept quite clean and free from dust and grease.

The double ring handle at top of case prevents any risk of the case opening when carried by the handle if not locked.

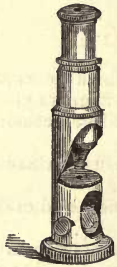
LIST OF MATERIALS AND IMPLEMENTS.

BOTTLES.	LEFT DRAWER.	RIGHT DRAWER.
Asphalte.	Dipping Tube, straight.	Needle, straight.
Gold Size.	Do. curved pointed.	Do. hooked.
Turpentine.	Do. curved parallel.	Do. curved.
Canada Balsam.	Brush, very small.	Forceps, large.
Glycerin and Carbolic Acid Water.	Do. small.	Do. small.
Goadby's Fluid.	Do. large for dusting.	Dissecting Knife.
Alcohol.	Marine Glue.	Scraper.
Chloroform.		Stage Forceps.
Liquor Potassæ.		Four Spring Clips.
Distilled Water.		

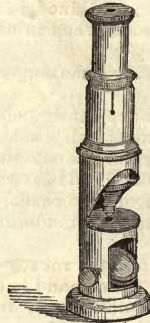
LOWER DRAWER.—Cover Glasses, Tin Cells, Ebonite Cells, Labels.

BOTTOM.—Two dozen Glass Slides, Three Watch Glasses, Wiper.

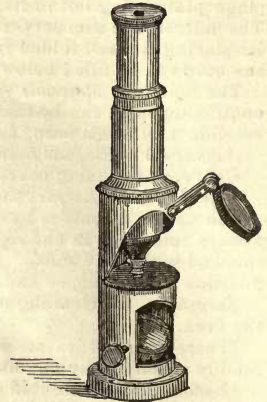
NON-ACHROMATIO MICROSCOPES.



1655.



1656.

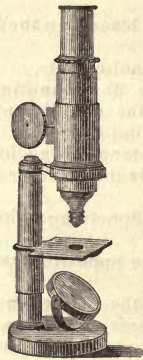


1657

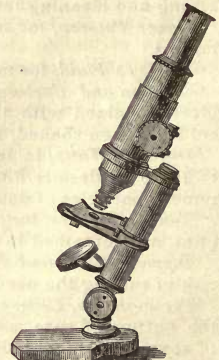
No.	PRICE.
1655. Microscope, brass body 6 inches high, 1 object lens, power 40 diameters, in mahogany box,	\$2 50
1656. Microscope, brass body, 7½ inches high, 2 object lenses, power 40 and 60 diameters, in mahogany box,	5 00
1657. Microscope, brass body, 7½ inches high, 3 object lenses, power 40, 60, and 100 diameters, and condensing lens for illuminating opaque objects, in mahogany box,	7 50



1658.



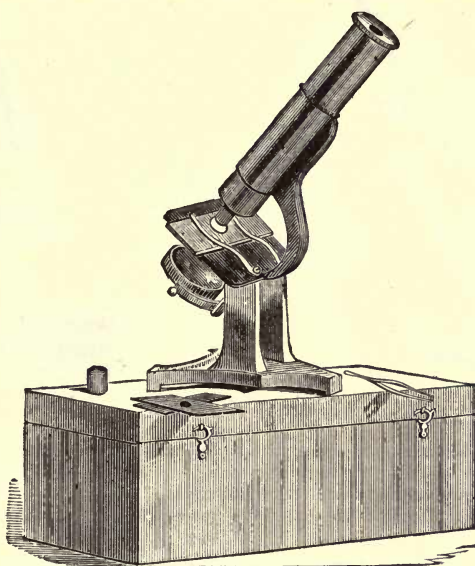
1659.



1659½.

1658. Microscope, iron tripod base; brass body, with joint to incline at any angle; 9 inches high; broad stage, with spring clips to hold the object; rack and pinion for adjustment of focus; 2 object glasses, power 60 and 100 diameters; 2 prepared objects; 1 glass, with concave centre; 2 plain glass slips; brass forceps; in handsome polished walnut case,	10 00
1659. Achromatic Microscope, with broad circular base; excellent rack and pinion adjustment for focus; draw tube; 1 eye-piece, and dividing object glass, of two powers, with draw tube giving from 50 to 220 diameters; needles, forceps, and 2 prepared objects; in mahogany box,	15 00
1659½ The same as 1659, with addition of joint to incline at any angle,	17 50

QUEEN'S UNIVERSAL HOUSEHOLD MICROSCOPE.



1660.

No.	PRICE.
1660. The Universal Household Microscope,	\$6 00

This is the most convenient, complete and powerful Microscope ever offered for the low price of \$6 00. It has the important parts of a first-class instrument, is readily adjusted, and well calculated not only to amuse but instruct young persons, and thereby foster a taste for the study of Natural History. It has a firm tripod base of cast iron, and the facility for inclining to any angle for convenience of observation; a concave mirror for concentrating the rays of light upon the object; an adjustable eye-piece or draw-tube, and two object-glasses of different powers; all packed in a neat wooden box with hinges and hooks. No microscope of equal power and neatness of finish has ever been offered for the same low price; and no more instructive or entertaining gift can be made to young persons. It has a magnifying power of from 20 to 100 diameters, or 400 to 10,000 times the area.

MAGNIFYING POWERS.

Objective No. 1 is the lowest power, and, with the tube closed, gives a power of 20 diameters or 400 times the area; with the extension tube drawn out to three inches, the power is 40 diameters or 1600 times the area.

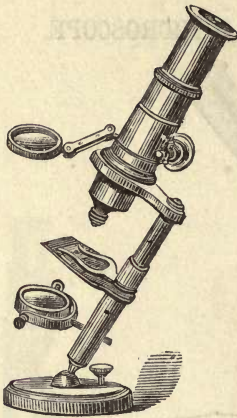
Objective No. 2, with the tube closed, gives a power of 50 diameters or 2500 times the area; with the extension tube drawn out to three inches, the power is 100 diameters or 10,000 times the area.

The magnifying power, as understood by microscopists, is in diameters. A popular way is to give the area or superficies; and, as the object is magnified equally in all directions, this power is obtained by squaring the diameter.

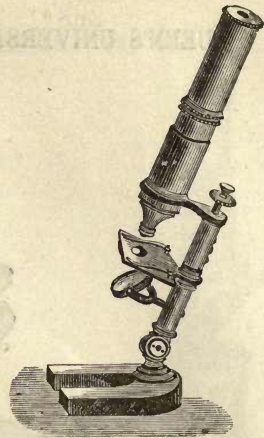
We have a great variety of objects, neatly prepared and mounted on glass papered slides, with name on each, well calculated for the Household Microscope. We sell them at the low prices of \$2 00 per dozen, or 20 cents for any single slide.

A suitable and interesting Book on the Microscope, with directions for collecting and preparing the objects, can be had with it. Price 50 cents, with 400 colored illustrations.

1660½. The Universal Household Microscope, fitted with Achromatic Object glasses, giving powers from 20 to 100 diameters,	\$10 00
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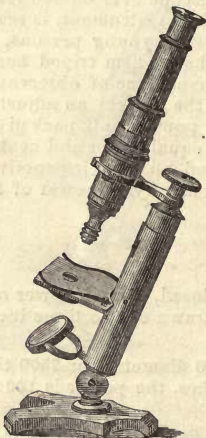
1661.



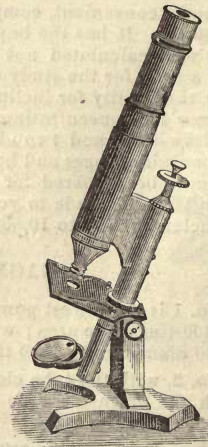
1662.

PRICE.

- | | | |
|-------|--|---------|
| No. | | PRICE. |
| 1661. | Achromatic Microscope, brass body, 9 inches high, with ball and socket joint at foot for inclining it to any angle, rack adjustment for focus, condensing lens for illuminating opaque objects, spring clips for holding the object slide, power 50 to 125 diameters, in mahogany box, | \$16 50 |
| 1662. | Achromatic Microscope, brass body, 9½ inches high, with joint to incline it to any angle, quick and fine adjustment for focus, draw tube, spring clips for holding the object slide, diaphragm under the stage with different sized openings, iron base, power 50, 150 and 200 diameters, in mahogany box, | 22 50 |



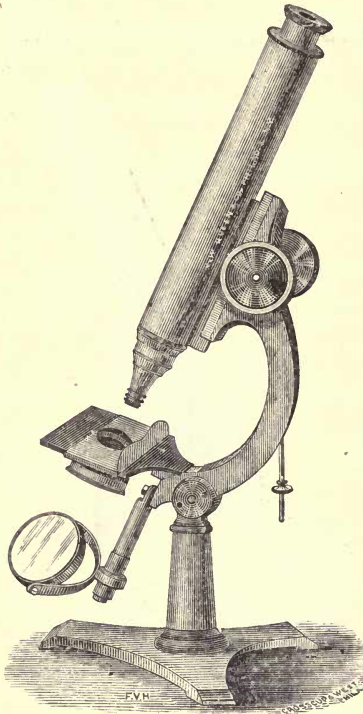
1663.



1664.

- | | | |
|-------|--|-------|
| 1663. | Achromatic Microscope, similar to No. 1662, with the addition of a second eye-piece for increasing the power, in walnut case, | 25 00 |
| 1664. | Achromatic Microscope, brass body, brass stand 12 inches high, with joints to incline to any angle, draw tube, two eye-pieces, two sets of achromatic object-glasses, diaphragm, condenser on separate stand, micrometer adjustment for focus, power 50 to 650 diameters, in upright mahogany case, with lock and key, | 45 00 |

QUEEN'S POPULAR MICROSCOPE.



1664½.

1664½. Queen's Popular Microscope. This Stand, as its name imports, has been designed and constructed by us expressly for popular use, and places within the reach of all a full-sized instrument of first-class workmanship, capable of carrying objectives of any make, and all the accessories of Queen's Student's Microscope, so that in addition to the ordinary objects usually viewed in the microscope, all the beautiful phenomena of Polarized Light, Dark Field Illumination, &c., &c., are exhibited by it in the most satisfactory manner.

The Stand is 14 inches high, the base being of iron, handsomely japanned in a light bronze color, and very firm and steady. Body, stage, and movements all of highly finished brass. The coarse adjustment of focus is made by a friction pinion and milled heads, the fine adjustment by a lever working so delicately that the highest powers may be used with the greatest accuracy. There is sufficient length of motion in the body to admit of using a 2-inch objective. The stage is very large and roomy, with a thin super-stage or object-carrier, having a very delicate movement in every direction of more than one inch. The Mirror is, mounted in the most approved manner, admitting the greatest obliquity of illumination, and the body is fitted with the Society Screw, allowing objectives of any make to be used. Beneath the stage is a revolving diaphragm of various sized openings, carried in a tube, which also holds the Polarizing Prism or other accessories when in use.

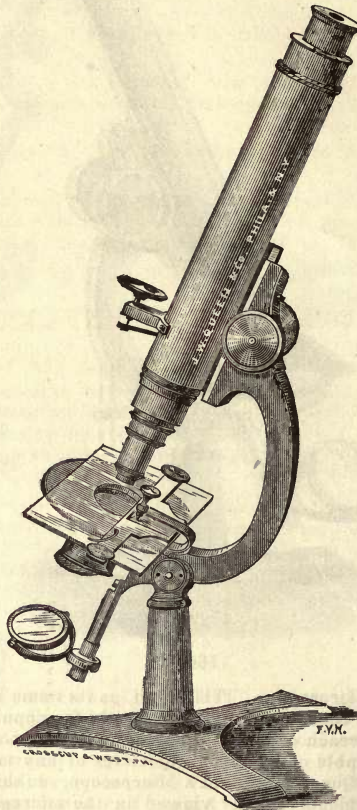
The price of this really excellent microscope has been fixed very low, which must insure a large sale. With One Eye-Piece, and No. 3 French Object Glass, giving powers from about 60 to 300 diameters; Condensing Lens on separate stand for opaque objects; Needles and Forceps; and packed in a neat oiled walnut case, with good brass handle and lock, the cost is only

\$45 00

Price of Stand only, with one eye-piece,

30 00

QUEEN'S STUDENT'S MICROSCOPE.



1665.

1665. Queen's Student's Microscope. This stand has been designed and constructed by us especially to meet the wants of students and professional men, combining, with excellent workmanship, most of the advantages of the more elaborate instruments, at less than one-third of their cost. The very highest powers may be used with it perfectly. Its height is 14 inches. The base and arm are of iron, finished in light-green bronze; whilst the body and all other parts are of brass of the very highest finish. The coarse adjustment is of an entirely novel construction, working with entire smoothness; fine adjustment by micrometer screw; movable glass stage, beneath which a tube is fitted for carrying the diaphragm and accessory illuminating apparatus; concave and plane mirrors, arranged for direct and oblique illumination, fitted with Society Screw. Price of stand with one eye-piece, draw-tube, two object-glasses Number 0 (1 inch), and Number 0 ($\frac{1}{4}$ inch), giving powers from 50 to 250 diameters, condensing lens on separate stand, a glass slip, with ledge and covers, for the examination of objects in fluid, needles, stage forceps, and brass pliers, packed in handsome polished walnut cabinet, with good lock and brass handle, \$65 00

No.	PRICE.
1665½. Queen's Student's Microscope, the same as 1665 with addition of B eye-piece, increasing the power to 350 diameters,	\$70 00
1666. Queen's Student's Microscope, same as 1665, with addition of Number 4 ($\frac{1}{8}$ inch) Objective, in place of 0 ($\frac{1}{4}$ inch), giving powers from 50 to 400 diameters,	75 00
1667. The same as 1666, with addition of B eye-piece, increasing the power to 600 diameters,	80 00
1668. Queen's Student's Microscope, with Queen's $\frac{2}{3}$ and $\frac{1}{3}$ objectives, 2 eye-pieces, powers 65 to 750 diameters. Condensing lens, needles, forceps, and walnut case,	100 00
1668½. Queen's Student's Microscope, stand only, with one eye-piece, no objectives, no box,	50 00
Queen's Student's Microscope, same as any of the foregoing, but with entire stand of brass, finished in the best possible manner, will cost \$20 00 additional, or with Rotating Concentric Stage, \$30 00 additional.	

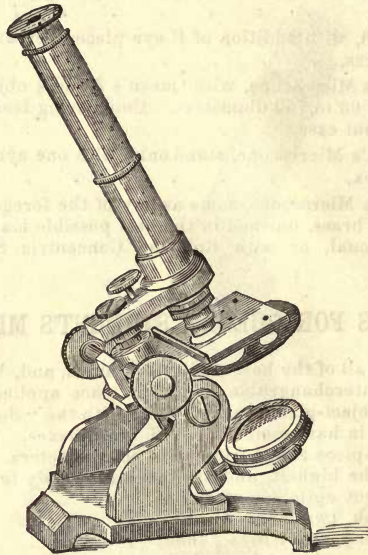
ACCESSORIES FOR QUEEN'S STUDENT'S MICROSCOPES.

These accessories are all of the best quality and finish, and, being with the stands made interchangeable, can be at once applied without any fitting. The object-glasses are all fitted with the "Society Screw," and contained in handsome engraved brass boxes. Their powers with the A eye-piece range from 50 to 800 diameters. 0 being the lowest, and 6 the highest, and are made expressly for us by one of the most eminent opticians of Paris.

Objective Number 0 weak, two lenses 1 inch,	\$6 00
Do. do. 0 strong, two lenses $\frac{1}{2}$ inch,	8 00
Do. do. 1 three do. $\frac{1}{2}$ do.	9 00
Do. do. 2 do. do. $\frac{1}{4}$ do.	10 00
Do. do. 3 do. do. $\frac{1}{8}$ do.	11 00
Do. do. 4 do. do. $\frac{1}{10}$ do.	12 00
Do. do. 5 do. do. $\frac{1}{10}$ do.	14 00
Do. do. 6 do. do. $\frac{1}{12}$ do.	17 00
1725. Objective Queen's 2 inch angular aperture 10°	16 00
1726. Do. do. 1 do. do. do. 18°	18 00
1727. Do. do. $\frac{2}{3}$ do. do. do. 22°	20 00
1728. Do. do. $\frac{1}{4}$ do. do. do. 80°	25 00
1729. Do. do. $\frac{1}{8}$ do. do. do. 110°	30 00
Erecting Glass,	9 00
Lieberkuhn to $\frac{2}{3}$ objective,	3 75
Dark well,	2 00
Orthoscopic Eye-piece,	9 50
Achromatic Condenser,	9 50
Wenham's Parabola for Dark-Field Illumination,	9 50
Polarizing Apparatus complete with Selenite,	16 50
Camera Lucida for drawing an Object,	7 25
Stage Micrometer Ruled into $\frac{1}{100}$ and $\frac{1}{1000}$ ths of an inch,	2 25
Stage Forceps,	2 50
Animalcule Cage,	3 25
Zoophyte Trough, complete with wedge and spring,	3 25
Condensing lens, on Brass Stand, universal joint,	6 00
Eye-Pieces, B and C, each,	6 00
Black Walnut Cabinet for Queen's Student's Microscope. French Polished, with drawer to contain the accessory apparatus, good brass handle, and lock and key,	7 50

We strongly recommend this stand to students and working microscopists as being the very best *cheap* instrument made. The workmanship is first class, whilst the optical effects are not surpassed by any excepting those of the very highest cost. The accessories are all of the very best. We guarantee all to give entire satisfaction.

QUEEN'S EDUCATIONAL MICROSCOPE.



1669.

No.	PRICE.
1669. THE EDUCATIONAL MICROSCOPE,	\$37 50

This is believed to be the best low priced Microscope ever offered to the public, and it may safely be relied upon as capable of performing all the work required by the young student in any department of Microscopical science. It is not of course expected that it will bear comparison with Microscopes of many times its cost, but it is infinitely superior to the best Microscope ever constructed on the old (non-achromatic) plan. The simplicity of its construction, and the facility with which all those adjustments may be made that are required for the purposes it is intended to fulfill, constitute with its low price, a great recommendation to those who value a Microscope rather as a means of interesting recreation for themselves, or of cultivating a taste for the study of nature, and a habit of correct observation in the young, than as an instrument of scientific research.

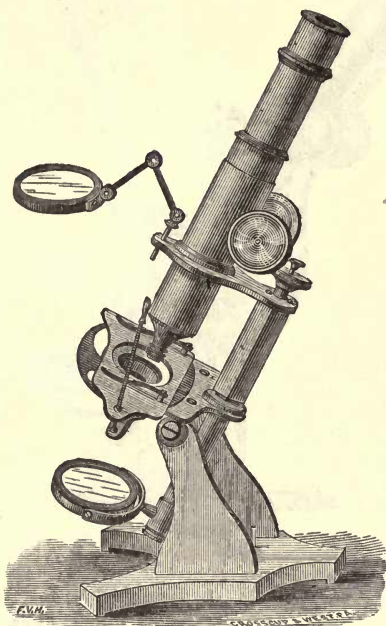
The stand is entirely of brass, of handsome proportions, and well finished; the compound body is mounted upon a double axis joint, allowing the instrument to be inclined at any angle convenient to the observer, with quick rack adjustment and fine screw adjustment for focus, sliding object-holder, plane and concave mirrors, wheel of diaphragms, and the following accessories:

- 2 Eye Pieces.
- 1 Achromatic Objective, 1 inch focus, power 40 to 100 diameters.
- 1 Do. do. $\frac{1}{4}$ do. do. 120 to 180 do.
- 1 Condensing Lens, on separate stand, tweezers, forceps, animalcule cage, knife and needles, thin glass and slides for mounting objects.

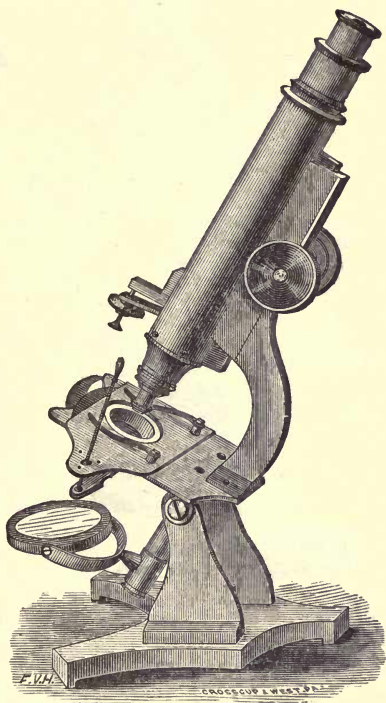
The whole packed in polished upright mahogany case with drawer.

1670. The same, with additional object glass; power 600 diameters,	\$45 00
1671. The same as 1669, with addition of Polariscope,	45 00
1672. The same as 1669, with addition of Mechanical Stage,	45 00

QUEEN'S FAMILY MICROSCOPE.



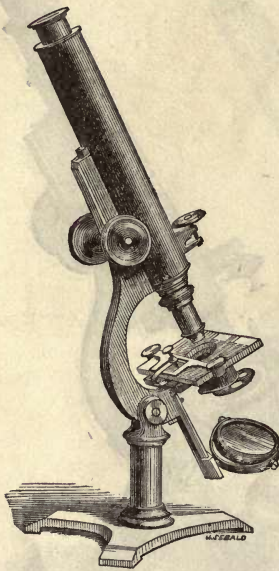
1675.



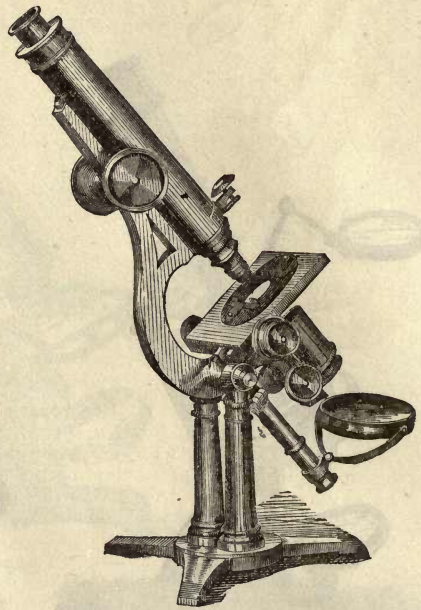
1677.

No.		PRICE.
1675.	Queen's Family Microscope, brass body, 12 inches high, on brass stand, to incline to any angle, draw tube, two eye-pieces, two sets of achromatic object-glasses, condensing lens, diaphragm, double milled head, rack and pinion for coarse adjustment and micrometer screw for fine adjustment, lever stage, so that the object may be brought directly in the field of view with the greatest facility; polarizing apparatus and selenite plate, dissecting needles, six objects; power 50, 150, 250, 400, and 500 diameters; in a mahogany box, . . .	\$75 00
1676.	Same as 1675, with addition of Camera Lucida, for drawing the object,	82 50
1677.	Queen's Large Family Microscope, brass body, 16 inches high, on brass stand, to incline to any angle, draw tube, two eye-pieces, two sets of achromatic object-glasses, condensing lens on separate stand, double milled head, rack and pinion for coarse adjustment and micrometer screw for fine adjustment, lever stage, so that the object may be brought directly in the field of view with the greatest facility; polarizing apparatus and selenite plate, dissecting needles, six objects; power 80, 150, 250, 650, and 700 diameters; in a mahogany box, . . .	95 00
1678.	Same as 1677, with addition of Camera Lucida, for drawing the object,	100 00

ZENTMAYER'S MICROSCOPES.



1679.

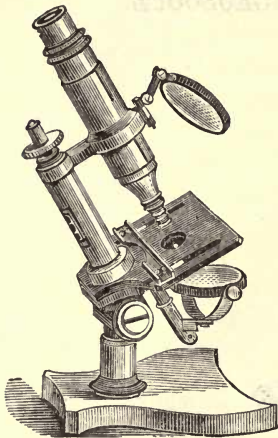


1680.

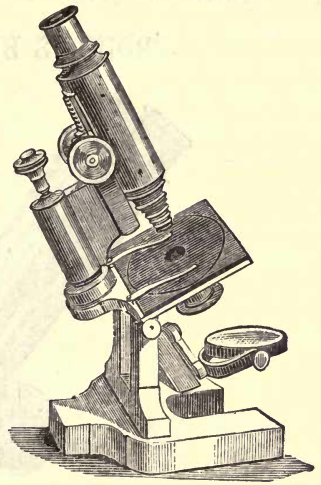
No.	PRICE.
1679. Zentmayer's U. S. Army Hospital Microscope, with 2 eye-pieces, concave and plane mirrors, $\frac{8}{10}$ and $\frac{1}{5}$ th object-glasses, draw tube, camera lucida, stage micrometer, and condensing lens. In walnut case,	\$135 00
1681. Zentmayer's Grand American Microscope, with 3 eye-pieces, $1\frac{1}{2}$, $\frac{8}{10}$, $\frac{4}{10}$, and $\frac{1}{5}$ th object-glasses, polarizing apparatus, parabola, erector, draw tube, camera lucida, stage micrometer, condensing lens, stage forceps, animalcule cage, zoophyte trough. In mahogany cabinet,	400 00

NACHETT'S AND HARTNACK'S MICROSCOPES.

1700. NACHETT'S SMALL MODEL MICROSCOPE, all brass, very firm, steady stand, with inclination of the body to any angle, with quick and slow motions, and draw tube; large firm stage, with sliding object-holder; diaphragm and mirror, arranged for giving the greatest obliquity of illumination; condensing lens, for opaque objects; two eye-pieces, and two objectives, Nos. 1 and 3, giving powers from 30 to 380 diameters. The whole packed in a highly polished mahogany case,	75 00
1701. HARTNACK'S HOSPITAL MICROSCOPE, a compact, neat, and exceedingly good working instrument, almost exclusively used in the Hospitals and by the medical students of Paris. With one eye-piece, and No. 7 objective, power 300 diameters, needles, forceps, and glass for mounting,	37 50
1702. HARTNACK'S NEW STUDENT'S MICROSCOPE; this is a small but firm and very complete stand, with two object-glasses, Nos. 4 and 7, and two oculaires, Nos. 2 and 3, power from 50 to 300 diameters, with needles, forceps, &c., packed in very compact mahogany case,	65 00



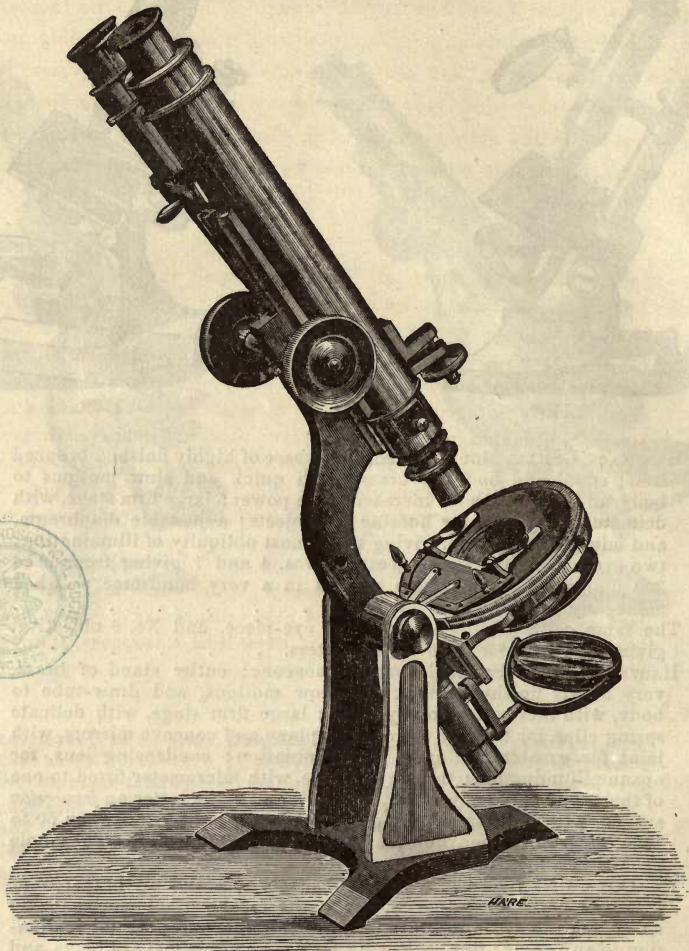
1700.



1709.

No.		PRICE.
1706.	HARTNACK'S SMALL MODEL MICROSCOPE; base of highly finished bronzed iron; stand and body all brass; with quick and slow motions to body, and draw-tube for increasing the power; large firm stage, with delicate spring clips for holding the objects; adjustable diaphragm, and mirror arranged for giving the utmost obliquity of illumination; two eye-pieces, and two objectives, Nos. 4 and 7, giving from 50 to 300 diameters. The whole packed in a very handsome polished mahogany case,	\$75 00
1707.	The same, with addition of a third eye-piece, and No. 8 objective, giving powers from 50 to 600 diameters,	100 00
1708.	HARTNACK'S NEW SMALL MODEL MICROSCOPE; entire stand of brass, very highly finished; quick and slow motions, and draw-tube to body, with inclination to any angle; large firm stage, with delicate spring clips, for holding the object; plane and concave mirrors, with joint for greatest obliquity of illumination; condensing lens, for opaque illumination; three eye-pieces, with micrometer fitted to one of them, and three objectives, Nos. 4, 7, and 9, the latter an <i>immersion</i> system, with adjustment for glass cover, giving powers from 50 to 1000 diameters; removable diaphragm for each objective. The whole packed in a highly finished mahogany case,	200 00
1709.	HARTNACK'S NEW LARGE MODEL MICROSCOPE; stand all brass; very firm and perfectly balanced, and of the most perfect workmanship and finish; body of full size, with draw-tube, and joint for inclination to any angle; fine rack-work for coarse adjustment of focus, and micrometer screw for fine; large, firm and very thin stage, with very delicate spring clips, for holding the objects, and <i>perfect concentric</i> rotation of the same in the optic axis, so delicate that with the highest powers an object is never thrown out of the field of view; concave and plane mirrors, so arranged as to give the utmost obliquity of illumination; large condensing lens, on separate stand; five eye-pieces, and five objectives, Nos. 2, 4, 5, 7, and 9, the latter an <i>immersion</i> system, with adjustment for glass covers, and a removable diaphragm for each objective, giving from 25 to 1300 diameters. The whole packed in a beautifully finished and highly polished mahogany cabinet,	350 00
	Mechanical Stage, with Goniometer fitted to the above, at an additional cost of	75 00
	Polariscope for the same, very fine,	35 00

CROUCH'S BINOCULAR MICROSCOPE.



1710.

This is one of the best instruments of its class in use, and we strongly recommend it to such as desire to possess a Binocular at once cheap, good, and portable. Its general arrangement is shown in the illustration above, the double body being supported on a "limb" on the Lister model. The adjustment of the eye-pieces for the distance of the eyes is made by a transverse bar which is attached to one of them, and which works through a slot-piece fixed to the other; so that if, by the application of the finger and thumb to the projecting pin, the bar with the attached eye-piece be raised or lowered, the other eye-piece also is moved accordingly. The stage is circular in form, and consists of a plate of polished black glass, over which the object-holder slides in every direction with the greatest facility, and is so arranged as to afford entire concentric rotation in the optic axis; an indispensable feature in a good Binocular instrument.

This Microscope in its "Binocular" form, the first introduced to the scientific public at a reasonable cost, has steadily increased in reputation, and has now attained the highest position of any microscope of its class. Its thorough excellence of performance, stability in any position (in this respect being unrivalled), simplicity of construction, and consequent non-liability to derangement, render it by far the most perfect working microscope extant. It has now for many years been favored with the approval of Dr. Carpenter, as his own working microscope, and was the instrument selected for use by him on the important expedition of H. M. S. "Porcupine."

No.	Price.
1710. Crouch's Student's Binocular Microscope, with one pair of No. 1 Eye-pieces, rack and pinion adjustment for low powers, giving sufficient range for all powers from 4 inch upwards, Micrometer screw for fine adjustment of high powers, Draw-tubes having lever adjustment for coequal adaptation to width of eyes; the new Concentric Glass Rotating Stage, with complete rotation and all adjustments; removable Diaphragm of three apertures, plain and concave Mirrors, having lengthening arm and complete adjustments, Condenser on separate stand, best 1 inch objective of 25° and ¼ inch of 75° packed in handsome portable mahogany case, with fittings for all accessory apparatus,	\$150 00
1711. Crouch's Student's Monocular Microscope, is the same in all particulars as 1710, with the exception of being monocular. With 2 Eye-pieces, 1 inch and ¼ inch Objectives, Draw-tube, Condenser, and mahogany case, the price is	120 00

Special Accessory Apparatus for the above Microscopes.

1712. Crouch's Polariscope,	16 50
1713. Do. Eye-pieces, Nos. 2 and 3,	7 00
1714. Do. Webster Achromatic Condenser, with Diaphragm for dark ground or oblique illumination, and cap for direct illumination with high powers,	25 00
1715. Crouch's Wenham's Parabola,	14 00
1716. Do. Parabolic Illuminator,	15 00

Any other accessories desired can be selected from our Catalogue at rates herein given.

1717. Crouch's Educational Microscope, Monocular, light but firm and well-balanced stand, with coarse and fine adjustments, sliding stage, 1 Eye-piece, 2 inch and 1 inch objectives,	35 00
1718. The same, with addition of ¼ inch objectives, and No. 2 Eye-piece,	65 00

Any of Crouch's first-class instruments or objectives imported to order.

QUEEN'S OBJECTIVES.

No.									PRICE
1725.	2 inch,	angular aperture,	10°	.	.	.	.	.	\$16 00
1726.	1 do.	do.	18°	.	.	.	.	.	18 00
1727.	$\frac{2}{3}$ do.	do.	22°	.	.	.	.	.	20 00
1728.	$\frac{1}{4}$ do.	do.	80°	.	.	.	.	.	25 00
1729.	$\frac{1}{8}$ do.	do.	100°	.	.	.	.	.	30 00

ROSS'S OBJECTIVES.

New Series. All above the $\frac{3}{4}$ d have adjustment for covering-glass, and all above the $\frac{1}{4}$ th can be used *Dry* or *Immersion* at pleasure.

1730.	4 inch,	angular aperture,	9°	.	.	.	.	.	15 00
1731.	3 do.	do.	12°	.	.	.	.	.	30 00
1732.	2 do.	do.	15°	.	.	.	.	.	30 00
1733.	$1\frac{1}{2}$ do.	do.	20°	.	.	.	.	.	30 00
1734.	1 do.	do.	25°	.	.	.	.	.	30 00
1735.	$\frac{3}{8}$ do.	do.	35°	.	.	.	.	.	28 00
1736.	$\frac{1}{2}$ do.	do.	90°	.	.	.	.	.	45 00
1737.	$\frac{1}{10}$ do.	do.	95°	.	.	.	.	.	60 00
1738.	$\frac{1}{8}$ do.	do.	120°	.	.	.	.	.	60 00
1739.	$\frac{1}{10}$ do.	do.	140°	.	.	.	.	.	70 00
1740.	$\frac{1}{15}$ do.	do.	170°	.	.	.	.	.	110 00
1741.	$\frac{1}{15}$ do.	do.	170°	.	.	.	.	.	175 00

HARTNACK'S OBJECTIVES.

1743.	2 inch,	No. 1.	.	.	.	.	.	.	12 50
1744.	1 do.	" 2.	.	.	.	.	.	.	15 00
1745.	$\frac{3}{4}$ do.	" 3.	.	.	.	.	.	.	17 50
1746.	$\frac{1}{2}$ do.	" 4.	.	.	.	.	.	.	20 00
1747.	$\frac{1}{4}$ do.	" 6.	.	.	.	.	.	.	22 50
1748.	$\frac{1}{8}$ do.	" 7.	.	.	.	.	.	.	25 00
1749.	do.	" 8.	.	.	.	.	.	.	30 00
1750.	$\frac{1}{12}$ do.	" 9. Immersion	.	.	.	.	.	.	65 00
1751.	$\frac{1}{16}$ do.	" 10.	.	.	.	.	.	.	90 00
1752.	$\frac{1}{18}$ do.	" 11.	.	.	.	.	.	.	100 00

These are all Hartnack's first quality of objectives, are furnished with the "Society Screw," and are contained in engraved brass boxes. If supplied without boxes and with the "Hartnack Screw," they will cost one dollar less than the prices here given.

POWELL AND LEALAND'S OBJECTIVES.

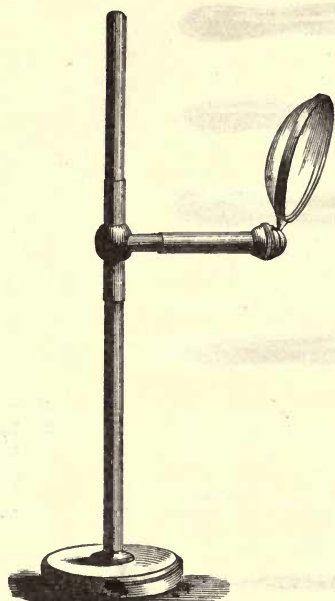
1753.	1 inch,	angular aperture,	30°	.	.	.	.	.	30 00
1754.	$\frac{1}{2}$ do.	do.	70°	.	.	.	.	.	40 00
1755.	$\frac{1}{4}$ do.	do.	145°	.	.	.	.	.	70 00
1756.	$\frac{1}{8}$ do.	do.	140°	Immersion.	.	.	.	.	90 00
1757.	$\frac{1}{8}$ do.	do.	175°	do.	.	.	.	.	150 00

R. AND J. BECK'S OBJECTIVES.

A full list of these will be found in Beck's special catalogue at the end of this.

Objectives by *Crouch*, *Nachett*, *Tolles*, *Wales*, and *Zentmayer*, always in stock. Price lists will be sent on application. These are all furnished with the "Society Screw," unless specially ordered otherwise.

We would call special attention to the *French Objectives*, a list of which will be found on the following page. These are not the ordinary commercial lenses usually sold at low prices, and most of which are mere toys, but are good, well-corrected glasses, made especially for us by one of the most eminent Opticians of Paris, and we guarantee their performance to be satisfactory. If cheaper lenses are wanted, we have those usually sold, in stock, at prices about 25 per cent. less than the following list.

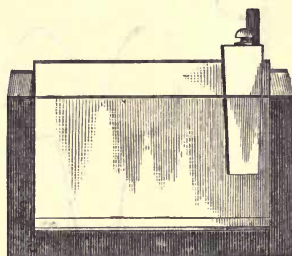


1775.

No.		PRICE.
1765.	Achromatic Object-Glass, French make, No. 1, $\frac{1}{2}$ inch focus, used on the Student's Microscope, gives a power of 150 diameters,	\$6 00
1766.	Achromatic Object-Glass, French make, No. 2, $\frac{1}{4}$ inch focus, used on the Student's Microscope, gives a power of 250 diameters,	7 00
1767.	Achromatic Object-Glass, French make, No. 3, $\frac{3}{16}$ inch focus, used on the Student's Microscope, gives a power of 400 diameters,	8 00
1768.	Achromatic Object-Glass, French make, No. 4, $\frac{1}{8}$ inch focus, used on the Student's Microscope, gives a power of 500 diameters,	10 00
1769.	Achromatic Object-Glass, French make, No. 5, $\frac{1}{10}$ inch focus, used on the Student's Microscope, gives a power of 600 diameters,	12 00
1770.	Achromatic Object-Glass, French make, No. 6, gives a power of 800 diameters,	15 00
1771.	Eye-pieces, from 1 to 2 inches long, French make, each,	5 00
1772.	Condensing Lens, $1\frac{1}{4}$ inches diameter, small stand,	2 50
1773.	Condensing Lens, $1\frac{5}{8}$ inches diameter, small stand,	3 50
1774.	Condensing Lens, 2 inches in diameter, large stand,	6 00
1775.	Large Bull's Eye Condenser, 3 inches diameter,	10 00
1776.	Animalcule Cage, for use in examining a small animal or a drop of water. Small size, each,	1 00
1777.	Animalcule Cage, medium size,	2 25



1778.



1779.

1778.	Animalcule Cage, Varley's, best quality,	3 50
1779.	Zoophyte Trough, with wedge and spring complete,	3 25
1780.	Growing Cell, with cover,	3 00
✓ 1781.	Spring Compressor, of steel wire, nickel-plated, for holding down thin covers in mounting specimens, per dozen,	1 50
1782.	Spring Compressor, wood, per dozen.	30
1783.	Brass Forceps, 3 inches long,	25
1784.	Do. do. better finished,	50
1785.	Do. do. very finely finished,	1 00
1786.	Do. 4 inches long, do.	1 50
1787.	Steel Forceps, 4 do. straight,	75
1788.	Do. 4 do. curved,	1 00
1789.	Do. 4 do. do. very delicate,	1 50



1787.



1788.



1789.



1790.

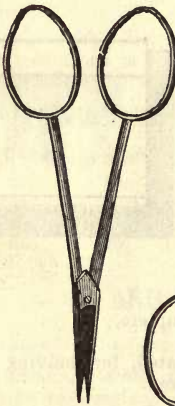
No	PRICE.
1790. Steel Forceps, 4 inches long, straight, very delicate,	\$1 50
1791. Do. do. nickel plated, do. do.	1 75
1792. Do. do. do. curved, do.	1 75
1793. Double Forceps, German silver, points on one end, tipped with platina, each,	2 25



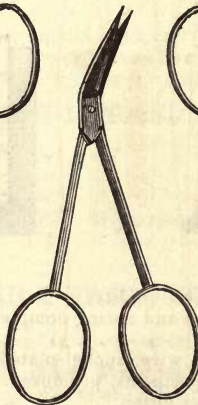
1795.



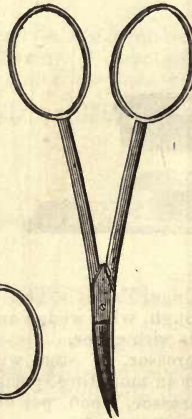
1794.



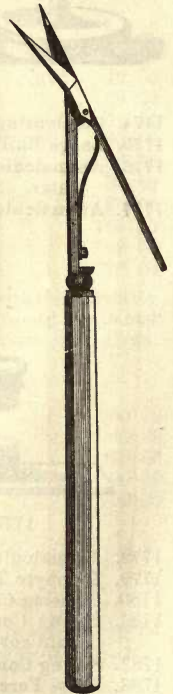
1796.



1798.



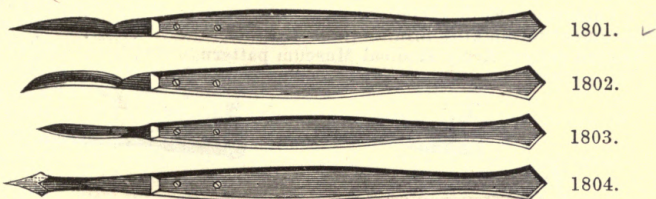
1797. ✓



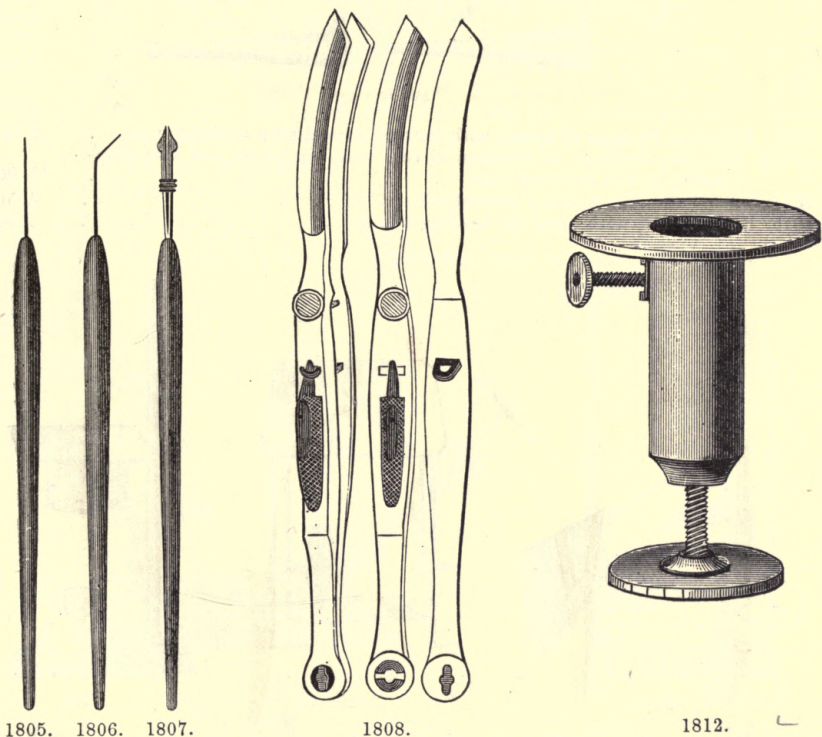
1799.

1794. Quekett's Forceps, for taking objects from the bottom of deep jars,	3 00
1795. Stage Forceps, adapted to any microscope,	4 00
1796. Dissecting Scissors, very delicate, straight points,	1 75

No.	PRICE.
1797. Dissecting Scissors, very delicate, curved points,	\$1 75
1798. Do. do. do. elbow do.	1 75
1799. Spring do. do. ivory handles,	6 00
1800. Elbow Scissors, with strong blades for cutting elytra and legs of beetles, &c.,	1 25

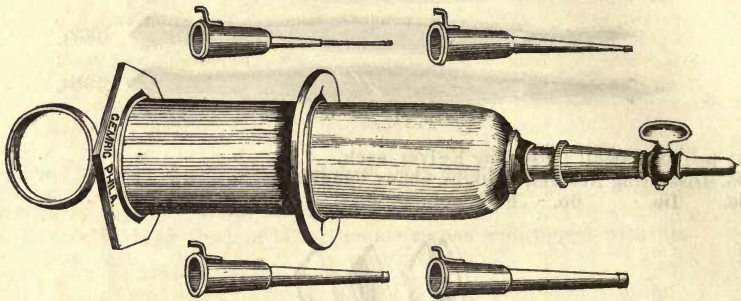


1801 to 1804. Small Dissecting Knives, each,	75
1805. Dissecting Needles, straight, ebony handles, each,	15
1806. Do. do. hook points, do. do.	15



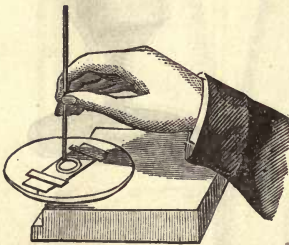
1807. Dissecting Needle Holders, with binding screw, each,	75
1808. Valentine Knife, for making thin sections of soft substances,	6 50
1809. Morocco Leather Case of Dissecting Instruments: containing, 1 Pair Forceps (1788); 1 Pair Scissors (1796); 3 Dissecting Knives (1802-4); and 2 Needle Holders (1807), with needles,	10 00

No.	PRICE.
1810. Morocco Leather Case of Dissecting Instruments: containing, 1 Pair Forceps (1792); 1 Pair Scissors (1796); 1 Pair Scissors (1797); 3 Dissecting Knives (1801-3); 2 Needle Holders (1807); 1 Valentine's Knife (1808),	\$18 00
1811. Morocco Leather Case of Dissecting Instruments: containing, 2 Pair Forceps (1791-92); 2 Pair Scissors (1796-97); 1 Pair Spring Scissors (1799); 4 Dissecting Knives (1801-4); 2 Needle Holders (1807); 1 Valentine's Knife (1808),	25 00
1812. Instrument for making thin sections of wood,	6 00
1812½. Section cutter, Army Medical Museum pattern,	12 00



1813.

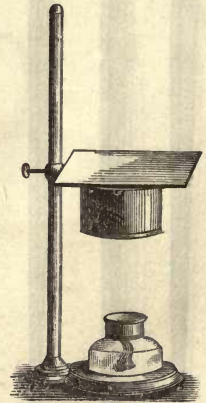
1813. Injecting Syringe of brass, with four pipes and stop-cock, in case,	8 00
1813½. Injecting Syringe of German silver, with six pipes and two stop-cocks, in fine morocco case,	15 00
✓ 1814. Turn Table, for making cement cells,	4 50
1815. Brass Table, with lamp for heating slides,	1 50



1814.



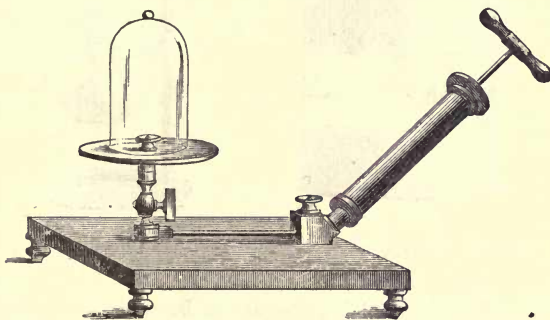
1815. ✓



1816.

✓ 1816. Mounting Stand, with lamp and sand bath,	2 50
1817. Small Glass Spirit Lamp, with cover,	75
1818. Knife in strong Ebony Handle for cutting Sections with 1812 and 1812½,	2 50
1820. Glass Slips, 3×1 inch, flatted crown, unground edges, per dozen, 30 cents; per gross,	3 00
1821. Glass Slips, 3×1 inch, flatted crown, ground edges, per dozen, 50 cents; per gross,	5 00

No.		PRICE.
1822.	Glass Slips, 3×1 inch, extra white plate, unground edges, per dozen, 40 cents; per gross,	\$4 50
1823.	Glass Slips, 3×1 inch, best patent plate, ground edges, per dozen, 60 cents; per gross,	6 00
1824.	Glass Slips, 3×1 inch, best patent plate, extra thin, ground and polished edges, per dozen, 65 cents; per gross,	6 50
1825.	Glass Slips, 2 $\frac{3}{8}$ × $\frac{3}{4}$ inch, best flatted crown, unground edges, per dozen, 25 cents; per gross,	2 50
1826.	Glass Slips, 2 $\frac{3}{8}$ × $\frac{3}{4}$ inch, best flatted crown, ground edges, per dozen, 40 cents; per gross,	4 50
1827.	Glass Slips, 2 $\frac{3}{8}$ × $\frac{3}{4}$ inch, with concave centres, for examination of liquids, per dozen,	1 50
1828.	Glass Slips, 3×1 inch, with concave centres, for examination of liquids, per dozen,	2 00
1829.	Glass Slips, 3×1 inch, with concave centres, oval or round, and revolving thin glass covers, each,	75
1830.	Glass Slips, 3×1 inch, the same as above, but of opal glass, each,	1 00
1831.	Do. 3×1 inch, ground edges, with cells of different sizes and depths, and covers, per dozen,	3 50
1832.	Glass Rings, for making cells, as above, per dozen,	1 00
✓ 1833.	(Tin) Lead or Horn Rings, for making cells, as above, per dozen,	30
1834.	Thin Glass, in sheets, per oz., according to thickness,	\$1 50 to 2 50
1835.	Do. Squares, No. 3, $\frac{1}{10}$ to $\frac{1}{100}$, per dozen, 30 cents; per oz.,	2 50
1836.	Do. do. No. 2, $\frac{1}{100}$ to $\frac{1}{200}$, do. 40 do. do.	3 50
1837.	Do. do. No. 1, $\frac{1}{200}$, and thinner, per doz., 50 cts.; per oz.,	4 50
1838.	Do. Circles, No. 3, $\frac{1}{10}$ to $\frac{1}{100}$, per dozen, 35 cents; per oz.,	3 00
1839.	Do. do. No. 2, $\frac{1}{100}$ to $\frac{1}{200}$, per dozen, 45 cents; per oz.,	4 00
1840.	Do. do. No. 1, $\frac{1}{200}$, and thinner, per doz., 60 cts.; per oz.,	6 00
<i>All sizes of above from $\frac{3}{8}$ to 1 inch, always in stock.</i>		
1841.	Watch Glasses, all sizes, each,	10
1842.	Dropping and Dipping Tubes, each,	15
1843.	Pipets, with bulb, each,	30
1844.	Test Tubes, of various lengths, each,	10
1845.	Small Bell Glass, for preserving objects from dust during preparation,	75



1846.



1865.



1847.

1846.	Small Air Pump, for use in mounting,	12 50
1847.	Finest Canada Balsam, pure, in flexible tubes, each,	25
1848.	Do. do. prepared for use without heat, per bottle,	50
1849.	Damar, the new mounting medium, superior to Balsam, do.	50

No.		PRICE.
1850.	Pure Glycerin, per bottle,	\$0 25
1851.	Do. Jelly, per bottle,	60
✓ 1852.	Universal Preservative Fluid, for Animal or Vegetable Tissues. Put up in Dropping Bottle (1869), each,	50
1853.	Brunswick Black, per bottle,	35
1854.	Asphalte, do.	60
✓ 1855.	Gold Size, do.	25
1856.	Marine Glue, do.	60
1857.	Shellac Cement, do.	50
1858.	Beil's Cement, the best for use with Glycerin,	75
✓ 1859.	White Zinc Cement, the best for fluid mounting,	50
1860.	Punches, various sizes,	50 cents to 1 00



1861.



1862.

1861.	Glazier's Diamonds, ebony handles, each,	\$4 00 to 10 00
1862.	Writing do. do. do.	4 00



1863.



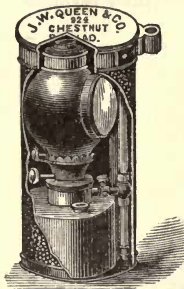
1856.



1865½.

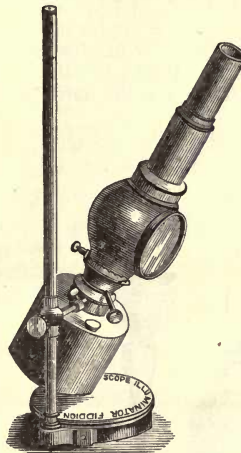
✓ 1863.	Capped Bottles, with Glass Rod, for holding Balsam or Damar for mounting, each,	1 15
1864.	Brass Stand, with firm base, for carrying magnifying glasses in dissect- ing or mounting,	4 00
1865.	Circle Cutter, with diamond for cutting thin glass circles, in morocco case,	13 50
1865½.	Beck's Microscope Lamp; arranged to carry the flame at any de- sired height, very firm, portable, and clean,	6 75
1866.	Gas Lamp, arranged to carry the burner at various heights from the table, with shade, blue glass chimney, and 6 feet of flexible tubing,	12 00

FIDDIAN'S MICROSCOPE ILLUMINATOR.



1866½.

LAMP WHEN PACKED IN CASE.



1866½. LAMP.



1866½.

EXTERIOR OF CASE.

- 1866½. Fiddian's Microscope Illuminator, with metallic telescope chimney, and condenser, in morocco case, \$15 00
 1867. Fiddian's Microscope Illuminator, nickel plated, 17 50

This very convenient and useful Lamp has been designed to combine the qualities of other Microscope Lamps, together with greater portability, the whole fitting into a brass tubular box, the exterior of which is covered with morocco leather, the lid forming the stand of the Lamp. The metallic chimney being telescopic, occupies a very small compass; the condenser fits into the cell in front. The reservoir is of brass, and will contain sufficient petroleum for six hours' consumption. The entire Lamp fitting into the case from the top, escape of the oil is prevented.

In trimming the Lamp care should be taken that the wick is perfectly dry, and the petroleum of good quality: also that none of the oil gets upon the metallic chimney or reservoir, or a bad smell will be given off until the oil is burnt away.

In using the Lamp it will be found convenient to slightly incline it, so as to bring the broad surface of the flame more parallel with the surface of the mirror of the microscope.

When it is necessary to re-line the chimney, screw off the sliding portion, wash out the old lining, and re-coat it with superfine Plaster of Paris. When dry it will be found ready for use—a few minutes will be found sufficient to do this.

Size of Case:—Height, 6 inches; Diameter, 3 inches.

1868. Collecting Bottles, flat, for the vest pocket, each, 10 to 15
 1869. Dropping Bottles, with glass bulbs, each, 35
 1870. Dropping Bottles, with rubber top, will supply a large quantity of fluid promptly, 75
 1871. Wright's Microscopic Collecting Bottle. Price, complete in box, 3 00

Microscopists will find this new form of COLLECTING BOTTLE an indispensable companion in their Pond-hunting Excursions, for collecting and retaining the various minute objects that may be obtained in water by the dipping bottle. It consists of a bottle with a movable brass cap, in which is fastened two small tubes with screw tops. One of these (A) projects a little higher than the other; in which is fixed the funnel (C) when in use. The other tube (B) has a trumpet-shaped form, across the mouth of which a piece of fine muslin is stretched; the loose funnel shown is placed in the outer tube, and the water containing the various organisms which it is wished

to retain is poured into it. As soon as the bottle is full the water rises through the porous material placed across the lower end of this inner tube, and flows over retaining behind and in the bottle the various *diatoms*, *volvox*, *desmids*, *entomostraca*, &c., which may have been floating therein. Any quantity of water may be deprived of the minute objects floating in it, without the troublesome, imperfect and destructive process of first filtering through a piece of muslin or flannel, and then reversing the filtering material in the mouth of the bottle, to detach the deposit.

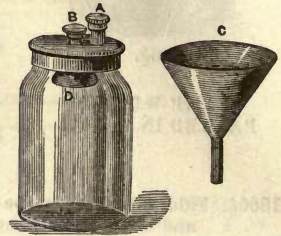
For collecting larger objects, the cap of the bottle can be removed.



1869.



1870.



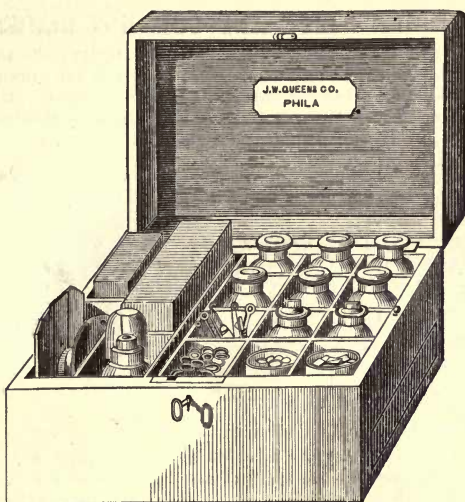
1871. ✓

No.	PRICE.
1872. Queen's Collecting Case, with sling strap for the shoulder, containing Bottles, Tubes, Net, &c. Particularly recommended for Microscopical Excursions,	\$6 00
1873. Queen's Collecting Satchel, the same as above, in handsome real Morocco Bag, with strap for shoulder,	10 00



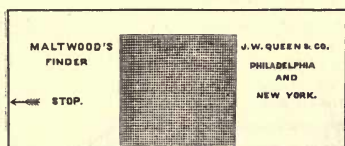
1872.

1874. Amateur Mounting Cabinet, containing Turn-table (1814); Brass Table and Lamp (1815), Dropping Bottle (1869), Three Dozen Slips (1821), - - Three Dozen Circles (1839), Wooden Forceps (1783), Canada Balsam (1847, 1848), Glycerin Jelly (1851), Asphalte (1854), Gold Size (1855), - - White Zinc Cement (1859), Bell's Cement (1858), Bone Cells (1833), - - Dipping Tubes (1842), Wide-mouthed Bottle for Solutions; the whole packed in neat walnut box, with lock and key,	20 00
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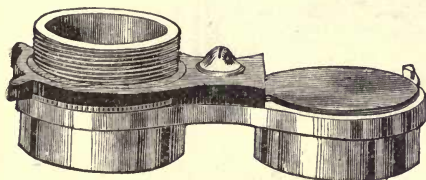


1874.

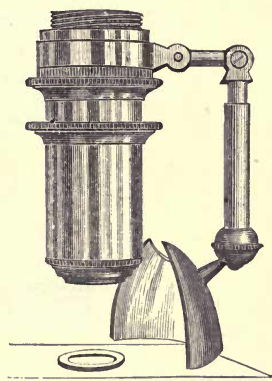
- | | | |
|-------|--|--------|
| No. | | PRICE. |
| 1876. | Safety Stage. This highly useful piece of apparatus is applicable to almost any Microscope, and by its use the breaking of objects or damage to object-glasses is entirely avoided, since the most inexperienced observer can use the very thinnest covers with entire safety. It also affords the utmost facility for oblique illumination. | \$6 00 |



1879.



1877.

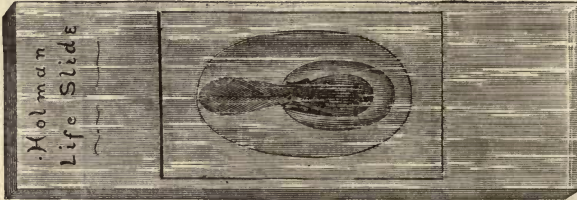


1878.

- | | | |
|-------|--|-------|
| 1877. | Double Nosepiece. By using which the power is readily changed without removing the objectives, | 13 75 |
| 1878. | Beck's Parabolic Illuminator, for opaque objects, with Crouch's Adaptor to fit any objective, | 15 00 |
| 1879. | Maltwood's Finder or Indicator, used on the stage for finding and noting the position of a particular portion of a prepared object. In a neat morocco case, | 4 00 |
| 1880. | Hot Water Drying Case, for drying tissues and hardening Balsam mountings. This very useful piece of apparatus is made of heavy polished tin, handsomely japanned, is well ventilated, will dry one hundred specimens at once, and retains its heat for eight hours without replenishing, | 15 00 |

HOLMAN'S LIFE AND CURRENT SLIDES.

These very useful and ingenious accessories to the Microscope are attracting great attention among scientific men everywhere, and have received the strongest commendations from Medical and other Scientific Journals at home and abroad. By an arrangement with the inventor we are enabled to supply them to our customers of the most perfect quality, each one having passed through Mr. Holman's hands before being delivered to us.

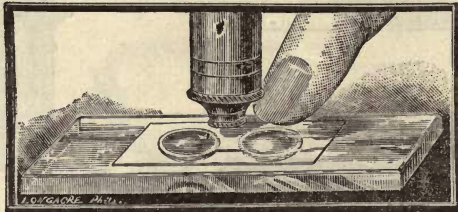


1882.

No. 1882. HOLMAN'S LIFE SLIDE, with Cover, in a neat Box, PRICE. \$1 50

THE LIFE SLIDE consists of a plate of thick glass 3 x 1 inch, with a deep oval cavity ground in its centre, to contain the mass of material under observation. Around the margin of this oval cavity is a polished bevel, and from the bevel extends a small cut, the object of which is to afford an abundance of fresh air to the living things within. It is found upon enclosing the animalculæ, etc., that they will invariably seek the edge of the pool in which they are confined, and the bevelled edge permits the observer to take advantage of this disposition; for when beneath it, the objects are within the range of the highest powers.

The Life Slide is constructed to retain the greatest quantity of material under the smallest cover glass, and is designed to be used with the highest powers of the Microscope for studying the Bacteria, Vibriones, and other low forms of life. For studying the circulation of the blood in the tail of the Tadpole, it is the most perfect contrivance imaginable. The deep oval cavity will contain the body of a small Tadpole, whilst the tail lies extended in the bevelled portion, and may be examined with the highest powers. Another very important feature in the device is the fact that a preparation may be kept with it for days or weeks together without losing vitality, owing to the simple arrangement for supplying fresh air.



1883.

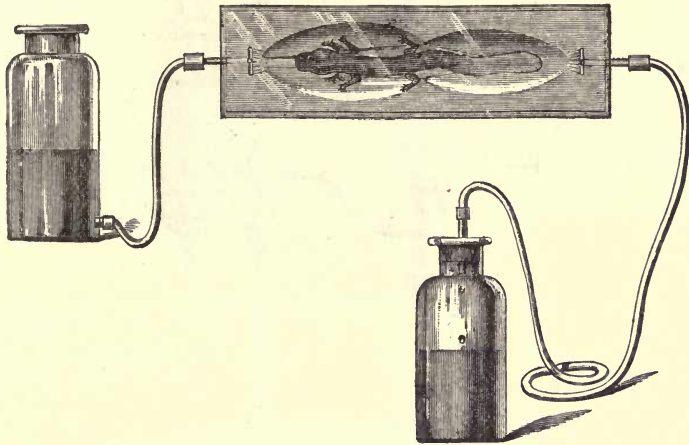
No. 1883. HOLMAN'S CURRENT SLIDE, with Cover, in a neat Box, PRICE. \$1 50

The Current Slide consists of slip of plate glass 3 x 1 inch, in which two oval concave cells are ground, there being a space of $\frac{1}{12}$ in. left between the cells. These cells, which are about $\frac{1}{2}$ in. in diameter and as deep as the glass will permit — say $\frac{1}{16}$ in. deep — are united by a very shallow channel somewhat below the centre of the two cells, so that with cells placed $\frac{1}{2}$ in. apart, the channel is about $\frac{3}{8}$ in. long. Both the cells and channel are polished. If a few drops of blood be placed in these cells, and a cover of thin glass be pressed down, some of the blood, finding its way between the surfaces in contact, will dry, and act as a cement to hold the fluid blood in the cells in place. The quantity of blood being insufficient to fill the cells, a considerable amount of air becomes imprisoned with the blood, and the expansion of the air in either cell will drive the blood through the channel into the adjacent cell, and in the shallow channel it is presented under the most favorable condition for examination. By holding the top of the finger near one or the other cell, the heat is enough to cause

the expansion and a consequent more or less rapid flow of the fluid through the channel. This flow may be arrested, or continued and reversed at will, by change of position of the finger, so that any particles floating in the liquid can pass in succession across the field, but can be arrested and examined with ease at will.

So sensitive is the apparatus, that even with the highest powers, a corpuscle, granule, or cell in the field of view, may be leisurely turned over and over in any desired position, thus affording an unequalled means of observation and study to the microscopist; and while the eye is examining at leisure the behavior of the objects beneath it, the mind is charmed with the simplicity of the means by which their motions are controlled.

Blood or other fluid inclosed in the cells remains in good condition for examination for several days, and changes undergoing in the fluid can be examined.



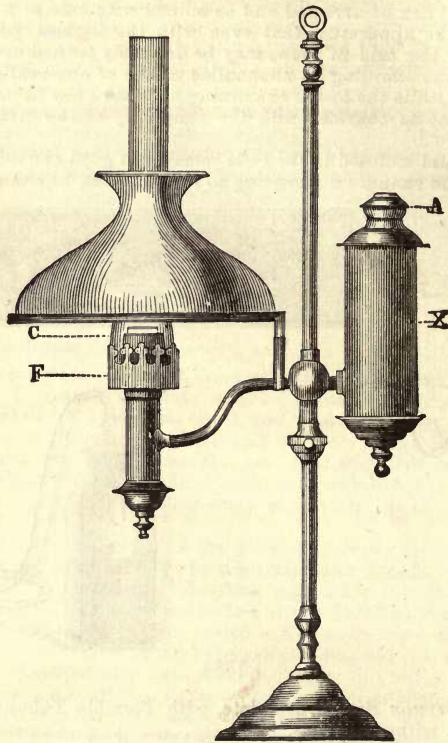
1884.

No. 1884. HOLMAN'S SYPHON SLIDE, complete, with Flexible Tubes and Glass Cover, but without Bottles, PRICE. \$4 50

This is a modification of the "LIFE" and "CURRENT" slides, whereby living objects of suitable size and habits can be retained under observation uninterruptedly for days or even weeks. A current of water, or other fluid, is made to flow continuously through the chamber containing the object, so that the processes of respiration, circulation, digestion and nutrition, the phenomena of inflammation, and the effects of some classes of poisons, may be studied at leisure and under perfectly natural or entirely controllable conditions. The habits of life of small aquatic animals are similarly brought within reach of our observations. For use with the Magic Lantern, in projecting the images of living objects upon the screen, this apparatus is absolutely perfect—the flow of fresh water through the chamber being so constant that its inmates are entirely free from inconvenience during the most protracted exhibition.

The following description of the SYPHON SLIDE will render its construction and use quite clear. In a slip of thick plate glass, a chamber is excavated similar to that in the LIFE SLIDE. In each end of this chamber are fine perforations, too small to permit the escape of the animal under view, but sufficient to maintain a flow of water. These openings merge into tubular mouths, to each of which is attached a tightly-fitting elastic tube: one of these communicates with the reservoir of water, whilst the other acts as an escape conduit. The position of the slide, when in use, must be slightly *above* the level of the reservoir, while the escape-tube must rest *below* the same, thus insuring a veritable *siphon* action in the apparatus; a constant flow of water being secured in connection with the required atmospheric pressure for the retention of the cover on the slide. It is not necessary to have bottles specially fitted for use with this apparatus; any vessel capable of holding water will answer, it being only necessary to insert the end of one tube in the reservoir, and by gently sucking at the end of the other establish a flow of the water, which will continue so long as the reservoir contains any.

GERMAN STUDENT'S LAMP.



1885.

No.	PRICE.
1885. SAINT GERMAIN; OR, GERMAN STUDY OR OFFICE LAMP,	\$7 00
Boxing for shipment,	50

Directions for Use.—To fill the lamp, take out the holder A, invert it and pour in the oil till it reaches the valve; then pull up the valve by means of the wire B; invert it, holding it above the holder X, so that any oil which may escape drops into this holder; replace it in the holder X.

This lamp gives a very superior and steady light, and with ordinary care will emit neither smell nor smoke. One-twelfth or one-eighth of a heavier oil, Sperm, Lard or Olive, mixed with Kerosene, makes the best and safest oil.

Testimonials have been given by highest authority, as to its safety against explosions.

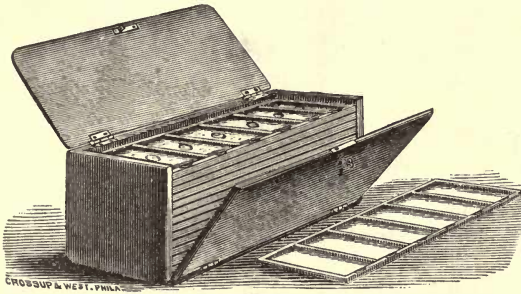
The wick should be trimmed regularly. If a crust has formed, do not disturb it, but only remove any little point or unevenness that may occur; do not use the scissors unless the wick, through uneven draft, should have coaled or charred unevenly. By this method you will have an even flame, and the wick will last much longer than when cut frequently. If your lamp should make a humming noise, which is caused by the shank of the chimney being of the wrong length, raise the chimney slightly, or change it for one with a longer shank.

Use kerosene or spirits in place of water for cleaning chimneys. The brass part of the lamp may be cleaned with Vienna lime and kerosene, and polished with rouge.

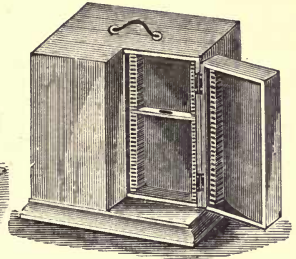
1886. Green Porcelain Shade for the above,	\$1 50
1887. The same Lamp Nickel Plated,	10 00

BOXES, CASES, AND CABINETS FOR OBJECTS.

No.					PRICE.
1890.	Mailing box of whitewood, for one object,	.	.	.	\$ 08
1891.	Do. do. three objects,	.	.	.	10
1892.	Do. do. six do.	.	.	.	12
1893.	Do. do. twelve do.	.	.	.	15
1894.	Do. do. twenty-five objects,	.	.	.	25

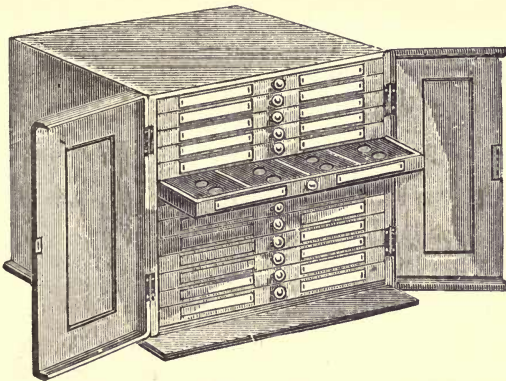


1895-96.



1897.

1895.	Mahogany Case, with 6 Trays, holding 36 Objects to lie flat,	.	.	.	3 00
1896.	Do. do. 12 do. do. 72 do. do.	.	.	.	4 50
1897.	Black Walnut Cabinet, with racks, do. 200 do. do.	.	.	.	8 50



1898 to 1900.

BLACK WALNUT OR MAHOGANY CABINETS.

Porcelain Knobs, with Number and Silicate Tablets, for Names of Objects.

OBJECTS LIE FLAT.

1898.	For 300 Objects, 10 Drawers,	.	.	.	25 00
1899.	For 520 Objects, 13 Drawers,	.	.	.	35 00
1900.	For 1,200 Objects, 21 Drawers,	.	.	.	75 00

NICOL'S PRISMS, &c.

No.		PRICE
1910.	Thin films of selenite mounted between two pieces of glass, showing a uniform color, each,	\$0 75
1911.	Films of selenite of unequal thickness, showing various colors, each, .	75
1912.	Mounted specimens of minerals, &c., for the Polariscopes, consisting of polished plates of carbonate of lime, beryl, arragonite, nitre, Brazilian topaz, Rochelle salt, sulphate of barytes, crystallized sugar, borax, amethyst, bichromate of potass, sulphate of iron, &c., &c., cut at right angles to their axis, for exhibiting the colored rings produced by the action of these crystalline bodies on polarized light, each, .	
1913.	Plates of polished quartz, nitre, Iceland spar, topaz, &c., &c., with two and four axis, each,	4 00
1914.	Two glass plates set in a brass rim, with clamping screws, to show Newton's rings, each,	5 00
1915.	Nicol's Prism of Iceland Spar, 8 millimetres across face,	2 75
1916.	Do. do. 9 do. do.	3 25
1917.	Do. do. 10 do. do.	4 00
1918.	Do. do. 11 do. do.	4 50
1919.	Do. do. 12 do. do.	5 00
1920.	Do. do. 14 do. do.	7 50
1921.	Do. do. 16 do. do.	10 00
1922.	Do. do. 20 do. do.	12 50
1923.	Do. do. 8 do. do. cut perpendicular,	4 25
1924.	Do. do. 9 do. do.	5 00
1925.	Do. do. 10 do. do.	5 50
1926.	Do. do. 11 do. do.	6 25
1927.	Do. do. 12 do. do.	7 00
1928.	Do. do. 14 do. do.	10 00
1929.	Do. do. 16 do. do.	15 00
1930.	Do. do. 20 do. do.	25 00

Larger sizes imported to order.

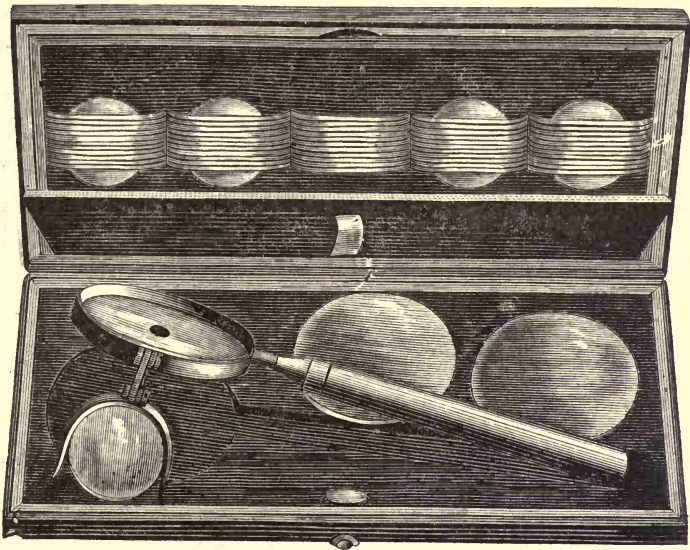
OPHTHALMOSCOPES AND LARYNGOSCOPES.

1933.	Nachett's Pocket Ophthalmoscope, in fine morocco case,	6 00
1934.	Nachett's Pocket Ophthalmoscope, same as 1933, with revolving disk behind the mirror, carrying four convex lenses of different foci, . .	10 00
1935.	Liebrich's Ophthalmoscope, with two Bi-convex Lenses, $1\frac{1}{4}$ and 2 inch focus, and a series of 5 lenses of various foci, fitting on an arm behind the perforated mirror, the whole packed in a morocco case, . .	6 50
1936.	Improved Adjusting Binocular Ophthalmoscope,	35 00
1937.	Dr. Galezowskie's Ophthalmoscope, consists of a brass tube about 10 inches long, with joints to slide together as a telescope; in this tube the concave mirror and condensing lens are permanently placed, with adaptations for their proper adjustment when in use,	22 00
1938.	Laryngoscope for examining the larynx, consists of a large concave mirror for reflecting the light down the patient's throat, and a series of concave speculums with long handles for making the required examinations,	16 00

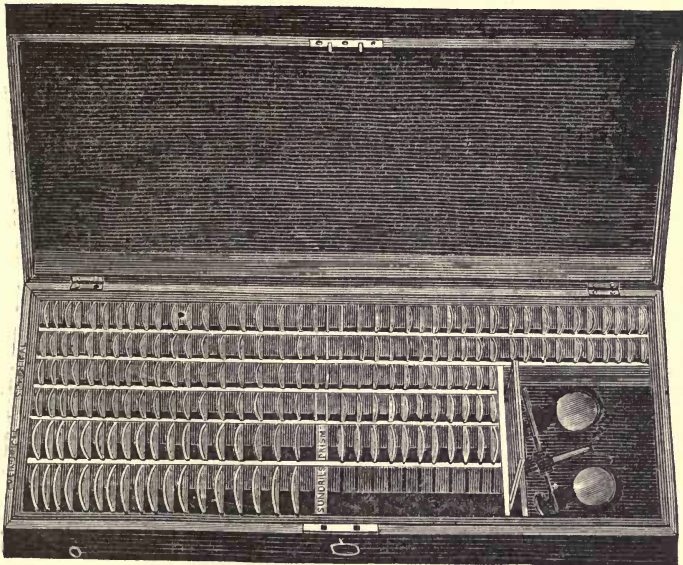
TRIAL SIGHTS.

1939.	Nachett's Complete Series of Trial Sights, consisting of 32 pairs spherical convex and 32 pairs spherical concave lenses, from 2 to 72 inches focus; 19 pairs cylindrical convex and 19 pairs cylindrical concave lenses, from 6 to 60 inches focus; 9 prisms, angles from 2° to 10° , all mounted in handsome metallic frames; 4 colored glasses, 4 metal disks, 1 stenopaic instrument, and a graduated adjustable frame for holding the various lenses; the whole packed in a highly-polished mahogany, or morocco covered case,	120 00
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OPHTHALMOSCOPIES AND TRIAL SIGHTS.



1935.



1940.

1940. Complete Series of Trial-Sights, consisting of 36 pairs of Convex and 36 pairs of Concave Spherical Lenses, 18 Convex and 18 Concave Cylindrical Glasses, as per Table below, 12 Prisms, angle mentioned in Table below—

FOCI OF THE VARIOUS LENSES IN INCHES.													
SPHERICAL CONVEX (+).			SPHERICAL CONCAVE (-).			CYLINDRICAL+		CYLINDRICAL-		ANGLE OF PRISMS.			
1	4	9 15 26 45	1	4	9 15 26 45	2½	5½	12	2½	5½	12	3°	9°
1½	4½	10 16 28 50	1½	4½	10 16 28 50	3	6	14	3	6	14	4°	10°
2	5	11 18 30 60	2	5	11 18 39 60	3½	7	17	3½	7	17	5°	12°
2½	6	12 20 32 70	2½	6	12 20 32 70	4	8	21	4	8	21	6°	14°
3	7	13 22 36 80	3	7	13 22 36 80	4½	9	25	4½	9	25	7°	16°
3½	8	14 24 40 100	3½	8	14 24 40 100	5	10	30	5	10	30	8°	18°

2 Blank Disks, 4 Disks with small apertures, 3 Colored Glasses, and a Graduated Adjustable Frame (No. 1946) for holding the various Lenses, the whole packed in a Strong Mahogany Case,

\$72 00

1941. Series of Trial-Sights, consisting of 24 pairs of Convex and 24 pairs of Concave Spherical Lenses, 9 Convex, and 9 Concave Cylindrical Glasses, as per Table below, 6 Prisms, as per Table below—

FOCI OF THE VARIOUS LENSES IN INCHES.													
SPHERICAL CONVEX (+).			SPHERICAL CONCAVE (-).			CYLINDRICAL+		CYLINDRICAL-		ANGLE OF PRISMS.			
1	4	7 14 28 40	1	4	7 14 28 40	3	6	14	3	6	14	3°	6°
2	4½	8 16 30 50	2	4½	8 16 30 50	4	8	21	4	8	21	4°	14°
3	5	10 20 32 70	3	5	10 20 32 70	5	10	30	5	10	30	5°	18°
3½	6	12 24 36 100	3½	6	12 24 36 100								

2 Blank Disks, 2 Disks with small aperture, 3 Colored Glasses, and a Graduated Adjustable Frame (No. 1946) for holding the various Lenses, the whole packed in a Strong Mahogany Case,

\$55 00

1942. Series of Trial-Sights, consisting of the complete set of 36 pairs of Convex and 36 pairs of Concave Spherical Lenses, as per Table to No. 1940, 2 Blank Disks, 3 Colored Glasses, and a Graduated Adjustable Frame (No. 1946) for holding the various Lenses, the whole packed in a Strong Mahogany Case,

55 00

1943. Series of Trial-Sights, consisting of 24 pairs of Convex and 24 pairs of Concave Spherical Lenses, as per Table to No. 1941, 2 Blank Disks, 3 Colored Glasses, and a Graduated Adjustable Frame (No. 1946) for holding the various Lenses, packed in a Strong Mahogany Case,

40 00

1944. Series of Cylindrical Glasses, consisting of 18 Convex and 18 Concave, as per Table to No. 1940, packed in a Strong Mahogany Case,

20 50

1945. Series of 12 Prisms, from 3° to 18°, as per Table to No. 1940, packed in a Strong Mahogany Case,

9 50

1946. Graduated Adjustable Spectacle-frame. This Instrument in which the Trial-Sights are held by Springs, is placed on the head like an ordinary pair of Spectacles; the distance between the centres of the Eyes is indicated on the Steel bar, and the height of the bridge of the Nose on the Sliding Upright Centrepiece,

15 50

1947. Adjusting Cones for Measuring the Distance between the Eyes. Holding the Instrument in the right hand a distant object should be looked at with the right eye through the hole in the right-hand cone; the other cone, fixed to an adjusting arm, should be moved backwards and forwards until the left eye sees the same object through the aperture in the left cone, and the two holes appear as one. The distance between the Eyes is then indicated on the cross bar, one side of which is divided to inches, and tenths, the other to millimeters,

3 50



A CLASSIFIED LIST
OF
FIRST-CLASS MICROSCOPIC OBJECTS,

WITH MANY NEW, RARE, AND INTERESTING SPECIMENS, AFFORDING INSTRUCTIVE ILLUSTRATIONS IN ANATOMY, PHYSIOLOGY, BOTANY, ENTOMOLÓGY, GEOLOGY, AND MINERALOGY, INCLUDING THE FINEST PREPARATIONS OF WHEELER, NORMAN, TOPPING MOLLER, BOURGOGNE, VERICK, WALMSLEY, AND OTHER FOREIGN AND AMERICAN ARTISTS.

INTRODUCTORY REMARKS AND EXPLANATIONS.

Although this Catalogue is intended as a guide in the selection and purchase of objects, yet it is obvious that no such list can be strictly correct for any considerable time, since new objects are being added continually, and the vacancies that occur cannot always be filled instantly. It must therefore be understood that these objects can be supplied on demand with *probability* rather than *certainty*; hence, it is advisable when ordering to name a few more than the number actually required. In this Catalogue about 2,000 objects are comprised; of these it may be calculated that more than one-half will be found in stock. Any object not specially named will be procured, *if possible*, when ordered, and orders are solicited for any object desired, even if not named in the Catalogue, as it is our aim to keep and supply the fullest assortment of Microscopic Objects to be found in this country. The alphabetical arrangement has been preserved throughout, as the easiest guide to any particular specimen.

The prices marked on the top of each page have a *general* signification only to the objects on that page, and refer to the majority that follow. Some of the exceptions are marked; but the prices of many are liable to fluctuation from scarcity or abundance, although it is the intention to adhere as closely as possible to the *general* list of prices herein named.

In the selection of these specimens, the aim has not been so much to *reduce the price* as it has to *improve the quality*, by supplying every object as clean and perfect as its nature will admit. The predominant wish has not been to introduce as many objects as possible in each department, but rather to rest satisfied with such as are the most beautiful as natural objects, or of their kind the best illustration of special structure or function, and hence, of the highest interest both to the student in science and the popular observer also.

Any person confidentially known, or giving reference to those who are, if he desires to purchase a reasonable number of objects, can have an assortment sent for examination and approval, the express charge both ways being at his expense, the objects to be returned *within one week*, and the risk of damage or loss in transit borne by the purchaser. Such specimens are sent securely packed in rack boxes, affording facilities for inspection, as well as for packing and returning those not chosen.

In this Catalogue will be found many objects admirably suited to educational and instructional use for the elucidation of general principles, as well as of special application and adaptation. In Entomology, the various parts of Insects; in Botany, the Elementary Tissues of Plants; in Anatomy and Physiology, the organic structure in Man and the lower animals; the Microscope thereby affords the parent and tutor a pleasing aid to the communication of useful and truthful knowledge. It would be a laborious task to specify those objects that have especial interest either from their novelty, beauty or scarcity; but there are many that may repay careful notice among the Whole Insects, the Transparent Injections and Polariscope Objects, and the Miscellaneous Vegetable Preparations.

Special attention is called to our cheap series of Educational Objects Nos. 1955 and 1956, which fill a long existing want, by supplying well prepared and properly named objects to students and others at a low price. Their excellence is apparent on inspection.

LABELS.

1949½.

No.	1948.	1949.	1950.	PRICE.
1948.	Adhesive Gilt Fronts, per hundred,	. . . . .	. . . . .	\$0 50
1949.	Adhesive Gilt Backs, per hundred,	. . . . .	. . . . .	50
1949½.	Adhesive Labels for covering small-sized slides, per hundred,	. . . . .	. . . . .	25
1950.	Adhesive Labels, with number, per hundred,	. . . . .	. . . . .	25
	Adhesive Name Label, round, per hundred,	. . . . .	. . . . .	10
	Adhesive Name Label, oval, per hundred,	. . . . .	. . . . .	20
	Backs or Fronts, if with holes punched, per hundred, extra,	. . . . .	. . . . .	25

OPAQUE ANATOMICAL INJECTED SPECIMENS. \$1.

Fœtal Human Preparations.

Intestine, outer and inner surface.
 Kidney, (also transparent).
 Stomach, surface and section.
 Spinal Cord, trans. sec., transparent.

Adult Human Preparations.

Adipose Tissue.
 Bladder.
 Buccal Membrane.
 Eye, Choroid Membrane.
 Eye, Ciliary Processes. \$2 00.
 Intestine, small and large, surface.
 Do. do. section.
 Stomach, section and surface.
 Kidney, Tubuli, urinifera.
 Do. Veins.
 Do. Malpighian bodies.
 Liver, two colors.
 Lung, opaque and transparent.
 Muscle, Voluntary and Involuntary.
 Mesentery.
 Mucous Membrane.
 Peyer's Glands.
 Placenta.
 Solitary Gland.
 Synovial Membrane.
 Skin, Palm of Hand, surface.
 Do. Foot, showing perspiration ducts.
 Do. Back of Hand. with hairs.
 Tongue, section.
 TRANSPARENT INJECTIONS, see p. 62.

Morbid Structures. 75 cents.

Cancer Cells, Encephaloid and others.
 Fatty degeneration of Heart.
 Do. do. Liver
 Fungoid Liver.
 Fungus, Achorion Schœnbeni, \$1 00.
 Do. Its effect on the hair, 1 00.

The following are Injected. \$1 00.

Lung, tubercular deposits.
 Do. Asthma.
 Do. Emphysema.
 Do. Pneumonia, 1st stage.
 Do. do. 2nd stage.
 Bright's Kidney.
 Skin, Papilloma.
 Eye, Cataract of Crystalline Lens and de-
 generation of Cortical fibre. \$2 50.

Frequent Additions to the above.

From the Lower Animals.

Lung of Boa Constrictor.
 Do. Fowl, Rabbit.
 Do. Frog, Toad.
 Do. Cat, two colors
 Kidney of Toad.
 Do. Giraffe.
 Do. Dolphin.
 Do. Sheep.
 Do. Lion.
 Do. Rhinoceros.
 Intestines of Ostrich.
 Do. Snake.
 Do. Monkey.
 Do. Toad.
 Do. Cockatoo
 Do. Horse.
 Do. Dog, Frog.
 Muscle of Guinea Pig.
 Do. Wing of Pigeon.
 Ova of Toad.
 Oviduct of Toad.
 Bladder of Toad.
 Cloacca of Toad.
 Palate of Toad.
 Poison glands of Toad.
 Palate of Frog.
 Pad of Cat's Foot.
 Do. Lion's Foot.
 Do. Panther's Foot.
 Stomach of Dog.
 Do. Toad.
 Do. Guinea Pig.
 Do. Lamb.
 Do. Monkey.
 Do. Sheep.
 Do. Tortoise.

Skin of Toad.
 Do. Fowl.
 Do. Guinea Pig.
 Do. Ostrich.
 Tongue of Frog and Toad.
 Uterus of Guinea Pig.
 Web of Frog's Foot.
 Claw of Fowl.
 Oviduct of Fowl.
 Proventriculus of Fowl.
 Eye, Choroid Membrane from Ox.
 Eye, Ciliary Processes, from Ox.
 Eye, Pigment Cells, from Ox.
 Gills of Eel.
 Lip of Cat, with hair.
 Do. Monkey.
 Do. Rabbit.
 Lung of Monkey, tubercular.
 Do. Dog, distemper.

Frequent Additions to the above.

ANATOMICAL SPECIMENS. 75 cents and \$1.

The following are not Injected. 75 cts.

Trichina spiralis, Human, in the Cyst, and separated therefrom.	\$1 00.
Trichina spiralis in Pork.	\$1 50.
Head of Cysticercus from Hare.	
Fluke from Liver of Sheep.	\$2 00.
Sarcina ventriculi, Human.	
Echinococci from Cyst, and Ova.	
Pro-glottis of Tœnia solium, with sexual organs.	
Anguillula from Toad.	
Tœnia from Thrush.	
Ascaris from Dog and Fowl.	
Filaria from Rabbit and Fish.	
Fasciola hepatica.	

INTESTINAL WORMS FROM HORSE :

Trichocephalus crenatus.
Spiroptere megastome.
Sclerostoma equinum.
Entozoa from Cuttle-fish
Ova of Tœnia from Dog.

FOR MORBID STRUCTURES, see p. 61.

Urinary Deposits. 75 cts. and \$1 00.

Twelve to twenty-four Specimens can be supplied, and, in addition to the more usual crystalline forms, some of the specialit es in cases of chronic and acute disease.

BLOOD DISCS (TYPICAL)—

Mammalia, from Man.
Carnivora—Cat.
Ruminantia—Sheep.
Rodentia—Mouse.
Insectivora—Hedgehog.
Birds—Canary, Passenger Pigeon.
Reptilia—Snake, Slow-worm.
Amphibia—Frog, Toad, Triton.
Cartilaginous Fish—Sturgeon.
Osseous Fish—Salmon.

PIGMENT CELLS showing the deposit of coloring matter in

Skin of African Negro, Sole, Triton, Frog, Toad, Snake. Sepia pigment in Cuttle-fish.
Eye of Ox.
Tail of Shrimp.
Hair of Ornithorhynchus paradoxus.
Pigmentum Nigrum of Human Eye.

SPERMATOOZA from Man, Bird, Boar, Elephant, Fish, Mouse, Dog, Horse, Rat, Rabbit, Hare.

GERMAN ANATOMICAL INJECTIONS.

Transparent Injections. \$1.

From the Human Frame.

Brain, Cerebrum and Cerebellum.
Eye lid, Upper.
Kidney, Fetal and Adult. 2 colours.
Large and Small Intestines. \$1 50.
Lung, healthy and diseased.
Liver. 2 colours.
Skin of Cheek and Chin.
Scalp Section with Hair Roots.
Skin of Hand (Section.)
Tongue showing Papillæ.
Voluntary Muscle, Arteries injected.

From the Lower Animals.

Bursa fabricus from Owl.
Eye, choroid from Cat.
Eye, Ciliary processes from Horse.
Eye, Cornea and Iris from Stag.
Optic Nerve, Calf, vert. & trans. \$1 50
Retina from Calf, Cat, and Rat. \$1 50
Cerebrum and Cerebellum of Cat.
Ear of Mouse.
Medulla Oblongata of Rabbit, Rat.
Gills of Eel.
Large and Small Intestines of Cat, Rat, Pig, Goat, Mouse, and Ourang Outang.
Intestinal Canal of Snake.
Pleum of Hare.
Stomach of Carp, Mouse.
Glandular Stomach of Goose and Stork.
Esophagus of Goose.
Oviduct of Hen. \$1 50.
Kidney of Cat, Marmot, Snake, and Bat.
Lung of Goose and Snake.
Liver of Marmot and Bat
Nose of Mole. \$1 50.
Nose of Mouse
Skin of Horse, vert. and trans. section.
Muscle of Pig.
Spleen of Guinea Pig.
Supra-renal Capsule of Cat.
Do. do. Guinea Pig.
Tongue of Cat, \$1 00. Large, \$1 50.
Do. Antelope.
Do. Goat, Gull, Pig, and Rat.
Urinary Bladder of Cat and Goat.
Embryo of Pig and Sheep. \$2 50.

OPAQUE INJECTIONS, see p. 61.

ANIMAL SUBSTANCES AND ORGANS. 75 cents.

Human Cartilage from Sternum.
 Do. do. Fœtal.
 Cellular Cartilage in ear of Bat.
 Human Tendon (section.)
 Do. Muscular Fibre, voluntary.
 Do. do. do. involuntary.
 Do. do. do. Fœtal, vol.
 Do. White Fibrous Tissue.
 Do. Yellow Elastic.
 Do. Adipose Tissue.
 Striated Ligamentum nuchæ from neck
 of Giraffe.

MUSCULAR FIBRE (VOLUNTARY)—

Mammal—Man.
 Bird—Pigeon.
 Insect—Blowfly.
 Reptile—Salamander.
 Fish—Lepidosiren.

**ULTIMATE FIBROUS STRUCTURE in Crystal-
 line Lens, Eye of Man.**

Crystalline Lens, Eye of Frog, Shark.
 Scalp of African Negro, superficial view
 showing the insertion of hair in tufts.
 Also vertical section with the curling
 of hair at the roots.

Section of Leather, Calf.
 Do. Tanned Skin of Hippotamus.

FEATHERS, TRANSPARENT—

From Emeu, Goldfinch.
 Do. Humming Bird, Nightingale.
 Do. Rifle Bird, Australia.

**BARBS OF FIBRILS OF FEATHERS TYPICAL OF
 STRUCTURE—**

From Wing of Condor, Owl.
 Do. Emeu, Ostrich.
 Down from the Eider Duck, showing tran-
 sition from Down to Feather.

Scales of Fish.

Cycloid, Carp and Eel.
 Ctenoid, Perch and Sole.
 Ganoid, Lepidosteus, and Section.
 do. Sturgeon (section).
 Placoid, Dog Fish, Shark.
 Epidermis of Saw of Sawfish.

Spines of Echinodermata.

Acrocladia trigonaria.
 Cidaris metulariæ.
 Diadema Savignyi.
 Echinus esculentes, and lividæ.

Echinothrix Petersii.
 Echinocidaris purpurescens.
 Echinometra lucunter.

HAIRS (SUPERFICIAL VIEW)—

From African Squirrel.
 Do. Albino Mole.
 Do. English Mole.
 Do. Beaver (felting surface).
 Do. Bat, Australian.
 Do. Bat, Indian.
 Do. Bat, British.
 Do. Caterpillar of Tiger Moth.
 Do. do. Vapor Moth.
 Do. Bird-catching Spider.
 Do. Mouse, Brown.
 Do. Mouse, Shrew.
 Do. Mouse, White.
 Do. Mole.
 Do. Ornithorhynchus paradoxus.
 Do. Ringtailed Monkey.
 Do. Spider ditto.
 Do. Rein Deer (body) cellular.
 Do. do. (legs) bristly.
 Do. Russian Sable.
 Do. Rat.
 Do. Wild Rabbit.
 Do. Squirrel.
 Do. Sea Mouse.
 Do. Seal, Falkland Islands.
 Do. Sea Otter, ditto.
 Human Hair, Transverse Sections.
 Human Hair Surface, various kinds.
 Do. do. beard shavings.
 Do. do. bulbous roots.
 Do. do. eyebrows.
 Do. do. Albino Girl.
 Fœtal Hair Imbricated surface.

HAIRS (TRANSVERSE SECTION)—

From Ant Eater.
 Do. Peccary.
 Do. Eyelash of Whale.
 Do. Tail of Asiatic Elephant.
 Do. Tail of African Elephant.
 Do. Tail of Giraffe.
 Do. Tail of Hippotamus.
 Do. Tail of Rhinoceros.
 Do. Tail of Siberian Mammoth.
 Do. Whisker of Wild Cat.
 Do. Whisker of Lioness.
 Do. Whisker of Walrus.
 Palate of Garden Snail, *Helix aspersa*.
 Do. Cellar Slug. *Sepia*.
 Do. *Doris bilamelata* and *tuberculata*.
 Do. Chiton.
 Young Crab, 1st Stage.
 Cyclops quadracornis (Etnostraca.)
Hair and Skin for Polariscope, Page 73.

ANIMAL SUBSTANCES, BONE, TEETH, SHELL, SPICULES, &c. 75 cents and \$1.

Sections of Bone. \$1

Bone of Albatross.
Do. Armadillo.
Do. Boa Constrictor.
Do. Chimpanzee.
Do. Crocodile.*
Do. Elephant.
Do. Eagle.
Do. Flying Fish.
Do. Gorilla.
Do. Grampus.
Do. Lion.*
Do. Rhinoceros.
Do. Saw Fish.
Do. Silurus.
Do. Toad.
Do. Toad (Surinam).
Do. Turtle (fin).
Do. Walrus.
Do. Whale, &c.

Sections of Human Bones. \$1.

Clavicle (transverse).
Femur (transverse).*
Do. (vertical).*
Skull, parietal and frontal.*
Earthy Matter of Femur.
Animal do. do.
Fœtal Bone, Femur (transverse).
Do. do. (vertical).

A series of (12) slides, completely illustrating the Structure and Growth of Bone, Cartilage, &c. \$10 00.

Sections of Teeth. \$1.

From Alligator, Cat Fish.
Do. Deer, Dolphin.
Do. Dugong, Hippopotamus.
Do. Fox, Hare, Horse.
Do. Human (various).*
Do. Myliobatis, Zygobatis.
Do. Porcupine, Rhinoceros.*
Do. Rabbit, Rat, Ox.*
Do. Saw Fish, Silurus.
Do. Sheep, Shark.
Do. Sperm Whale,* Suis Gigas.
Do. Tiger, Wild Cat, Walrus.
Ossification of Pulp cavity in Tooth of Elephant.

**These may be had larger size.*

Sections of Shell.

Egg of Emeu, Cassowary.
Do Ostrich (superficial and vertical)
Do. Guinea Fowl, Goose.
Pearl Oyster (avicula margaritacea).
Haliotis splendens.
Pinna marina (vert. sec. and surface).
Crab (vertical and superficial section).
Cyprea annulus, Cerithium atratum.
Meleagrina margaritifera.
Oliva Peruviana.
Ricinula ricinus (long. sec.) \$1 25.
Mitra cucumerina (long. sec.) 1 25.
Cerithium atratum (long. sec.) 1 25.
Terebratula Australis.
Orbiculina complanata
Syderolina Spenglerii.
Foraminifers, in chalk formation (section)
Hydrophora rigida do. do.
Seriatopora hystrix do. do.
Section of White Coral. Red do.
Do. Pearls from River Tay.

Spicula from Zoophytes, &c. 75 cents.

Alyconium digitatum.
Spongilla Meyeni, Ceylon.
Do. plumosa, Bombay.
Glass Rope Sponge (Hyalonema mirabile).
Geodia Baretii. Grantia compressa.
Hymedesmia Johnsoni.
Halichondria Griffithsii.
Pachymatisma Listeri.
Tethia cranium. Tethia lyncurium.
Gemmules of Sponge Geodia.
Section of Smyrna Sponge.
British Spongilla and Spongilla Meyeni,
with Spicula in situ.
Fibres from Euplectella speciosa.
Spines of Spatangus.
Spicula of Gorgonias, various.
Ambulacral disks from Echinus.
Plates and hooks (Astrophyton Linkii).
Do. do. (Synapta digitata).
Do. do. Synapta (inhærens).
Wheel Plates, Chirodota (violacea).
Do. do. do. (inhærens).
Cutaneous plates (Holothuria edulis).
Do. do. Holothuria (floridana).
Do. do. (from Tongataboo).
Spicules of Xenia.
Do. Renilla Americanus.
Spines of Brissiopis.
Do. young Star Fish.
Star Fish.
Seven Pointed Spicules of Sponge.

TEST OBJECTS AND DIATOMACEÆ. 50 and 75 cents.

Thickness of covering glass . . . . .	.006
For 1-12th and 1-16th Objectives . . . . .	.004
For 1-20th, 1-25th, and 1-50th Objectives . . . . .	.003

The following are Mounted Dry.

GENUS PLEUROSIGMA.

Balticum, Hippocampus, quadratum, strigosum, strigilis, attenuatum, intermedium, elongatum, Spencerii, angulatum, fasciola, scalprum, macrum.

NAVICULA—Cuspidata, crassinervis.

Amician test, N. rhomboides.
 Nitzschia birostrata.
 Nitzschia sigmoidea.
 Surirella gemma.
 Hyalodiscus subtilis.
 Grammatophora marina.
 Do. subtilissima.
 Do. serpentina.
 Amphipleura pelucida.

A Series of Test Diatomaceæ arranged on one Slide. Price \$6 00.

Test Diatoms in Balsam.

PLEUROSIGMA formosum.
 Do. decorum, Hippocampus.
 Do. Balticum, strigosum.
 Do. attenuatum, strigilis.

Miscellaneous Test Objects.

SCALES of Lepisma saccharina.
 Do. Podura plumbea.
 Do. Amathusia Horsfieldi.
 Do. Tinea vestimenti.
 Do. Morpho menelaus.
 Do. Hipparchia janira.
 Do. Pontia brassica.
 Do. Pieris rapæ.
 Do. Wing of Gnat.
 Do. do. do. in Balsam.

HAIR of Indian Bat.
 Do. Australian Bat.
 Do. Indian Mouse.
 Do. Dermestes (Anthrenus).

Proboscis of Blowfly.
 Pygidium of Flea.
 Ultimate Fibrous Tissue of Muscle of Pig (Powell's Test). \$1 00.
 Disks of Deal (Dr. Carpenter's Test for Achromatism).

Ocean Telegraph Soundings.

From Indian Ocean, 2,200 Fathoms.
 Do. Red Sea, Selections.
 Do. Persian Gulf, 504 Fathoms.
 Do. Coast of Malabar, 188 Fathoms.

By Prof. Sir Wm. Thompson, F.R.S.

1856. Atlantic Ocean, 2,070 fathoms.
 1866. Do. do. 2 miles deep.

Diatomaceæ, &c., from Guano.

California. Isle of Elide.
 Old Ichaboe, 1844. New, 1860.
 Lobos de Tierra. Canary Islands.
 Saldannah Bay. Chinch Islands
 St. Helena. Lower Peruvian.
 Bolivia. New Peruvian, 1862.
 Guanapee Island. Mejillowes.

Recent Diatomaceæ from

Ormesby, Torquay, Keswick.
 Ocean Surface (Bay of Bengal).
 Brodick Bay (Isle of Arran).
 Coast of Cherbourg, Japan, Cuxhaven,
 Kiel, Corsica, St. Bees.
 Rivers Humber, Thames, Severn.

Fossil Infusorial Deposits from

Australia, Bermuda.
 Badjik (Turkey), Santa Fiore.
 Berghmehl, Lapland, and Sweden.
 Cornwallis, Nova Scotia.
 Los Angeles, California.
 Cherryfield and Monmouth, Maine.
 Perley's Meadow, South Bridgton, Maine.
 Duck Pond and French's Pond, Maine.
 Calvert County, Richmond, U. S.
 Shokoe Hill, Bangor, U.S.
 Polirschiefer Bilin, Bohemia.
 Lüneburg, Franzenbad, Eger, Bohemia.
 Linfjord, Jutland.
 Oran, Algeria.
 Maremma, Leghorn.
 Lamplugh, South Australia.
 Stonyford, River Down, Ireland.
 Med Combre, Antrim, Ireland.
 Lough Mourne, Toome Bridge, Ireland.
 Holderness, Yorkshire.
 Isle of Raasay, Scotland.
 Isle of Mull, Scotland.
 Dolgelly, North Wales.

RECENT AND FOSSIL DIATOMACEÆ. 75 Cents.

Many of these are in symmetrical groups, \$1.00, and some in larger and more elaborate forms at \$1.50 to \$2.50.

- Acnanthes brevipes*. *A. longipes*.
Actinocyclus subtilis.
Actinoptochus Barkleyi. *A. duodenarius*.
 Do. *Hallynyx*. *A. hexagonale*.
 Do. *radiatus*. *A. Ralfsii*. *A. splendens*.
 Do. *trilingulatus*. *A. undulatus*.
Amphitetras antedeldiviana. *A. nobilis*.
 Do. *ornatus*. *A. producta*.
 Do. *trilingulatus*.
Amphiprora pulchra.
Amphora ovalis.
Arachnoidiscus Ehrenbergii. *A. elegans*.
 Do. *Indicus*. *A. Japonicus*.
 Do. *ornatus*.
Asterolampra affinis. *A. ambigua*.
 Do. *Brightwelliana*. *A. Marylandica*.
 Do. *concinna*. *A. marginata*.
 Do. *decora*. *A. Ralfsiana*.
 Do. *Rylandsiana*. *A. spatangidium*.
 Do. *stella*. *A. vulgaris*.
Asteromphalus arachne. *A. Brookei*.
 Do. *Moronensis*. *A. Ralfsianus*.
 Do. *Roperianus*.
Aulacodiscus angulatus. *A. Comberi*.
 Do. *crux*. *A. formosus*.
 Do. *Kittonii*. *A. Margaritaceus*.
 Do. *oreganus*. *A. Petersi*.
 Do. *radiatus*. *A. scaber*.
Auliscus elaboratus. *A. cœlatus*.
 Do. *obscurus*. *A. ovalis*. *A. punctatus*.
 Do. *sculptus*. *A. Peruvianus*.
Biddulphia aurita. *B. pulchella*.
 Do. *lævis*. *B. obtusa*.
 Do. *regina*. *B. reticulata*.
 Do. *robusta*. *B. (New)*, not named.
Brightwellia Johnsonii.
Campylodiscus clypeus. *C. costatus*.
 Do. *Kittonianus*. *C. limbatus*.
 Do. *spiralis*.
Cerataulus turgida.
Chatoceros didymum.
Colletonema neglecta.
Cocconeis Gregoriana. *C. regalis*. *C. splendida*.
Cocconeis cistula. *C. lanceolata*. *C. parvum*.
Coscinodiscus centralis. *C. concavus*. *C. elegans*.
 Do. *ellipticus*. *C. gigas*. *C. New species*.
 Do. *oblongus*. *C. oculus iridis*.
 Do. *ovalis*. *C. radiatus*.
 Do. *symmetricus*. *C. lineætus*.
Craspedodiscus coscinodiscus. *C. elegans*.
Creswellia ferox. *C. superba*. *C. turris*.
Cyclotella astrea. *C. rotula*.
Cymbella Ehrenbergii. *C. gasteroides*.
Cymatopleura elliptica. *C. solea*.
Diatoma grande. *D. vulgare*.
Dicladia capreolus.
Donkinia carinata and *minuta*.
Doriphora Boekii.
Epithemia glabra. *E. granulata*. *E. turgida*.
Endyctia oceanica.
Encyonema paradoxum.
Eupodiscus Argus. *E. Jonesianus*.
 Do. *Hardmanianus*. *E. radiatus*.
 Do. *Rogersii*.
Euphyllodium spathulatum.
Fragillaria capucina. *F. virescens*.
Gephyria incurvata.
Glyphodiscus stellatus.
Gomphonema geminatum. *G. olivata*.
Heliopelta Euleri. *H. Leuwenhoekii*.
 Do. *metli*. *H. Seegeri*.
Hemidiscus cuneiformis.
Himantidium pectinale.
Homeocladia Martiniana.
Hemiaulus alatus. *H. polycystinus*.
Hydrosera triquetra.
Isthmia enervis. *I. nervosa*.
 Do. *(New)*, not named.
Licmophora splendida.
Meridion circulare.
Mastogloia Grevillii.
Melosira radians. *M. varians*.
Navicula Amphibœna. *N. clepsydra*.
 Do. *convexa*. *N. didyma*. *N. elliptica*.
 Do. *Entomon*. *N. firma*. *N. formosa*.
 Do. *granulata*. *N. Jennerii*.
 Do. *Kennedyi*. *N. lyra*.
 Do. *Northumbrica*. *N. maxima*.
 Do. *pretexata*. *N. quadrata*. *N. serians*.
 Do. *spectabilis*. *N. splendida*.
 Do. *Smithii*. *N. virgata*.
Nitzschia insignis. *N. obliqua*.
 Do. *panduriformis*. *N. scalaris*.
 Do. *sigmoldea*. *N. sigma*. *N. vivax*.
Odontidium Harrisoni. *O. mesodon*.
Omphalopelta cellulosa. *O. versicolor*.
Orthosira arenaria.
Pinnularia alpina. *P. Johnsonii*. *P. lata*.
 Do. *major*. *P. nobilis*. *P. oblonga*.
 Do. *viridis*.
Polymyxis coronatis.
Porodiscus elegans.
Pyxidicula cruciata.
Rhabdonema Adriatica. *R. arcuatum*.
Rylandsia biradiata.
Schizonema Grevillii.
Seriato-phora hystix.
Sollum exculptum.
Stauroneis acuta. *S. Phœnicenteron*.
 Do. *pulchella*.
Stephanogonia Danica.
Stictodiscus Californicus.
Surirella biseriata. *S. constricta*. *S. fastuosa*.
 Do. *minuta*. *S. nobilis*. *S. ovalis*.
 Do. *Slesvicensis*. *S. splendida*.
Symbolophora trinitatis.
Syndendrium diadema.
Synedra capitata. *S. crystallina*. *S. radians*.
 Do. *robusta*. *S. splendens*.
 Do. *superba*. *S. undulata*.
Tabellaria fenestrata.
Terpsinoe musica.
Toxinidea Gregoriana.
Triceratium arcticum. *T. armatum*.
 Do. *brachiatum*. *T. coniferum*.
 Do. *cinnamomeum*. *T. favus*.
 Do. *fimbriatum*. *T. grande*.
 Do. *megastomum*. *T. Marylandica*.
 Do. *Monteryl*. *T. orbiculatum*.
 Do. *parallelum*. *T. serratum*.
 Do. *spicatum*. *T. striolatum*.
 Do. *subcapitatum*. *T. variable*.
 Do. *Zonatulatum*. *T. New species*.
Trinacria excavata. *T. regina*.

FOSSIL, WOOD, BONE, COAL.

\$0 75 and \$1 00.

Fossil Substances.

Sections of Teeth of Shark, &c.
(vertical and transverse).
Bones and Teeth of Fish in situ from
Northumberland Coal Shale.
Coprolites, from Lyme Regis.

Section of Coal.

Transverse, Vertical, and Radial.
Derbyshire, Newcastle, Yorkshire, Scot-
land, China, Australia, America, Hera-
clea on the Black Sea, Tertiary Coal,
Bovey Tracey.
Cannel or Parrot Coal.
Torbane Hill Coal, from which Young's
Paraffin Oil is made.
Sections of Jet (Whitby).
The above, very large size, \$2.50.

FOSSIL BONE OF MAN (Guadaloupe).
Do. Mastadon. Irish Elk.
Do. Crocodile.—Dugong.
Do. Ichthyosaurus.—
Iguanodon.
Do. Pterdactyl.—Whale.
Do. Dinornis giganteus,
New Zealand.

Sections of Fossil Wood.

Endogens from Antigua, &c.
Palm, vertical and transverse.
Palm, from West Indies and Ceylon.
Fern, stem, and root.
Conifers and Exogens from Derbyshire,
Portland, Lough Neagh. Unknown
forms from Lancashire Coal.
Fibrous Fossil Wood, Egypt.
Opalized Wood, Tasmania.
Fossil Sponge.
Fossil Coral, *Acervularia pentagona*.
Pentacrinus basaltiformis.

Shells.

FORAMINIFERA, Adriatic Sea.
Do. Bay of Bengal.
Do. The Levant.
Do. The River Nene.
POLYCYSTINA, Barbadoes, various.
Do. Island of Nicobar.
Do. do. Bermuda.

GEOLOGICAL SPECIMENS.

\$0 75 and \$1 00.

See also those at pages 72 and 74.

Moss Agates, various.
Basalt—Giant's Causeway.
Do. Fingal's Cave.
Do. Staffordshire.
Carbonate of Lime. Stalactite.
Flint, with various organic remains, Spi-
cules, Sponges, Corals, Xanthidia (or
Sporangia), and Shells.

GRANITE from Aberdeen.
Do. Peterhead.
Do. Killiney, Ireland.
Do. Guernsey.
Do. "Greenland's Icy Mountains."
Do. Cornwall, Cheesewring.
Do. Greywacke from Labrador.
Syenite from Mount Sorrel.
Do. Sarcophagus in Gt. Pyramid.
Limestone, Nummulitic—foundation of the
Great Egyptian Pyramid.
Limestone, St. Vincent's Rock.

LIMESTONE, Magnesian, Dudley.
Do. Mountain, Scotland.
Do. Upper Silurian, Dudley.
Do. Oolitic, Clifton and Bath.
Do. Encrinital Marble.
Do. Foundation Stone of Old
Blackfriars Bridge.
Do. Himalaya Mountains.
Do. Lyme Regis and Portland.
Do. Niagara Falls.

Many of the above contain interesting or-
ganisms—Foraminifera, Echini, Shells,
Coral, Spicules, Nummulites, &c., &c.
Lapis lazuli. Lepidolite.
Madrepores, various, Torquay.
Black Marble.
Encrinital Marble, Derbyshire.
Marble, Carrara, Temple of Ephesus.
Green Malachite from Russia.
Blue Malachite from Australia.
New Red Sandstone, Cumberland.
Old Red Sandstone, Scotland.
Pitch Stone, Isle of Arran.
Red Porphyry, Egypt.
Brown Porphyry, Sweden.
Heliotrope, Blood Stone.
Sun Stone.
Serpentine, Red and Green.
Water Cells in Quartz Rocks from Nor-
way and Mount Blanc.
Various Organisms from the Chalk, Chalk
Marl and Gault.

MICRO-PHOTOGRAPHS. 75 cents and \$1.

200 Kings and Queens of England.
 Her Majesty Queen Victoria.
 The late Prince Consort.
 The Royal Family, 1861.
 The Prince and Princess of Wales.
 Napoleon III. and Eugenie.
 Shakespeare.
 General Garibaldi.
 Right Hon. W. E. Gladstone.
 John Bright, Esq., M.P.
 Charles Dickens.
 Sir John Herschell.
 The Lord's Prayer Illuminated.
 The Creed Illuminated.
 The Ten Commandments Illuminated.
 The whole of the Sermon on the Mount,
 Matt. ch. v., vi., vii.
 The Crucifixion, Michael Angelo.
 The Descent, José Bellver, Madrid.
 Christ Blessing Little Children.
 Rebecca and Laban.
 The Fall of Nineveh, Martin.
 Belshazzar's Feast, Martin.
 Passage of the Red Sea, Martin.
 The Great Day of His Wrath, Martin.
 The Great Pyramid and Sphinx.
 Hindoo Mosque, A. D. 1469.
 Statue of Buddha, Japan.
 Notre Dame Cathedral, Paris.
 Milan Cathedral.
 View of Rome.
 The Falls of Niagara.
 Fingal's Cave (Staffa).
 The Giant's Causeway.
 Tintern Abbey.
 Fountain's Abbey.
 Melrose Abbey.
 York Minster.
 Canterbury Cathedral, interior.
 Windsor Castle.
 Osborne House.
 Balmoral.
 Sir Walter Scott's Monument.
 St. Paul's Cathedral.

The Houses of Parliament.
 The Crystal Palace and Fountains.
 Trafalgar Square,
 Moonlight at Sea.
 Great Eastern Steamship.
 American River Steamship.
 £1,000 Bank of England Note.
 The Times Newspaper, 12,500 words.
 Title Page of Punch.
 Map of Europe.
 The Marriage of Her Majesty.
 Mrs. Fry reading the Scriptures to the
 Prisoners in Newgate
 Uncle Tom and Eva.
 The Play Scene in Hamlet.
 The Death of Lord Nelson.
 The Dame School.
 Happy as a King.
 The Afternoon Nap.
 The Village School in Uproar
 The Blind Fiddler.
 Laying Down the Law.
 Bolton Abbey in Olden Time.
 The Derby Day, W. P. Frith, R. A.
 The Railway Station, do.
 Life at the Sea Side, do.
 The South Sea Bubble.
 The Horse Fair, Mdlle. Rosa Bonheur.
 The Moon, Crescent and Full.
 The Planet Saturn, Rings, &c.
 The Planet Jupiter, Belts, Moons, &c.
 Statue—Sabrina. Ariadne.
 Franklin's Letter to Strahan.
 Declaration of Independence.
 Ticket to Heaven.
 Eminent Women—105 portraits
 Eminent Men—115 portraits.
 Going with the Stream.
 Going against the Stream.
 The Origin of Music.
 "Oh!"
 "May and December."
 "Did you Ring?"
 "Sherry, Sir?"

PARASITIC INSECTS, ACARI, &c. 75 cents and \$1.

Parasites from Vampire, Bat, Canary,
 Curlew, Crow, Dog, Fowl, Eagle, Gull,
 Hedgehog, House Fly, Bee, Horse, Mole,
 Ox, Passenger Pigeon, Rook, Starling,
 Fern, Turkey, Water Rat, Sole, &c.
 Flea from Bat, Cat, Dog, Fowl, Pigeon,
 Mole, Squirrel, Hedgehog.
 Acarus from Cheese and Meal.
 Acarus from Sugar and Ergot of Rye.
 Human Associates—
 Flea (sexes), Pulex irritans.

Bed Bug, Cimex lectularius.
 Acarus of Itch, Sarcoptes scabiei. \$1 50.
 The same, with Male, Female and Larva,
 on one slide, \$2.56.
 Face Insect, Desmodex folliculorum.
 Crab Louse, Pediculus pubis. 1 25.
 Body Louse, P. vestimentis. 1 25.
 Head Louse (sexes), P. capitis.
 Harvest Bug, Trombidium. 1 25.

The sexes of the above may be had.

WHOLE INSECTS. 75 cents to \$3.

Flies and their Allies

- Aphis rosæ, and others.
 Ant, Formica rufa, and others.
 Blossom Fly, Anthomyia pluvialis.
 Bronze Fly, Pachygaster ater.
 Biting Field Fly, Stomoxys calcitrans.
 Black-tip Fly, Ortalis vibrans.
 Cattle Fly, Musca corvina.
 Corn Fly, Empis livida.
 Crane Fly, Tipula oleracea. \$1 50.
 Dung Fly, Scatophaga merdana.
 Drone Fly, Helophilus pendulus.
 Flirt Fly, Sepsis punctum.
 Fantail Fly, Dolichopus Æneus.
 Fungus, Mycetophila.
 Gnat, Culex pipiens, Sexes (Male).
 Do. Window, Rhyphus fenestralis.
 Do. Ringed, Culex annulatus.
 Do. Plumed, Chironomus plumosa.
 Do. Winter, Trichocera hiemalis.
 Do. Wood, Sciara brunipes.
 Do. Short Legs, Micropeza corrigiolata.
 Grass Fly, Opomyza germinationis.
 Hairy Fly, Bibio Marci.
 Hawk Fly, Dioctria rufipes.
 Herbage Fly, Platypalpus fasciatus.
 His Grace, Calobata petronella.
 House Fly, Musca domestica.
 Ichneumon Fly, Ophion luteum. \$1 50.
 Lace Wing, Chrysopa perla. \$2 00.
 Leaf Insect, Phyllophorella acerina.
 Mayflower Fly, Dilophus.
 Merrydancer, Hilara maura.
 Mosquito, Culex Mosquito Australis.
 Mosquito, Jamaica, Labrador, &c.
 Midge, Psychoda.
 Mud Fly, Borborus longipennis.
 Marsh Fly, Tetanocera aratoria.
 Marsh Crane Fly, Phycoptera.
 Nettle Fly, Platystoma seminatiois.
 Pearl Fly, Sialis lutarius.
 Scorpion Fly, Panorpa communis. \$1 50.
 Shadow Watcher, Syritta pipiens.
 Snipe Fly, Leptis scolopacea.
 Snout Fly, Rhingia campestris.
 Saw Fly, Allantus scolopacea. \$1 25.
 Thistle Beetle, Crepidodera ferruginea.
 Thrips, Phlæothrips coriaceus.
 Vinegar Fly, Drosophila cellaris.
 Unicorn Fly, Odontocera denticornis.
 Wasp Fly, Syrphus ribesii.
 Window Fly, Phora.

Bugs, Beetles, &c.

- Corn Bug, Miris.
 Cuckoo Spit, Aphrophora spumaria.
 Collared Florist. Anthobium torquatum.
 Cardinal Beetle, Pyrochroa rubens.
 Earwig, Forficula auricularia.
 Frog Hopper, Amblycephalus viridis.
 Grass Hopper, Locusta viridis.
 Glow-worm, Lampyrus noctiluca.
 Grass Flea, Thyamis femoralis.
 Lady Bird, Coccinella variabilis, &c.
 Parsnip Beetle, Anaspis melanopa.
 Pond Beetle, Lactophilus minutus.
 Mud Beetle, Hyphydrus ovatus.
 Marsh Flea, Delphax lineata.
 Raspberry Beetle.
 Soldier Beetle, Telephorus.
 Sailor Beetle, Halipus lineatocollis.
 Thistle Beetle, Crepidodera ferruginea.
 Wood Beetle, Leptura levis.
 Water Beetle, Hygrotus elegans.
 Water Bug, Corixa fossarum.
 Water Boatman, Notonecta glauca.
 Water Scorpion, Nepa cinerea.
 Pond Skater, Gerris lacustris.
 Ditch Skater, Velia rivolorum.
 Gyrinus natator.

Spiders.

- Bush Spider.
 Garden Spider, Epeira diadema. \$3 00.
 Ground Spider, Lycosa agrestica.
 House Spider, Aranea labyrinthica.
 Harvest Spider, Phalangium cornutum.
 Hunting Spider, Drassus luciferus.
 Shepherd Spider, Opilio.
 Water Spider, Argyroneta aquatica.
 Water Wolf, Lycosa aquatica.

Larvæ and Pupæ.

- Pupa of Water Boatman.
 Do. Scorpion.
 Larva of Dragon Fly, Agrion.
 Do. of Water Beetle.
 Do. and Pupa of Gnat. \$1 25.
 Do. Flea, House and Blow Fly.
 Do. Bot Fly in Egg, on hair.
 Do. Staphylinus, Devil's Coach-horse.
 Do. Lady Bird, Coccinella.
 Wire Worm.
 Centipede, Lithobius forcipatus.
 Millipede, Geophilus electricus.
 Skin of Caterpillar, many species.
 Do. Silkworm, Bombyx mori.
 Earth Mite, Trombidium.

Our assortment of the above, as of all other Whole Insects, is constantly changing with frequent additions.

PARTS OF INSECTS. 50 and 75 cents.

- ANTENNÆ of Cockchafer, sexes.
Do. House Fly, and Blow Fly.
Do. Moths, Gnat, sexes.
- HEAD of Butterflies and Moths.
Do. Crane Fly, Gnat.
Do. Mosquito (Lancets).
- EYE, showing facets, transparent.
EYE, Cockchafer.
EYE, Crane Fly.
EYE, Dragon Fly.
EYE, House Fly.
EYE, Humble Bee.
EYE, Butterfly.
EYE of Beetle, prepared to show multiplied images reflected from facets of Cornea.
See also Opaque, Page 71.
- GIZZARD of Dytiscus.
Do. Cricket.
- STOMACH of Beetle.
Do. Blow Fly.
- FOOT of Caterpillar.
- LEG and FOOT of Blow Fly.
Do. Drone Fly.
Do. Dung Fly.
Do. Dytiscus.
Do. Frog Hopper.
Do. Gyrinus.
Do. Honey Bee.
Do. Hawk Fly.
Do. Hornet.
Do. Ophion.
Do. Pearl Fly.
Do. Saw Fly.
Do. Spiders, various.
Do. Wasp.
- MOUTH and JAWS of Wasp.
Do. Spiders.
- FEATHERED OAR of Corixa.
Do. do. Dytiscus.
- EXPANDING PADDLE, Gyrinus.
- LANCETS of Flea.
Do. Bed Bug.
Do. Gad Fly.
Do. Mosquito.
Do. Gnat.
- OVIPOSITOR of Cuckoo Spit.
Do. Crane Fly.
Do. Blow Fly.
Do. Drone Fly.
Do. Dragon Fly.
Do. Saw Fly.
Do. Frog Hopper.
Do. Corn Bug.
- PROBOSCIS or TONGUE—
Do. Butterfly and Moth.
Do. Honey Bee, Humble Bee.
Do. Blow Fly, House Fly.
Do. Cricket, Hawk Fly.
Do. Drone Fly, Rhingia.
- REPRODUCTIVE ORGANS, Male Wasp.
Do. Do. Hornet.
- SCALES from WINGS of—
Death's Head Moth.
Oak Egger. Cloth Moth.
Paris Butterfly. Fritillary.
Giant Silk Moth, Japan, and many others.
See also Test Scales, page 65.
- SPINNERET of Silkworm.
Do. Garden Spider.
- SKIN of Caterpillar.
Do. Chrysalis.
Do. Silkworm.
Do. Garden Spider.
- SPIRACLES of Blow Fly.
Do. Drone Fly.
Do. Cockchafer.
Do. Dytiscus.
Do. Privet Caterpillar.
- STING of Bee. Hornet. Wasp.
Do. With poison gland. \$1 50.
- TAIL of Dolichopus Æneus.
- TRACHEÆ of Silkworm.
Do. Blow Fly.
Do. And ultimate ramifications in stomach of Bee. \$1 00.
Do. In nerves of Caterpillar. 1 00.
Do. Intestines of Blow Fly.
- HALTERES of Crane Fly. Rhingia.
Do. Drone Fly. Blow Fly.
- WINGS of Bee, with hooklets.
Do. Hornet, do.
Do. Wasp, do.
Do. Blow Fly.
Do. Butterflies, various
Do. Moths, do.
Do. Mosquitos.
- ELYTRON of Corixa fossarum.
Do. Water Beetles, various.
- WINGLET of Blow Fly.
Anatomy of the Blow Fly, 12 Slides in a box, \$7.50.

OPAQUE AND BINOCULAR OBJECTS. 75 cts. and \$1.

Diatomaceæ on Sea Weed, in situ.
 Gemmules of Sponge.
 Hairs of Peccary, sections.
 Isthmia nervosa and enervis.
 Orthosira arenaria.
 Shell of Orbitolite.
 Spines and Shell of Spatangus.
 Spicules of Gorgonias.
 Young Oysters.
 Ophiura texturata. \$1 50.
 Ophiocoma rosula. \$1 50.
FEATHERS of Humming Birds.
 Do. Love Bird. Peacock.
 Do. Rifle Bird, Australia.
SKIN of Sole—
 From Belly and Back.
 Do. Dogfish. White Shark.
 Brittle Starfish, Ophiocoma neglecta.
 Sun Starfish, Solaster papposa. \$2 00.
 Bones of Ophiocoma rosula.
 Pedicellaria of Echinus sphaera.
 Do. Echinus esculentus.
 Do. Uraster rubens.
 Spines of Palmipes membranaceus.
 Sponge with Spicules, in situ.
 Spider Crab, Stenorhynchus phalangium.
 Mantis Shrimp.

Polyzoa, Corallines, &c.

Anguinaria spatulata.
 Bicellaria ciliata. B. grandis.
 Bugula avicularia.
 Catenicella plagiostoma.
 Cellularia avicularis.
 Crisea eburnea. Flustra foliacea.
 Membranipora pilosa.
 Notamia bursaria.
 Sertularia operculata.

Whole Insects, &c.

Tingis arcuata.
 Beetles and Weevils, various.
 Cicada from Maryland,
 Gall Fly, Typhlorhiza uloni.
 Asparagus Beetle. House Fly.
 British Diamond Beetle.
 Eggs of Insects, various.
 Do. Parasite of Pigeon.
 Do. do. Hornbill.
 Do. and Larvæ of Oak Egger.
 Eyes showing facets, from Beetle, House
 Fly, Butterfly, Moth.
 Facets and Ocelli in Wasp.
 Do. do. Dragon Fly.
 Eyes of Garden Spider.
 Aphid pierced by Ichneumon Fly.

Legs of Dytiscus marginalis.
HEADS and Parts of Beetles.
 Cyphus germari.
 Cicindela sylvatica.
 Eustales adamantinis.
 Chrysolophus.
 Curculio imperialis.
 Eupholus.
 Hypomeces squamosus.
 Golden girdle.
 Exuvium of Myriapoda, Polyxenus.
Wing of Magpie Moth.
 Do. Butterfly. Azure Blue.
 Do. Cloth Moth. Vapourer.
 Do. Alexis. Clouded Yellow.
 Do. Fritillary. Morphomenelaus.
 Do. Paris. Peacock. Copper.
 Do. Tortoiseshell. Red Admiral.

PALATE of Haliotis tuberculata.
 Do. Limpet, Patella vulgaris.
 Do. Periwinkle, Littorina littoralis.
 Do. Trochus zizyphinus.
 Do. Whelk, Buccinum undatum.
 Do. Gizzard of Cricket.

FORAMINIFERA—from Adriatic Sea, Bay of
 Bengal, Levant, River Nene.
 Polycystina, Barbadoes, various
 Fossil Infusoria.

Transparent at page 67.

Opaque Objects,

*Mounted expressly for Binocular and Lieber-
 kuhn Symmetrical Groups, \$1 to \$15.*

Arachnoidiscus Ehrenbergii.
 Actinosphaeria splendens.
 Aulacodiscus radiatus.
 Actinoptychus undulatus.
 Biddulphia pulchella.
 Campylo-discus costatus.
 Coscinodiscus radiatus.
 Foraminifera, various.
 Heliopelta metii.
 Isthmia nervosa and enervis.
 Pinnularia major.
 Pleurosigma formosum.
 P. Balticum. P. Hippocampus.
 P. Decorum. P. Angulatum.
 Triceratium favus.
 Polycystina, various.
 Haliomma Humboldtii.
 Astromma Aristotelis.

These may be had Transparent.

OPAQUE AND BINOCULAR OBJECTS. 50 and 75 cents.

Opaque Minerals, &c.

- Avanturine (artificial.)
Antimony, Needle form.
Do. Red, Oxy-sulphuret.
Crystals of Berberine.
Bismuth. Sulphuret of Iron
CRYSTALLINE Oxide of Lead.
Do. Lead, Ore, Galena.
Do. Titanium, Indigo.
Do. Lava from Mt. Vesuvius.
Do. Silver, Electro deposit.
Decomposed Glass from Pompeii.
Peacock and Ruby Copper.
Fibrous or Moss Copper.
Specula Iron from Elba.
Gold Nuggets, California.
Gold Dust, British Columbia.
Gold Sand with Quartz, Australia.
Gold Leaf transmitting Green Light.
Hypersthène. Sun Stone.
Iridescent Oxide of Lead.
Iridium.
Ores of various Metals.
Picrotoxine.
Tooth of Myliobatis and Zylobatis.
Gill of Sword Fish.
Ivory Turnings.

Vegetable.

- LEAF of Deutzia. Nettle, with Stings.
Do. Elæagnus, Onosma taurica.
Do. Alyssum Olympicum.
Skeleton Leaf of Box Tree.
SECTION of Leaf of Orchid.
Do. Stem of Clematis.
Do. do. Sugar Cane.
Do. Shell of Mexican Gourd.
Do. Pith of Rice Paper Plant.
SEEDS of Antirrhinum. Dandelion. Garden Poppy. Henbane. Lobel's. Catch-fly. Orchis. Portulaca. Petunia.
Paulownia imperialis. Eccremocarpu Scaber.
POLLEN of Hollyhock. Mallow.
Raphides from Tabaiba.
Peristomes of Mosses, various.
Funaria hygrometrica, mounted in cell for hygrometric experiment.

Fungus (Blight)

- On Leaf of Pea, Erysiphe Martii.
On Gooseberry, Æcidium grossulariæ.
On Bramble, Aregma bulbosum.
On Willow, Puccinia pulverulenta.
On Alchemilla, Uredo potentillarum.
On Thistle, Trichobasis suaveolens.
On Hop Mildew, Sphærotheca castagnei.

ALGÆ, DESMIDIACEÆ, FUNGI, &c. 75 cents.

Confervaceæ, Algæ, and Desmidiaceæ.

- Batrachospermum moniliforme.
Draparnaldea plumosum.
Zygnema, Closterium, Euastrum.
Micrasterias rotata.
Volvox globator.
Spirogyra.
Hepatica, Frullania dilatata.

Marine Algæ.

- Calithamniom, corymbosum.
Do. refractum.
Ceramium citatum.
Cladophora rupestris.
Catenicella plagiostoma.
Dasya coccinea.
Griffithsia.
Polysiphonia parasitica.
Do. fibrata.

Capsules and Spores of Mosses.

- Bryum capillare.
Dicranum scoparium.
Hypnum rutabulum.
Tortula unguiculata.
Funaria hygrometrica.

Thecæ and Spores of Ferns, &c.

- From Pteris aquilina.
From Polypodium vulgare.
From Osmunda regalis.
Platyserum alcecorne.

Fungi, Blight, Mould, Mildew, &c.

- Smut in Ear and Grain of Wheat (Ustilago segetum).
Bunt fungus in Corn grains; Uredo foetida (or Tilletia caries).
Rust or Brand on Leaf (Corn Mildew); Puccinia graminis.
Red Rust Trichobasis rubigo-vera.
Eels in Wheat, Vibrio tritici.
Timber fungus, Arcyria nutans.
Do. Stemonitis fusca.
Spiral fungus, Trichia chrysoesperma.
Star fungus, Asterosporium Hoffmannii.
Chain-Brand, Xenodochus carbonarius.
Section of Truffle.

POLARISCOPE OBJECTS. 50 cents, 75 cents, and \$1.

Animal Substances.

- PALATE of *Haliotis tuberculata*.
- Do. Limpet, *Patella vulgaris*.
- Do. *Nassa reticulata*.
- Do. Periwinkle, *Littorina littoralis*.
- Do. *Trochus zizyphinus*.
- Do. Whelk, *Buccinum undatum*.

- CLAW of Ourang Outang, Lynx.
- Do. Sloth, Lioness, Wild Cat.
- Do. Fowl, Polar Bear, Seal.

- Finger Nail—Human. Cuttings.
- Toe Nail, Transverse Section.
- Corns of Elephant.
- Do. Human.
- Foot Pad of Dromedary, Cat.

- HOOF of Antelope, Elk, Pig, Ox.
- Do. Mustang, Reindeer, Zebra.

- HORN of American Bison.
- Do. Antelope, Brahmin Bull.
- Do. African Rhinoceros.
- Do. Indian Rhinoceros.

- Quill of Porcupine.
- Whisker of Walrus.

- SPINES of HEDGEHOG.
- Do. Cat's Tongue.
- Section of Cat's Tongue, Nose and Lip.
- Bone of Cuttle Fish.

- WHALEBONE, Finland Whale.
- Do. Bottlenose.
- Do. Beluga Catodon.

- Embryo Oysters.
- Exuvium of Prawn.
- Teeth of Medicinal Leech.
- Tendon Achilles, Human.
- Tendon Ostrich.
- Leg of *Dytiscus*.
- Elytron of *Dytiscus*.

Crystallization of the Fatty Acids.

These preparations require to be warmed until the substance melts. Its crystallization may then be observed as it cools on the stage.

- Hard Acid from Human Fat.
- Do. Cotton Seed Oil.
- Margaric Acid from Olive Oil.
- Palmitic Acid from Palm Oil.
- Stearic Acid from Ruminants.

**Fine Transparent Injected Specimens.
\$1 50.**

- SECTION of Cat's Tongue.
- Do. Human Tongue.
- Do. Toe of White Mouse.

**Animal Substances (not injected).
50 cents to \$1.**

- SKIN, Human (vertical section).
- Do. Negro Scalp, with incipient Curl in Roots of Hair.
- Do. Alligator, the Nile.
- Do. Giraffe, with Hair.
- Do. Lip of Calf, with Hair.
- Do. Lip of Cat, with Hair.
- Do. Nose of Cat.
- Do. Eel, with Scales in situ.
- Do. Sole, with Scales in situ.
- Do. Synapta, Anchors in situ.

SCALES of Carp, Eel, Perch, Sole, Gudgeon, and Mullet.

- Tail of Whitebait.
- Crystals of Carbonate of Lime, in Tail of Prawn and Shrimp.

Plates from Skin of Holothuria.

- Anchors, &c. from Synapta.
- HAIR, Human, White with Age.
- Do. do. Roots and Eyebrows.
- Do. do. Shavings of Beard.
- Do. do. Albino Girl.
- Do. do. Infant.
- Do. do. Young Lady's Eyelash.

- Do. Gorilla.
- Do. Brahmin Bull.
- Do. Reindeer.
- Do. Polar Bear.
- Do. White Mouse.
- Do. Persian Cat.
- Do. Angora Goat, Mohair.
- Do. Elephant's Tail, section.

- Genuine Crinoline.
- Indian Muslin (Woven Wind).
- Pine Apple Muslin, Philippines.
- Finest French Cambric, \$10 00 per yard.

Polariscope Objects Moving in Fluid.

- Animal Substances Mixed.
- Actinolite.
- Brazilian Pebble Fragments.
- Crystalline Sulphate of Lime.
- Fibrous Sulphate of Lime.
- Rolling Stones, various.
- Young Oysters.

POLARISCOPE OBJECTS. 50 cts. to \$1.

Chemical Crystals. 50 and 75 cents.

Asparagine.
 Aspartic Acid.
 Bitartrate of Ammonia.
 Borax. Boracic Acid.
 Carbozotate of Potash.
 Carbonate of Lime, from Horse.
 Do. do. Boa Constrictor.
 Creatin. Cholesterin.
 Chlorate of Potash.
 Chloride of Barium.
 Cinchonine.
 Cinchonidine.
 Citric Acid.
 Ferri-cyanide of Potassium.
 Iodide of Potassium.
 Iodo-disulphate of Quinine.
 Murexide (Dichromatic).
 Naphthaline.
 Nitro-prusside of Sodium.
 Oxalate of Lime.
 Oxalate of Ammonia.
 Oxalate of Chromium and Potash.
 Oxalic Acid.
 Oxalurate of Ammonia.
 Platino-cyanide of Magnesia.
 Do. do. Barium.
 Do. do. Thallium.
 Plumose Quinidine.
 Quinidine. Santonine.
 Salignine. Salicine.
 Strychnine. Sugar.
 Sulphate of Cadmium.
 Do. Nickel and Potash.
 Do. Copper.
 Do. Spiral form.
 Do. Copper and Magnesia.
 Tartaric Acid.
 Thionurate of Ammonia.
 Triple Phosphate, various forms.
 Urea. Uric Acid.
 Uric Acid from Boa Constrictor.
 Wine Crystals.
 Bitartrate of Potash.

Vegetable Fibres in Balsam.

Cotton. China Grass.
 Flax from Ireland and New Zealand.
 Hemp, Russia and Manilla.
 Jute Fibre, Calcutta.
 Silk, Indian, Chinese.
 Silk, Italian, British.
 Wool, British, Australian.
 Pyroxylin (Gun Cotton).
 Shoddy Fibre.

Stones and Minerals. 75 cts. to \$1.

Actinolite. Aventurine.
 Agates, various.
 Asbestiform Serpentine.
 Carbonate of Lime.
 Carrara Marble.
 Gibraltar Rock.
 Granite, various localities.
 Labrador Felspar.
 Jasper with Amethyst
 Quartz Rock, various.
 Quartsite, Mount Blanc.
 Satin Spar. Sandstone.
 Selenites, various colors.
 Sulphate of Baryta.
 Zeolite from Giant's Causeway

Vegetable Substances.

Starch from Arrow Root.
 Do. Calabar Bean.
 Do. Colchicum autumnale.
 Do. Potato, Oats, Rice.
 Do. Sago, Palm, Tapioca.
 Do. Tous les Mois, Ginger.
 Do. Maize, Barley, Wheat.
 Section of Potato, Starch in situ.

Starches also mounted in Fluid.

CUTICLE of Leaf of *Correa cardinalis*.
 Do. do. *Deutzia scabra*.
 Do. do. *Elæagnus*.
 Do. do. *Onosma taurica*.

SILICOUS CUTICLES—

From *Araucaria imbricata*.
 Do. Bamboo Cane.
 Do. Sugar Cane.
 Do. *Equisetum arvense*.
 Do. Dutch Rush, *E. hyemale*.
 Do. Indian Corn.
 Do. Canary Seed.
 Do. Husk of Rice Grain.
 Do. Straw of Rice.
 Do. Leaf of Wheat.
 Fibro cells from *Arides roseum*.
 Do. do. *Oncidium bicallosum*.
 Scleriform vessels from Fern.
 Do. do. *Dicksonia Antarctica*.
 Spiral do. *Rhubarb*.
 Fern Scales, *Cheilanthes Eckloniana*.
 Do. *Elaphoglossum squamosum*.
 Do. *Nothochlæna maranta*.
 Do. do. *lævis*.
 Stellate Hairs from *Elæagnus*.
 Wing of Seed of *Ecchremocarpus*.

VEGETABLE PREPARATIONS. 50 cts., 75 cts. and \$1.

The number 3 indicates that Three Sections of Stems are on one Slide Transverse, Vertical, and Radial.

Arancaria excelsa, 3.
 Apple Tree, *Pyrus malus*, 3.
 Asparagus, *Asparagus officinalis*.
 Aristolochia siph.
 Do. ornithocephalus.
 Do. Japan.
 Baobab Tree, *Adansonia digitata*.
 Berberry, *Berberis vulgaris*.
 Beech, *Fagus sylvatica*, 3.
 Brake Fern, *Pteris aquilina*.
 Brava, *Cissampelos Pereira*.
 Burdock, *Arctium lappa*.
 Butcher's Broom, *Ruscus aculeatus*.
 Cane, Bamboo, 3.
 Bambusa, 3.
 Do. Malacca, *Calamus scipionum*.
 Do. Rattan, *Calamus rotang*, 3.
 Do. Sugar, *Saccharum officinarum*, 3.
 Do. Wanghae.
 Catalpa syringæfolia, 3.
 Cedar of Lebanon, *Cedrus Libanus*, 3.
 Cherry Tree, *Cerasus communis*, 3.
 Cinnamon, *Cinnamomum Zeylanicum*.
 Chili Pine, *Araucaria imbricata*, 3.
 Cocoa Nut Palm, *Cocus comosa*.
 Cork Tree, *Quercus suber*, 3.
 Cutleya Leopoldii.
 Dendrobium nobile.
 Do. speciosum.
 Dog Rose, *Rosa canina*.
 Dragon Tree, *Dracœna ferrea*.
 Date Palm, *Phœnix humilis*.
 Elder, *Sambucus nigra*, 3.
 Fennel, *Feniculum officinale*.
 Fig Tree, *Ficus carica*.
 Gesnera grandis.
 Gum Tree, *Eucalyptus*, 3.
 Gutta Percha Tree, *Isonandra gutta*, 3.
 Grape Vine, *Vitis vinifera*.
 Hibiscus Africanus, 3.
 Ivy, *Hedera helix*.
 India-rubber, *Ficus elastica*.
 Jasmine.
 Jasminum officinale.
 Lavender, *Lavandula vera*.
 Lace Bark, *Lagetta lintearia*, 3.
 Land Rush, *Juncus communis*.
 Larch, *Larix*, 3.
 Larix Europæus, 3.
 Lemon Tree, *Citrus limonum*.
 Magnolia grandiflora.
 Mahogany, *Swietenia mahagoni*, 3.
 Maple, *Acer campestre*, 3.
 Mimosa Nilotica.
 Mulberry, *Morus Nigra*, 3.

Miltonia cuneata.
 Mistletoe, *Viscum album*.
 Oak, *Quercus pedunculata*, 3.
 Orange Tree, *Citrus aurantium*, 3.
 Pampas Grass, *Gynerium argenteum*.
 Passion Flower, *Passiflora quadrangularis*.
 Pepper (Australia), *Piper alba*.
 Do. (Malacca), *P. Nigrum*.
 Pear Tree, *Pyrus domestica*.
 Pine, *Pinus strobus*, 3.
 Pine Apple, *Ananas lucida*.
 Pilea Smilacifolia.
 Plane Tree, *Platanus Occidentalis*, 3.
 Sansevieria Zeylanica.
 Sarsaparilla, *Smilax officinalis*.
 Satin Wood, *Chloroxylon Swietenia*.
 Screw Pine, *Pandanus odoratissimus*.
 Sea Rush, *Juncus maritimus*.
 Sunflower, *Helianthus annuus*.
 Sandal Wood, *Santalum album*, 3.
 Tea Tree, *Lycium barbarum*.
 Traveller's Joy, *Clematis vitalba*.
 Upas (Java), *Antiaris toxicaria*, 3.
 Water Plantain, *Alisma plantago*.
 Water Lily, *Nuphar luteum*.
 Walnut, *Juglans regia*, 3.
 Wellingtonia gigantea, 3.
 Willow, *Salix alba*, 3.
 Yew, *Taxus baccata*, 3.
 Section of Petiole of Arum.
 Do. Cinnamon.
 Do. Date Palm.
 Do. India-rubber.
 Do. Oleander.
 Bulb of Orchid, sections.
 Pith of Rice Paper Tree.
 Root of Wellingtonia gigantea
 Root Fern, *Pteris aquilina*.

Sections of Leaf, Vertical and Transverse.

Of *Ærides roseum* and *crispum*.
 Of *Dracœna Draco* and *ferrea*.
 Of India-rubber Tree.
 Of *Odontoglossum grande*.
 Of *Oncidium bicallosum*.
 Of *Saccolabium guttatum*.
 Of *Vanda Roxburghii*.
 Of Lily.
 Of Hyacinth.
 Of Oleander.
 Of Wax Plant.
 Of Cactus.

VEGETABLE PREPARATIONS. 50 and 75 cents.

CUTICLES OF PETALS—

- From Geranium, Peony.
- Do. Pansy, Fritillaria.
- Do. Nasturtium and Verbena.

CUTICLES from Cherry, Plum.

- Do. Pitcher Plant.
- Do. Rhubarb, Potato.
- Do. Sugar Grass.

Stomata in Cuticle of Orchid.

- Do. Aloe, Hyacinth, Lily.
- Do. Yucca, Oleander, Dog Rose.

SPIRAL VESSELS from Collomia Seed.

- Do. Rhubarb Stalk.
- Do. Compound, Nymphaea edulis.

Spiro-annular, Musa paradisiaca.

Seed of Paulownia imperialis.

Flower of Houstonia caerulea.

Section of Hard Tissues.

- Betel Nut, Palm, Areca pumila.
- Vegetable Ivory Nut.
- Cuticle of ditto, Surface and vert.

SHELL of Cocoa Nut (vertical).

- Do. do. (surface).
- Do. Coquilla Nut, Attalea funifera.
- Do. Brazil Nut.
- Do. Mexican Gourd.

Stone of Apricot and Cherry.

- Do. Damson and Peach.

Elementary particles of Cherry Stone.

Raphides in Cactus, Garlic.

- Do. Hyacinth, Onion, Pear.
- Do. Rhubarb, Squill, Rea.
- Do. Tabaiba, Water Lily.

Pollens, Transparent.

- From Cobœa scandens.
- Do. Enothera.
- Do. Convolvulus, Geranium, Hollyhock.
- Do. Lily, Nasturtium, Flax.
- Do. Lobelia, Cuphea platycenta.
- Do. Mallow, Passion Flower, Dahlia.
- Do. Arum, Yucca, Vegetable Marrow.
- Abelmoschus manihot.
- Filaments from Stamens of Tradescantia.

Scales from Ferns.

- Cheilanthes Eckloniana.
- Do. elegans.
- Ceterach officinarum.
- Goniophlebium sepultum.
- Niphobolus lingua.
- Nothochlæna lævis.
- Do. maranta.
- Elaphoglossum squamosum.
- Sporules and Theca of Ferns.
- From Pteris aquilina.
- Do. Polypodium vulgare.
- Do. Osmunda regalis.
- Fructification on Fronds of Ferns.
- Adiantum Capillus veneris.
- Asplenium Adiantum-nigrum.
- Athyrium Filix-femina.
- Cryptopteris fragilis.
- Davallia Canariensis.
- Gymnogramma Laucheana.
- Lastrea Filix-mas.
- Pteris aquilina.
- Polypodium fragilis.
- Scolopendrium vulgare, and others.
- Platycerum alcecorne.

Typical Illustrations of the Organic Structure of Plants.

- | | |
|--|---|
| Simple Cellular Tissue (<i>parenchyma</i>) | in Rice Paper Plant. |
| Isolated Cells | in Vegetable Ivory. |
| Stellariform Cells | in Common Rush. |
| Fibro-cellular Tissue | in Bulb and Leaf of Orchid. |
| Fibro-cells separated | from <i>Ærides</i> roseum. |
| Do. do. | from Leaf of <i>Oncidium</i> . |
| Scalariform Vessels | from Fern, <i>Pteris aquilina</i> . |
| Single Spiral Vessels | from Rhubarb and Seed of <i>Callomia</i> . |
| Compound Spiral Vessels | from <i>Nymphaea edulis</i> . |
| Spiro-annular Vessels | from <i>Musa paradisiaca</i> . |
| Stomata in Cuticle | of Leaf of Hyacinth and Aloe. |
| Resin and Gum Cells | in Pine Seed, and Stem of <i>Eucalyptus</i> . |
| Muriform Cells | in Yellow Water Lily. |
| Pitted Ducts or Glands | in Radial Section of Larch, and Pine. |
| Stem of Endogen, Vascular composition | Screw Pine. |
| Do. Exogen, Concentric annular layers | Cedar of Lebanon. |
| Petiole of Acrogen intermediate structure | <i>Pteris Aquilina</i> . |

MÖLLER'S DIATOMACEEN TYPEN PLATTE.

1951. Möller's Diatomaceen Typen Platte, No. 1, is a slide of the usual size—three inches by one inch—comprising about 500 Diatoms (correctly 392 distinct species and varieties), being acknowledged types of Seventeen Genera of the Order Diatomaceæ. The shells are arranged in four quadrangles, each formed of six lines, and each line containing about sixteen species, presenting a figure of the following form:

I.		III.	
1	.....	1	.....
2	.....	2	.....
3	.....	3	.....
4	.....	4	.....
5	.....	5	.....
6	.....	6	.....
II.		IV.	
1	.....	1	.....
2	.....	2	.....
3	.....	3	.....
4	.....	4	.....
5	.....	5	.....
6	.....	6	.....

The Diatoms are prepared in the best manner, mounted in Balsam, *absolutely pure and clean*, while the integrity of each and the symmetry of the whole may be said to be as perfect as possible.

Easy reference to each member is afforded by an accompanying Printed Catalogue, by which the name of any individual Diatom on the slide may be learned; or any name in the Catalogue as easily identified with its corresponding shell on the slide.

The classification is that of Herrn A. Grunow, of Berndorf, near Wien.

To the name of each Diatom is appended its nature, whether fossil or recent. Its origin, whether marine or from brackish or fresh water. Its geographical locality, with the name of the naturalist who assigned its nomenclature.

On the whole it is a marvellous production of human skill and unceasing perseverance, a wondrous example of accurate manipulation and delicacy of touch, exciting the admiration of all who see it. To the Naturalist and Student it forms a Cyclopædia of reference, which may be long and repeatedly studied, with untiring interest and returning freshness. It is worthy of a place in the cabinet of every advanced Microscopist.

The price, in morocco case, with bound Catalogue, is \$40 00

1952. Möller's Diatomaceen Typen Platte, No. 2, is a smaller collection of One Hundred Diatoms by the same artist, arranged on the same plan in one quadrangle, accompanied by a printed Catalogue, and quite equal in quality to the larger collection. The price of this is 16 00

1953. Möller's Diatomaceen Probe Platte is a collection of 20 Diatoms, by the same artist, arranged in a single line, on a slide of the usual size—3x1 inch—and graduated, according to their value as test objects. In a neat morocco leather case, with descriptive list, 7 50

NOTE.—By special arrangement with Mr. Möller, we are constituted his Sole Agents in America, and always have in stock all of his preparations.

Collomia Seed to show development of Spiral Vessels, in fluid, 15 cents per packet.

The Anatomy of an Insect complete on One Slide.

Each Composed of 10 to 15 Organs, \$2 50, each.

The Blow Fly.
The Garden Spider.

The Honey Bee.
The Scorpion Fly.

The Butterfly.
The Earwig.

NOBERT'S BANDS OF TEST LINES.

We receive direct from M. Nobert, of Pomerania, his exquisitely fine Bands of Lines, ruled on glass, as described in a communication to the *American Naturalist*, April, 1868, reprinted in the *Quarterly Journal of Microscopical Science*, October, 1868, p. 131, and referred to in Dr. Carpenter's *Microscope and its Revelations*, fourth edition, London, 1868, p. 180.*

The latest and finest of M. Nobert's productions consist of a series of Bands of Lines from No. 1 to 19, the distance of the divisions in the first being about the 11,000th part of an English inch, and those of the latter the 112,000th part of the same. They are mounted in two ways. In the first, price \$60, the lines are ruled on a slip of plate glass, protected by a cover of thin microscopic glass. The more expensive form, price \$90, has its lines ruled on a plate of microscopic glass, thickness .003, and covered by one of corresponding size and thickness. These are mounted on a slip of brass 3 inches by 1 inch, so that the lines, being reversible, may be examined on either side under an achromatic objective of one-fiftieth of an inch focus. This form has the advantage of admitting the close approach of any achromatic condenser to the Lines, and at the same time facilitates their illumination by the most oblique pencils of rays. The Lines themselves are essentially the same at \$60 and \$90.

1954. Nobert's Test Lines on ordinary glass slip, in morocco case, . . . \$60 00
 1954½. Nobert's Test Lines on thin glass in brass frame, in morocco case, . . . 90 00

CHEAP EDUCATIONAL OBJECTS.

The uses and pleasure of a Microscope are greatly increased by having at hand a collection of well-mounted specimens, since, however desirable it may be to prepare one's own objects, or to study the same without any special preparation, it follows that there are thousands of highly interesting and instructive objects which cannot be obtained in the raw state (if we may so express it) by every one, or at a moment's notice, when needed. The unavoidably high price of the finest preparations has long been a serious hindrance to many who would gladly possess a comprehensive collection, but find the cost a serious tax upon their pockets, whilst the so-called *cheap* objects imported from Europe are of such an utterly worthless character as to deter them from purchasing, even at the low prices asked for the same.

In order to meet this want, we some years since introduced our "Cheap Educational" series of objects, which at once met with universal favor, and the demand for which has steadily grown until it taxes all our ability to meet the same. These objects are prepared and mounted under the immediate supervision of our Mr. Walmsley, are all clean and excellent specimens of their various classes, embrace an endless variety of animal, vegetable, and insect subjects, diatoms, minerals, metals, etc., and are guaranteed to be correctly named, a matter of great importance for educational purposes. The Microscope having become an indispensable adjunct to every well-regulated school, it follows that the specimens shown the scholar should be good and reliable ones.

We divide these objects into two series or classes. The *first*, or *School Series*, are mounted on slides measuring $2\frac{3}{8}$ by $\frac{3}{4}$ inches, and are best suited to the smaller and cheaper kinds of Microscopes, which have not sufficient *stage room* to allow of the larger slides being conveniently used. The *second*, or *Student's Series*, are mounted on slides measuring 3×1 inches, the same size as the most expensive objects. This series is more extended in variety than the former, containing many large insect, vegetable, polariscope, and opaque specimens which cannot be mounted on the smaller slides. Both series are covered with handsome gilt labels, specimens of which may be found on page 70 of this Catalogue, over Nos. 1948 and 1949½. The quality of the specimens is the same in both series, which are catalogued as follows:

1955. School Series of Educational Objects, on slides $2\frac{3}{8} \times \frac{3}{4}$ inches, in neat
 rack boxes, containing one dozen specimens, \$2 00
 Single slide, 20

* "The mathematical certainty with which the distance of these lines may be ascertained, and the regular gradation of the series they present, gives to M. Nobert's Test Plate a very high value for the determination of the relative merits of achromatic objectives, of that class at least in which angular aperture and definition are of the first importance." — *Carpenter on the Microscope*, fourth edition.

1956. Student's Series of Educational Objects, on slides 3x1 inches, in neat rack boxes, containing one dozen specimens,	\$3 00
Single slide,	30

We take pleasure in announcing that we have recently completed arrangements with Dr. J. W. S. Arnold, of New York, by which we shall be continually supplied with his beautiful preparations of Human Anatomy, including opaque and transparent injections, preparations of the eye, brain and spinal cord, and an infinite variety of Pathological preparations. Our Mr. Walmsley will also continue to furnish his illustrations of Animal, Vegetable, and Insect Anatomy. His preparations were awarded the *highest premium* (Medal and Diploma), at the recent Fair of the American Institute, New York, and are at least equal to any imported.

Mr. Arthur C. Cole, of Liverpool, England, will also supply us with his exquisite slides of arranged diatomaceæ, polycistina, and foraminifera, which are quite unique in their general arrangement and finish.

BOOKS ON OPTICS AND OPTICAL INSTRUMENTS.

No.		PRICE.	POSTAGE.
1975.	BREWSTER. A Treatise on Optics, by Sir David Brewster. New edition, 1853. 520 pages, fully illustrated,	\$2 00	\$0 20
1979.	DICK. The Telescope and Microscope. By Rev. Thomas Dick. 192 pages,	50	8
1980.	WOOD. Common Objects of the Microscope, with upwards of 400 illustrations, printed in colors,	50	8
1983.	DAVIES. Hand-Book on Preparing and Mounting Microscopic Objects. Latest Edition fully illustrated and brought up to the present time. By Thomas Davies,	1 25	12
1984.	HOGG. The Microscope: Its History, Construction, and Application. Being a familiar Introduction to the Use of the Instrument and the Study of Microscopical Science, with Directions for Collecting, Preserving, and Mounting Objects. Illustrated with upwards of 500 engravings and colored illustrations. 750 pages. Seventh London edition, 1869,	3 00	0 36
1985.	BEALE. How to Work with the Microscope. By Lionel S. Beale, M.D., F.R.S. Fourth edition, with 400 illustrations. London, 1868,	8 00	40
1986.	BEALE. The Microscope, and its Application to Clinical Medicine. By Lionel S. Beale, M.D., F.R.S. 2d edition. 390 pages, with 270 engravings, and a colored plate,	7 00	40
1987.	QUEKETT. A Practical Treatise on the Use of the Microscope, including the Different Methods of Preparing and Examining Animal, Vegetable, and Mineral Structures. By John Quekett. Last edition. Profusely illustrated. 550 pages,	6 25	63
1988.	CARPENTER. The Microscope and its Revelations. Latest London edition. 434 illustrations. 776 pages,	5 00	48
1989.	LOOMIS. Treatise on Physical Diagnosis as illustrated by the Microscope. By Alfred L. Loomis, M.D.	3 00	20
1993.	GRIFFITH. Elementary Text Book of the Microscope, with a Description of the Methods of Preparing and Mounting Objects, &c. With twelve colored plates, 451 figures. By J. W. Griffith, M.D., F.R.S.,	3 75	20
1994.	COOKE. Microscopic Fungi: An Introduction to the Study of Rust, Smut, Mildew, and Mould. Illustrated by nearly 300 figures, colored. By M. C. Cooke, author of British Fungi, &c.,	3 00	20

No.		PRICE.	POSTAGE.
1995.	RICHARDSON. Hand-book of Medical Microscopy. 40 Illustrations. By J. G. Richardson, M.D.,	\$2 25	16
1996.	WARD. The Microscope. Profusely illustrated by Colored Plates. By the Hon. Mrs. Ward,	1 75	12
1997.	WARD. Microscopic Teachings. With Colored Plates. By the Hon. Mrs. Ward,	3 75	20
1998.	SUFFOLK. On Microscopical Manipulation. Being the subject matter of a Course of Lectures delivered before the Queckett Microscopical Club. By W. T. Suffolk, F.R.M.S., with 49 Engravings and 7 Lithographs,	2 00	16
1999.	GOSSE. Evenings at the Microscope. 477 pages. Profusely illustrated. By Phillip Henry Gosse, F.R.S.,	1 50	24
2000.	CLARKE. Objects for the Microscope. Third edition, with eight colored plates and numerous wood-cuts. By L. Lane Clarke. 250 pages,	1 50	12
2001.	COOKE. 1000 Objects for The Microscope with 400 Engravings. By M. C. Cooke,	50	08
2004.	HARLEY AND BROWN. Histological Demonstrations of Microscopic Anatomy. Profusely illustrated. Last London Edition,	6 00	20
2005.	NUGENT. A Treatise on Optics. By E. Nugent. 103 illustrations,	2 00	16
2007.	SLACK. Marvels of Pond Life. Second edition, with colored plates and numerous wood-cuts,	2 00	16
2008.	LANKESTER. Half Hours with the Microscope; being a popular guide to its use. By Edwin Lankester, M.D. A new edition, with profuse illustrations,	2 00	16
2009.	LARDNER. The Microscope. By Dr. Lardner,	1 00	12
2013.	TYSON. The Cell Doctrine, for use of Medical and Dental Students. Illustrated By James Tyson, M.D.,	2 00	16
2014.	BECK. A Treatise on the Construction, Proper Use, and Capabilities of R. & J. Beck's Achromatic Microscopes. By Richard Beck. Royal 8vo, with 27 plates,	8 75	36
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A

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“Vino bono non opus est hedera.”

JAMES W. QUEEN & CO.

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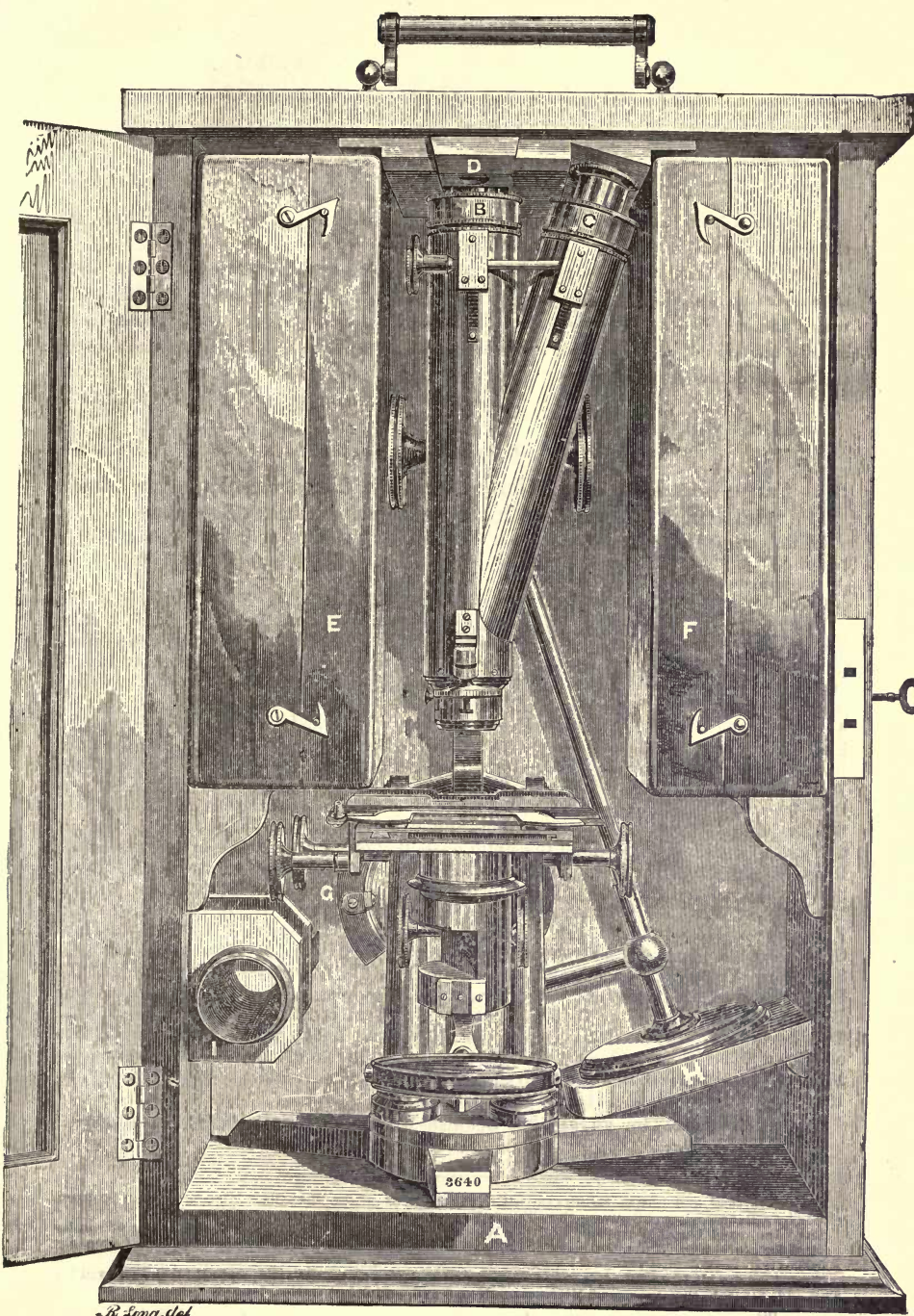
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B. 1.

FIRST-CLASS MICROSCOPES.

A STAND, of similar construction to those in this class, was shown by R. & J. B. at the Great Exhibition of 1851, and is thus mentioned by the Jury:—

“The Stand is excellent in principle; the body, stage, and appliances beneath are all carried on one stout bar, on the recommendation of Mr. G. Jackson, by means of which the centring of the achromatic illumination is rendered easy and certain; and on any tremor being communicated to the instrument, it is equally distributed over the whole of the working parts.”

(Reports of the Juries, p. 266, Class X., No. 253.)

Price \$1650.

B. 1. Large Best Binocular Microscope, with Concentric Rotating Stage and Iris Diaphragm, with all the Latest additions Complete.

12 Object-glasses, magnifying from 8 to 10,000 linear:—4 in. (8°), 3 in. (12°), $1\frac{1}{2}$ in. (23°), $\frac{3}{8}$ in. (32°), $\frac{4}{10}$ in. (55°), $\frac{4}{10}$ in. (90°), $\frac{1}{4}$ in. (75°), $\frac{1}{5}$ in. (100°), $\frac{1}{8}$ in. (120°), $\frac{1}{10}$ in. immer. (160°), $\frac{1}{10}$ in. (140°), $\frac{1}{10}$ in. (140°).

Lieberkuhns to the following Object-glasses:— $1\frac{1}{2}$, B. 89, $\frac{3}{8}$, B. 90, $\frac{4}{10}$, B. 91, $\frac{1}{4}$, B. 92. 10 Eyepieces, viz. 1 pair B. 1, 1 pair B. 2, 1 pair B. 3, 1 B. 4, 1 B. 5, B. 97, 1 pair Kelner's Eyepieces, B. 96. Indicators to 6 Eyepieces, B. 152. Graduated Draw-tube, B. 100. Erecting-Glass, B. 99, for use with the $\frac{3}{8}$ Object-glass, for erecting the Image and varying the power from 5 to 150 linear. Achromatic Condenser, with revolving Diaphragm, B. 101. Right-angle Prism, B. 104. Brown's Iris Diaphragm, B. 118. Amici's Prism, B. 105. Nacet's Prism, B. 107. Wenham's Parabolic Reflector, B. 108. Spot-Lens, B. 110. Rainey's Moderator, B. 135. White-ground Illuminator, B. 127. Polarizing Apparatus, B. 116. Darker's Series of Selenites, B. 117. Sorby's Micro-Spectroscope, B. 66. Sorby's Standard Spectrum-scale, B. 67*. Sorby's Dichroscope, B. 67. Leeson's Goniometer, B. 154. Tourmaline, B. 125. Two Double-image Prisms and Selenite Film, and Brass Plate with holes, B. 123. Set of 6 Crystals, showing rings round the optic axis, B. 124. Large Bull's-eye Condensing-Lens, B. 130. Smaller Side Condenser, B. 131. Side Silver Reflector, 133. Parabolic Illuminator with Sorby's Reflector, B. 129. Beck's Patent Illuminator, B. 126. Three Dark Wells and Holder, B. 136. Opaque Disk Revolver, B. 138. Quadruple Nosepiece in Aluminium, B. 161. Wollaston's Camera Lucida, B. 155. Neutral-Tint-Glass Camera, B. 156. Eyepiece Micrometer, B. 146. Stage Micrometer, B. 147. Set of Live-Traps, B. 173. Lever Compressor, B. 162. Wenham's Compressor, B. 165. Parallel-plate Compressor, B. 163. Reversible Compressor, B. 164. Screw Live-Box, B. 166. Large Live-Box, B. 167. Small Live-Box, B. 168. Growing-Cell, B. 172. Two Large Troughs, B. 169. Two Glass Plates with Ledge and Covers, B. 171. Set of Three Glass Fishing-Tubes, B. 180. Maltwood's Finder, B. 150. Frog-plate, B. 175. Mineral-holder, B. 145. Three-pronged Forceps, B. 143. Tightening-Key, B. 181. Stage Forceps, B. 144. Brass Pliers.

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The "Improved Large Microscope" (either Monocular or Binocular), with complete apparatus, can be packed for portability in a case measuring only 19 inches long by 9 inches wide, and 5 inches deep, for \$25.00 extra.

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Price \$1175.

B. 2. Large Best Binocular Microscope, with Concentric Rotating Stage and Iris Diaphragm, with the following Apparatus.

9 Object-glasses, magnifying from 12 to 5000 linear:—3 in. (12°), $1\frac{1}{2}$ in. (23°), $\frac{3}{4}$ in. (32°), $\frac{4}{10}$ in. (90°), $\frac{1}{4}$ in. (75°), $\frac{1}{2}$ in. (100°), $\frac{1}{3}$ in. (120°), $\frac{1}{10}$ in. immer. (160°), $\frac{1}{10}$ in. (140°).

Lieberkuhn's to the following Object-glasses:— $1\frac{1}{2}$, B. 89, $\frac{3}{8}$, B. 90, $\frac{4}{10}$, B. 91, $\frac{1}{4}$, B. 92. 7 Eyepieces, viz. 1 pair B. 1, 1 pair B. 2, 1 pair B. 3, 1 B. 4, B. 97. Indicators to 4 Eyepieces, B. 152. Graduated Draw-tube, B. 100. Erecting-Glass, B. 99, for use with the $\frac{3}{4}$ Object-glass, for erecting the Image and varying the power from 5 to 150 linear. Achromatic Condenser, with revolving Diaphragm, B. 101. Right-angle Prism, B. 104. Plain Diaphragm. Amici's Prism, B. 105. Natchet's Prism, B. 107. Wenham's Parabolic Reflector, B. 108. Spot-Lens, B. 110. Polarizing Apparatus, B. 116. Darker's Series of Selenites, B. 117. Two Double-image Prisms and Selenite Film, and Brass Plate with holes, B. 123. Large Bull's-eye Condensing-Lens, B. 130. Smaller Side Condenser, B. 131. Parabolic Illuminator, B. 128. Three Dark Wells and Holder, B. 136. Opaque Disk Revolver, B. 138. Quadruple Nosepiece in Aluminium, B. 161. Wollaston's Camera Lucida, B. 155. Eyepiece Micrometer, B. 146.—Stage Micrometer, B. 147. Lever Compressor, B. 162. Wenham's Compressor, B. 165. Parallel-plate Compressor, B. 163. Screw Live-Box, B. 166. Large Live-Box, B. 167. Small Live-Box, B. 168. Large Glass Trough, B. 169. Two Glass Plates with Ledge and Covers, B. 171. Set of Three Glass Fishing-Tubes, B. 180. Maltwood's Finder, B. 150. Frog-plate, B. 175. Mineral-holder, B. 145. Tightening-Key, B. 181. Stage Forceps, B. 144. Brass Pliers.

The whole packed in an Upright Spanish-Mahogany Case, with two boxes containing the Apparatus.

Price \$1125.

B. 3. Large Best Monocular Microscope, with Concentric Rotating Stage and Iris Diaphragm.

With the same Object-glasses and Apparatus as B. 2.

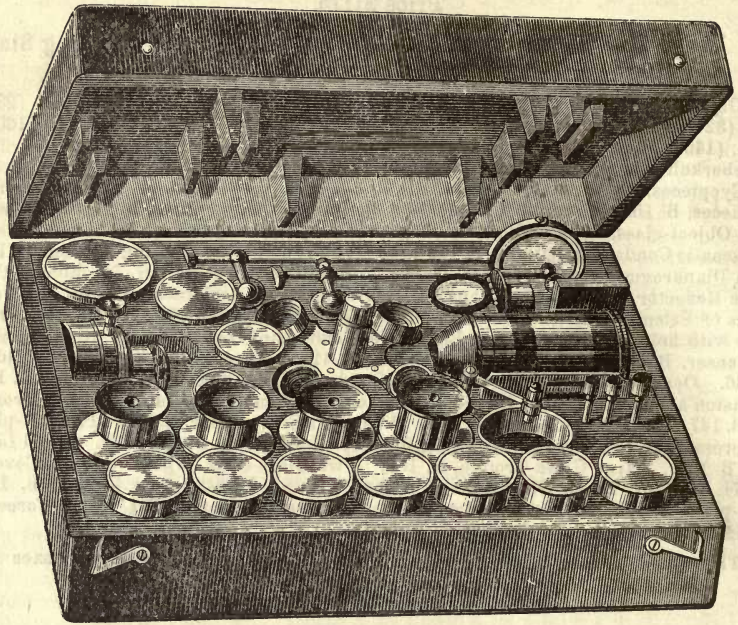
Price \$775.

B. 4. Large Best Binocular Microscope, with Concentric Rotating Stage and Iris Diaphragm with the following Apparatus.

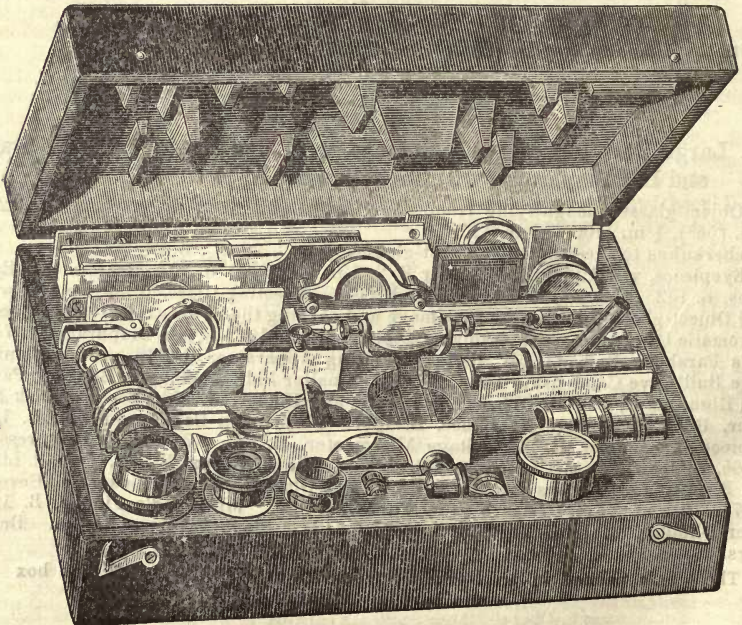
5 Object-glasses, magnifying from 30 to 1300 linear:— $1\frac{1}{2}$ in. (23°), $\frac{3}{4}$ in. (32°), $\frac{4}{10}$ in. (55°), $\frac{1}{2}$ in. (100°), $\frac{1}{3}$ in. (120°).

Lieberkuhn's to the following Object-glasses:— $\frac{3}{8}$, B. 90, $\frac{4}{10}$, B. 91. 6 Eyepieces, viz. 1 pair B. 1, 1 pair B. 2, 1 pair B. 3, B. 97. Indicators to 2 Eyepieces, B. 152. Graduated Draw-tube, B. 100. Erecting-Glass, B. 99, for use with the $\frac{3}{4}$ Object-glass, for erecting the Image and varying the power from 5 to 150 linear. Achromatic Condenser, with revolving Diaphragm, B. 101. Plain Diaphragm. Wenham's Parabolic Reflector, B. 108. Polarizing Apparatus, B. 116. One Selenite. Large Bull's-eye Condensing-Lens, B. 130. Smaller Side Condenser, B. 131. Parabolic Illuminator, B. 128. Three Dark Wells and Holder, B. 136. Opaque Disk Revolver, B. 138. Double Nosepiece, B. 159. Wollaston's Camera Lucida, B. 155. Eyepiece Micrometer, B. 146. Stage Micrometer, B. 147. Wenham's Compressor, B. 165. Parallel-plate Compressor, B. 163. Large Live-Box, B. 167. Small Live-Box, B. 168. Large Glass Trough, B. 169. Two Glass Plates with Ledge and Covers, B. 171. Set of Three Glass Fishing-Tubes, B. 180. Maltwood's Finder, B. 150. Mineral-holder, B. 145. Tightening-Key, B. 181. Stage Forceps, B. 144. Brass Pliers.

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ACCESSORY BOX, B. 1.



ACCESSORY BOX, B. 1.

Price \$725.

B. 5. Large Best Monocular Microscope, with Concentric Rotating Stage and Iris Diaphragm.

With the same Object-glasses and Apparatus as B. 4.

Price \$650.

B. 6. Large Best Binocular Microscope, with Concentric Rotating Stage and Iris Diaphragm, with the following Apparatus.

4 Object-glasses, magnifying from 30 to 700 linear:— $1\frac{1}{2}$ in. (23°), $\frac{2}{3}$ in. (32°), $\frac{4}{10}$ in. (55°), $\frac{1}{8}$ in. (100°).

Lieberkuhn's to the following Object-glasses:— $\frac{2}{3}$, B. 90, $\frac{4}{10}$, B. 91.

6 Eyepieces, viz. 1 pair B. 1, 1 pair B. 2, 1 pair B. 3, B. 97. Indicator to 1 Eyepiece, B. 152. Graduated Draw-tube, B. 100. Erecting-Glass, B. 99, for use with the $\frac{2}{3}$ Object-glass, for erecting the Image and varying the power from 5 to 150 linear. Achromatic Condenser, with revolving Diaphragm, B. 101. Plain Diaphragm. Wenham's Parabolic Reflector, B. 108. Polarizing Apparatus, B. 116. One Selenite, Large Bull's-eye Condensing-Lens, B. 130. Smaller Side Condenser, B. 131. Parabolic Illuminator, B. 128. Three Dark Wells and Holder, B. 136. Double Nosepiece, B. 159. Wollaston's Camera Lucida, B. 155. Eyepiece Micrometer, B. 146. Stage Micrometer, B. 147. Wenham's Compressor, B. 165. Large Live-Box, B. 167. Small Live-Box, B. 168. Large Glass Trough, B. 169. Two Glass Plates with Ledge and Covers, B. 171. Set of Three Glass Fishing-Tubes, B. 180. Maltwood's Finder, B. 150. Mineral-holder, B. 145. Tightening-Key, B. 181. Stage Forceps, B. 144. Brass Pliers.

The whole packed in an Upright Spanish-Mahogany Case, with one box containing the Apparatus.

Price \$600.

B. 7. Large Best Monocular Microscope, with Concentric Rotating Stage and Iris Diaphragm.

With the same Object-glasses and Apparatus as B. 6.

Price \$500.

B. 8. Large Best Binocular Microscope, with Concentric Rotating Stage and Iris Diaphragm, with the following Apparatus.

3 Object-glasses, magnifying from 30 to 700 linear:— $1\frac{1}{2}$ in. (23°), $\frac{2}{3}$ in. (32°), $\frac{1}{8}$ in. (85°).

Lieberkuhn to the $\frac{2}{3}$ Object-glass, B. 90.

6 Eyepieces, viz. 1 pair B. 1, 1 pair B. 2, 1 pair B. 3, B. 97. Indicator to 1 Eyepiece, B. 152. Graduated Draw-tube, B. 100. Erecting-Glass, B. 99, for use with the $\frac{2}{3}$ Object-glass, for erecting the Image and varying the power from 5 to 150 linear. Achromatic Condenser, B. 102. Polarizing Apparatus, B. 115. One Selenite. Large Bull's-eye Condensing-Lens, B. 130. Smaller Side Condenser, B. 131. Parabolic Illuminator, B. 128. Three Dark Wells and Holder, B. 136. Large Live-Box, B. 167. Two Glass Plates with Ledge and Covers, B. 171. Tightening-Key, B. 181. Stage Forceps, B. 144. Brass Pliers.

The whole packed in an Upright Honduras-Mahogany Case, with one box containing the Apparatus.

Price \$450.

B. 9. Large Best Monocular Microscope.

With the same Stage, Object-glasses, and Apparatus as B. 8.

Price \$375.

B. 10. Large Best Binocular Microscope, with Concentric Rotating Stage and Iris Diaphragm, with the following Apparatus.

2 Object-glasses, magnifying from 60 to 400 linear:— $\frac{2}{3}$ in. (32°), $\frac{1}{5}$ in. (85°).
 4 Eyepieces, viz. 1 pair B. 1, 1 pair B. 2, B. 97. Indicator to 1 Eyepiece, B. 152.
 Graduated Draw-tube, B. 100. Smaller Side Condenser, B. 131. Large Live-Box, B. 167. Two Glass Plates with Ledge and Covers, B. 171. Tightening-Key, B. 181.
 Stage Forceps, B. 144. Brass Pliers.

The whole packed in an Upright Honduras-Mahogany Case, with one box containing the Apparatus.

Price \$325.

B. 11. Large Best Monocular Microscope.

With the same Stage, Object-glasses, and Apparatus as B. 10.

Price \$650.

B. 12. Small Best Binocular Microscope.

5 Object-glasses, magnifying from 20 to 1300 linear:— $1\frac{1}{2}$ in. (23°), $\frac{2}{3}$ in. (32°), $\frac{4}{10}$ in. (55°), $\frac{1}{5}$ in. (100°), $\frac{1}{8}$ in. (120°).

Lieberkuhns to the following Object-glasses:— $\frac{2}{3}$, B. 90, $\frac{4}{10}$, B. 91.

6 Eyepieces, viz. 1 pair B. 1, 1 pair B. 2, 1 pair B. 3, B. 97. Indicators to 2 Eyepieces, B. 152. Graduated Draw-tube, B. 100. Erecting-Glass, B. 99, for use with the $\frac{2}{3}$ Object-glass, for erecting the Image and varying the power from 5 to 150 linear. Achromatic Condenser, with revolving Diaphragm, B. 101. Wenham's Parabolic Reflector, B. 108. Polarizing Apparatus, B. 116. One Selenite. Large Bull's-eye Condensing-Lens, B. 130. Smaller Side Condenser, B. 131. Parabolic Illuminator, B. 128. Three Dark Wells and Holder, B. 136. Opaque Disk Revolver, 1 tray of disks, B. 137. Double Nosepiece, B. 159. Wollaston's Camera Lucida, B. 155. Eyepiece Micrometer, B. 146. Stage Micrometer, 147. Wenham's Compressor, B. 165. Parallel-plate Compressor, B. 163. Large Live-Box, B. 167. Small Live-Box, B. 168. Large Glass Trough, B. 169. Two Glass Plates with Ledge and Covers, B. 171. Set of Three Glass Fishing-Tubes, B. 180. Maltwood's Finder, B. 150. Stage Forceps, B. 144. Brass Pliers.

The whole packed in a Strong Flat Spanish-Mahogany Case.

Price \$610.

B. 13. Small Best Monocular Microscope.

With the same Object-glasses and Apparatus as B. 12.

Price \$630.

B. 14. Small Best Binocular Microscope.

4 Object-glasses, magnifying from 20 to 720 linear:— $1\frac{1}{2}$ in. (23°), $\frac{2}{3}$ in. (32°), $\frac{4}{10}$ in. (55°), $\frac{1}{5}$ in. (100°).

Lieberkuhns to the following Object-glasses:— $\frac{2}{3}$, B. 90, $\frac{4}{10}$, B. 91.

6 Eyepieces, viz. 1 pair B. 1, 1 pair B. 2, 1 pair B. 3, B. 97. Graduated Draw-tube, B. 100. Erecting-Glass, B. 99, for use with the $\frac{2}{3}$ Object-glass, for erecting the Image and varying the power from 5 to 150 linear. Achromatic Condenser, B. 102. Wenham's Parabolic Reflector, B. 108. Polarizing Apparatus, B. 115. One Selenite. Large Bull's-eye Condensing-Lens, B. 130. Smaller Side Condenser, B. 131. Para-

bolio Illuminator, B. 128. Three Dark Wells and Holder, B. 136. Double Nosepiece, B. 159. Wollaston's Camera Lucida, B. 155. Eyepiece Micrometer, B. 146. Stage Micrometer, B. 147. Wenham's Compressor, B. 165. Small Live-Box, B. 168. Large Glass Trough, B. 169. Two Glass Plates, with Ledge and Covers, B. 171. Set of Three Glass Fishing-Tubes, B. 180. Maltwood's Finder, B. 150. Stage Forceps, B. 144. Brass Pliers.

The whole packed in a Strong Flat Spanish-Mahogany Case.

Price \$480.

B. 15. Small Best Monocular Microscope.

With the same Object-glasses and Apparatus as B. 14.

Price \$325.

B. 16. Small Best Binocular Microscope.

2 Object-glasses, magnifying from 60 to 720 linear:— $\frac{2}{3}$ in. (32°), $\frac{1}{2}$ in. (85°). Lieberkuhn to the $\frac{2}{3}$ Object-glass, B. 90.

5 Eyepieces, viz. 1 pair B. 1, 1 pair B. 2, 1 pair B. 3, B. 97. Graduated Draw-tube, B. 100. Erecting-Glass, B. 99, for use with the $\frac{2}{3}$ Object-glass, for erecting the Image and varying the power from 5 to 150 linear. Smaller Side Condenser, B. 131. Three Dark Wells and Holder, B. 136. Parabolic Illuminator, B. 128. Small Live-Box, B. 168. Two Glass Plates, with Ledge and Covers, B. 171. Stage Forceps, B. 144. Brass Pliers.

The whole packed in a Strong Flat Spanish-Mahogany Case.

Price \$275.

B. 17. Small Best Monocular Microscope.

With the same Object-glasses and Apparatus as B. 16.

*The vertical and horizontal movements to the Stage of the Small Best Microscope can be given either by a Rackwork and Screw or by White's Lever.

The "Improved Smaller Microscope," with complete apparatus, can be packed for portability in a case measuring only 17 inches long by 8 inches wide and 4 inches deep, for \$18 extra.

SECOND-CLASS OR STUDENT'S MICROSCOPES.

In these Microscopes the Magnifying-powers are the very best; but they are combined with Stands less expensive than those of the First Class, but efficient.

Price \$450.

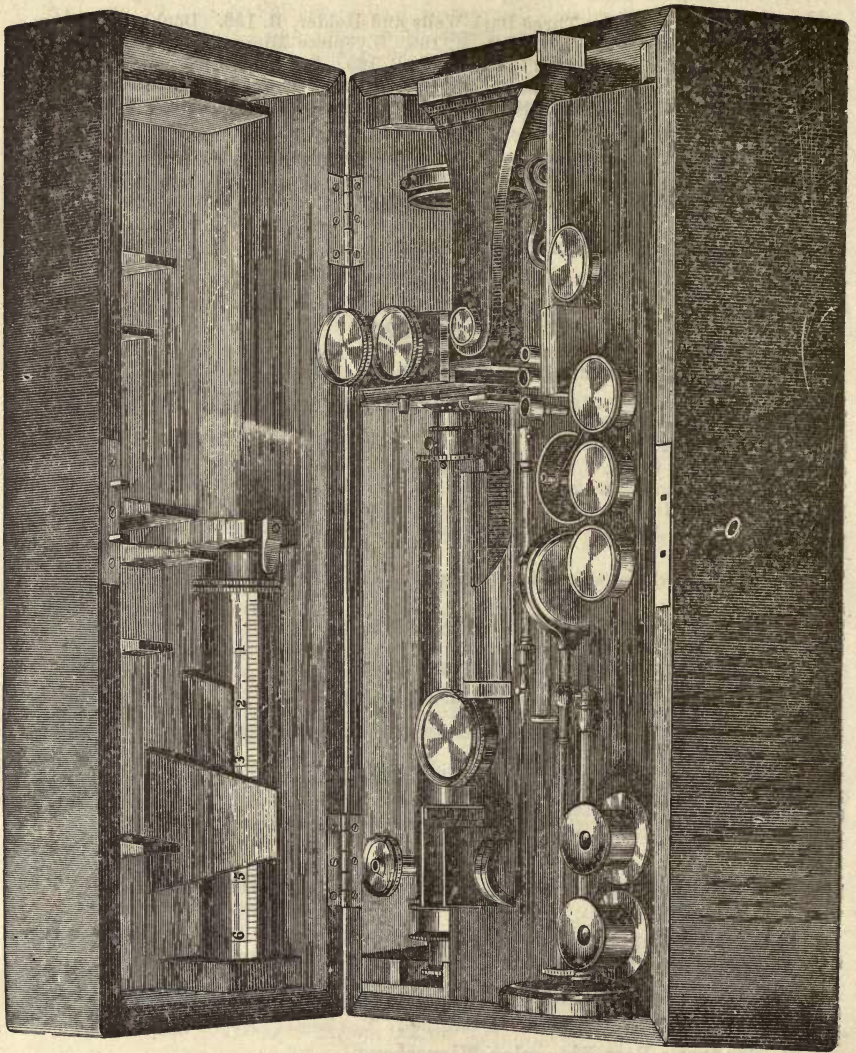
B. 21. Student's Best Binocular Microscope.

4 Object-glasses, magnifying from 20 to 720 linear:— $1\frac{1}{2}$ in. (23°), $\frac{2}{3}$ in. (32°), $\frac{1}{10}$ in. (55°), $\frac{1}{2}$ in. (100°).

Lieberkuhns to $1\frac{1}{2}$, B. 89, $\frac{2}{3}$, B. 90, $\frac{1}{10}$, B. 91.

6 Eyepieces, viz. 1 pair B. 1, 1 pair B. 2, 1 pair B. 3. 3 Indicators, B. 152. Erecting-Glass, B. 99. Graduated Draw-tube, B. 100. Side Condenser on Stand, B. 132. Three Dark Wells and Holder, B. 136. Achromatic Condenser, B. 102. Parabolic Illuminator, B. 128. Wenham's Parabolic Reflector, B. 109. Polarizing Apparatus, B. 115. Selenite Stage, B. 119. Wollaston's Camera Lucida, B. 155. Stage Micrometer, B. 148. Double Nosepiece, B. 159. Glass Trough, B. 170. Live-Box, B. 168. Glass Plate with Ledge and Covers. Stage Forceps, B. 144. Brass Pliers

The whole packed in a Flat Dove-tailed Mahogany Case.



B. 21.

Price \$415.

B. 22. Student's Best Monocular Microscope.

With the same Object-glasses and Apparatus as B. 21.

Price \$410.

B. 23. Student's Best Plain Binocular Microscope.

Stage with Sliding-piece and Clamping-spring, with the same Object-glasses and Apparatus as B. 21.

Price \$375.

B. 24. Student's Best Plain Monocular Microscope.

With the same Object-glasses and Apparatus as B. 21.

Price \$375.

B. 25. Student's Best Binocular Microscope.

3 Object-glasses, magnifying from 20 to 720 linear:— $1\frac{1}{2}$ in. (23°), $\frac{3}{8}$ in. (32°), $\frac{1}{8}$ in. (85°).
Lieberkuhn to $\frac{2}{3}$, B. 90.

6 Eyepieces, viz. 1 pair B. 1, 1 pair B. 2, 1 pair B. 3. 3 Indicators, B. 152. Erecting-Glass, B. 99. Graduated Draw-tube, B. 100. Side Condenser on Stand, B. 132. Three Dark Wells and Holder, B. 136. Parabolic Illuminator, B. 128. Wenham's Parabolic Reflector, B. 109. Polarizing Apparatus, B. 115. Selenite Stage, B. 119. Camera Lucida, B. 155. * Stage Micrometer, B. 148. Glass Trough, B. 170. Live-Box, B. 168. Glass Plate with Ledge and Covers. Stage Forceps, B. 144. Brass Pliers.

The whole packed in a Flat Dove-tailed Mahogany Case.

Price \$315.

B. 26. Student's Best Monocular Microscope.

With the same Object-glasses and Apparatus as B. 25.

Price \$330.

B. 27. Student's Best Plain Binocular Microscope.

Stage with Sliding-piece and Clamping-spring, with the same Object-glasses and Apparatus as B. 25.

Price \$280.

B. 28. Student's Best Plain Monocular Microscope.

With the same Object-glasses and Apparatus as B. 25.

Price \$290.

B. 29. Student's Best Binocular Microscope.

2 Object-glasses, magnifying from about 60 to 400 linear:— $\frac{2}{3}$ in. (32°), $\frac{1}{8}$ in. (85°).
Lieberkuhn to $\frac{2}{3}$, B. 90.

4 Eyepieces, viz. 1 pair B. 1, 1 pair B. 2. Side Condenser on Stand, B. 132. Three Dark Wells and Holder, B. 136. Live-Box, B. 168. Glass Plate with Ledge and Covers. Stage Forceps, B. 144. Brass Pliers.

The whole packed in a Flat Dove-tailed Mahogany Case.

Price \$210.

B. 30. Student's Best Monocular Microscope.

With the same Object-Glasses and Apparatus as B. 29.

Price \$225.

B. 31. Student's Best Plain Binocular Microscope.

Stage with Sliding-piece and Clamping-spring, with the same Object-glasses and Apparatus as B. 29.

Price \$180.

B. 32. Student's Best Plain Monocular Microscope.

With the same Object-glasses and Apparatus as B. 29.

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MICROSCOPE STANDS AND CASES,
 IF ORDERED SEPARATELY.

FIRST-CLASS MICROSCOPE STANDS.

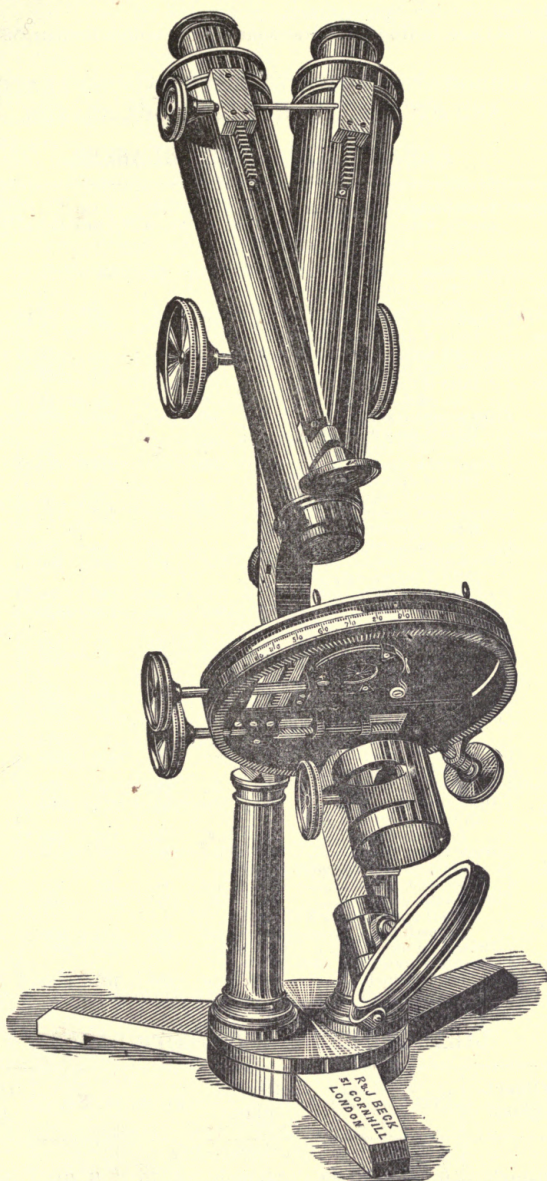
B. 36.	New Large Best Binocular-Microscope Stand, with Concentric Rotating Stage and Iris Diaphragm, most complete movements to the Body, Stage, and Double Mirror, Two pairs of Eyepieces, Pliers, Forceps, &c.	\$290 00
B. 37.	New large Best Monocular-Microscope Stand, with Concentric Rotating Stage and Iris Diaphragm, most complete movements to the Body, Stage, and Double Mirror, Two Eyepieces, Pliers, Forceps, &c.	232 50
B. 40.	Improved large Binocular-Microscope Stand, with the most complete movements to the Body, Stage, and Double Mirror, Two pairs of Eyepieces, Pliers, Forceps, &c.	255 00
B. 41.	Improved large Monocular-Microscope Stand, with the most complete movements to the Body, Stage, and Double Mirror, Two Eyepieces, Pliers, Forceps, &c.	200 00
B. 42.	Improved large Binocular-Microscope Stand, the same as No. 40, but made very portable,	275 00
B. 43.	Improved large Monocular-Microscope Stand, the same as No. 41, but made very portable,	225 00
B. 44.	Improved smaller Binocular-Microscope Stand, on the same principle, and with the same actions as No. 40, Two pairs of Eyepieces, Pliers, Forceps, &c., but with single pillar,	225 00
B. 45.	Improved smaller Monocular-Microscope Stand, on the same principle, and with the same actions as No. 41, Two Eyepieces, Pliers, Forceps, &c., but with single pillar,	175 00

CASES FOR FIRST-CLASS MICROSCOPES.

B. 46.	Best Upright Case, in Spanish Mahogany, for Nos. 40 and 41, with best brass handle, two boxes for Apparatus,	40 00
B. 47.	Best Upright Case, in Spanish Mahogany, for Nos. 40 and 41, with best brass handle, only one box for Apparatus,	33 00
B. 48.	Upright Case, in Honduras Mahogany, for Nos. 40 and 41, with best brass handle, two boxes for Apparatus,	27 50
B. 49.	Upright Case, in Honduras Mahogany, for Nos. 40 and 41, with best brass handle, one box for Apparatus,	22 50
B. 50.	Strong Flat Case, in Spanish Mahogany, with covered Dovetails (19 inches long by 9 inches wide, and 4 inches deep), for Nos. 42 and 43,	31 00
B. 54.	Best Upright Case, in Spanish Mahogany, for Nos. 44 and 45, with best brass handle and box for Apparatus,	31 00
B. 55.	Upright Case, in Honduras Mahogany, for Nos. 44 and 45, with best brass handle and box for Apparatus,	22 50
B. 56.	Strong Flat Case, in Spanish Mahogany, with covered Dovetails, for Nos. 44 and 45, with best brass handle,	16 50

SECOND-CLASS MICROSCOPE STANDS.

B. 59.	Student's Best Binocular-Microscope Stand, with complete movements to Body, Stage, and Double Mirror, Two pairs of Eyepieces, Pliers, Forceps, &c.	165 00
B. 60.	Student's Best Monocular-Microscope Stand, with complete movements to Body, Stage, and Double Mirror, Two Eyepieces, Pliers, Forceps, &c.	110 00
B. 61.	Student's Best Plain Binocular-Microscope Stand, Stage Movements by means of Sliding-piece and Clamping-spring, Double Mirror, Two pairs of Eyepieces, Pliers, Forceps, &c.	127 50
B. 62.	Student's Best Plain Monocular-Microscope Stand, Stage-movements by means of Sliding-piece and Clamping-spring, Double Mirror, Two Eyepieces, Pliers, Forceps, &c.	80 00



B. 36.

CASES FOR SECOND-CLASS MICROSCOPES.

- B. 64. Upright Case, in Honduras Mahogany, for Nos. 59-62, B. with best brass handle and box for Apparatus, \$22 50
 B. 65. Strong Flat Case, in Honduras Mahogany, Dovetailed, for Nos. 59-62, B. 11 00

PRICES OF ACHROMATIC OBJECT-GLASSES AND APPARATUS FOR FIRST AND SECOND-CLASS MICROSCOPE STANDS.

ACHROMATIC OBJECT-GLASSES.

No.	Focal length.	Linear magnifying power nearly, with eyepieces....						Angle of aperture, about	Price.
			No. 1.	No. 2.	No. 3.	No. 4.	No. 5.		
B. 70.	4 inches	Draw-tube closed.....	10	16	26	32	52	9	\$ c.
		Ditto if drawn out, add for each inch.....	1 1/4	3	5	6	8		
B. 71.	3 inches	Draw-tube closed.....	12	20	40	48	74	12	31 00
		Ditto if drawn out, add for each inch.....	2	4	6	7	10		
B. 72.	2 inches	Draw-tube closed.....	20	38	70	85	130	18	31 00
		Ditto if drawn out, add for each inch.....	4	6	8	12	15		
B. 73.	1 1/2 inches	Draw-tube closed.....	30	56	100	120	190	23	31 00
		Ditto if drawn out, add for each inch.....	5	7	12	15	22		
B. 74.	2/3 inch	Draw-tube closed.....	70	120	220	270	410	32	28 00
		Ditto if drawn out, add for each inch.....	8	14	25	27	48		
B. 75.	1/10 inch	Draw-tube closed.....	120	210	370	460	710	55	46 50
		Ditto if drawn out, add for each inch.....	14	24	34	46	70		
B. 76.	1/10 inch	Draw-tube closed.....	146	255	460	560	890	90	66 00
		Ditto if drawn out, add for each inch.....	18	32	48	60	80		
B. 77.	1/4 inch	Draw-tube closed.....	200	340	590	720	1120	75	46 50
		Ditto if drawn out, add for each inch.....	24	42	63	85	120		
B. 78.	1/5 inch	Draw-tube closed.....	225	400	700	860	1450	85	46 50
		Ditto if drawn out, add for each inch.....	18	35	60	80	130		
B. 79.	1/5 inch	Draw-tube closed.....	225	400	700	860	1450	100	55 00
		Ditto if drawn out, add for each inch.....	18	35	60	80	130		
B. 80.	1/8 inch	Draw-tube closed.....	400	680	1180	1440	2240	120	75 00
		Ditto if drawn out, add for each inch.....	50	85	140	180	280		
B. 81.	1/10 inch immer.	Draw-tube closed.....	500	870	1500	1850	2800	160	55 00
		Ditto if drawn out, add for each inch.....	60	100	180	190	370		
B. 82.	1/20 inch	Draw-tube closed.....	900	1570	2750	3450	4950	140	140 00
		Ditto if drawn out, add for each inch.....	80	150	300	350	900		
B. 83.	1/20 inch immer.	Draw-tube closed.....	900	1570	2750	3450	4950	170	130 00
		Ditto if drawn out, add for each inch.....	80	150	300	350	900		
B. 84.	1/40 inch	Draw-tube closed.....	1800	3140	5500	6900	9900	140	185 00
		Ditto if drawn out, add for each inch.....	160	360	600	700	1800		

LIEBERKUHNS FOR OBJECT-GLASSES.

No.	Object-glass.	Price.	No.	Object-glass.	Price,	No.	Object-glass.	Price.
B. 87.	3-inch,	\$ c.	B. 89.	1 1/2-inch,	\$ c.	B. 91.	1/10-inch,	\$ c.
B. 88.	2-inch,	6 75	B. 90.	2/3-inch,	5 00	B. 92.	1/4-inch,	4 50

APPARATUS.

B. 66.	Sorby's Spectroscope Eyepieces, for the Microscope, in Mahogany Case. (See "Popular Science Review," No. 18),	\$55 00
B. 67.	Sorby's Dichroscope,	9 50
B. 67*.	Sorby's Standard Spectrum-scale,	9 50
B. 96.	Orthoscopic Eyepieces, giving a very large field, each,	9 50
B. 97.	Eyepieces for the Improved Large Microscope, each,	7 75
B. 98.	Eyepieces for the Improved Smaller Microscope, each,	6 75
B. 99.	Erecting-glass,	9 00
B. 100.	Draw-tube for First- and Second-Class Microscopes,	4 75
B. 101.	Achromatic Condenser, with Revolving Diaphragm, with Stops, aperture from 25° to 80°, complete Adjustments, applicable to the First-Class Stands only,	45 00
B. 102.	Achromatic Condenser, without Diaphragm, aperture from 20° to 60°, complete Adjustments, applicable to the First- and Second-Class Instruments,	22 50
B. 104.	Right-angle Prism, for reflecting the light more perfectly than the Flat Mirror, for the First-Class Stands only,	22 50
B. 105.	Amici's Prism, for oblique light, for the First-Class Stands only,	20 00
B. 106.	Amici's Prism, on Separate Stand,	20 00
B. 107.	Nachet's Prism, for oblique light,	9 50
B. 108.	Wenham's Parabolic Reflector, for the First-Class Stands,	16 50
B. 109.	Wenham's Parabolic Reflector, for the Second-Class Stands,	16 50
B. 110.	Spot Lens, mounted in brass fitting,	5 00
B. 113.	Brown's Iris Diaphragm,	20 00
B. 115.	Polarizing Apparatus, with 1 Film of Selenite,	22 00
B. 116.	Polarizing Apparatus, with extra-large Polarizing Prism,	38 50
B. 117.	Darker's Series of Selenites, adapted for the First-Class Stands only,	33 00
B. 118.	Selenite Film, of two colours,	2 25
B. 119.	Selenite Stage, Red and Green or Blue and Orange, each,	3 50
B. 120.	Darker's Selenite Stage, giving 13 tints,	20 00
B. 121.	Black Glass, for Polarizing Light,	5 50
B. 122.	Bundle of Glass, for Polarizing Light,	9 50
B. 123.	Two Double-Image Prisms and Selenite Film, with fittings to Eyepiece, and brass plate with holes,	20 00
B. 123*.	Single Double-Image Prism, in fitting,	9 00
B. 124.	Crystals to show rings round the Optic Axis each,	4 75
B. 125.	Tourmalines, each,	9 00
B. 126.	Beck's Patent Illuminator, in a brass box, for viewing Objects as Opaque under high powers,	5 00
B. 127.	White-cloud Illuminator,	5 00
B. 128.	Parabolic Illuminator, fitted to the 1½-inch and ¾-inch Object-glasses,	10 00
B. 129.	Parabolic Illuminator, same as No. 128, with the addition of Sorby's Reflector,	20 00
B. 130.	Large Bull's-eye Condensing Lens, on stand,	10 00
B. 131.	Smaller Condensing Lens, with Fitting to Limb of the First-Class Stands,	9 00
B. 132.	Smaller Condensing Lens, on Stand,	6 00
B. 133.	Side Silver Reflector, with Fittings to Limb of the First-Class Stands,	10 00
B. 134.	Side Silver Reflector, on Stand,	10 00
B. 135.	Rainey's Moderator, on Stand,	10 00
B. 136.	Three Dark Wells and Holder,	5 50
B. 137.	Opaque-Disk Revolver, one Tray of Disks, in Case,	16 50
B. 138.	Opaque-disk Revolver, with 3 trays of Disks, Forceps, Capsule of Gold Size, in Mahogany Case, complete,	35 00
B. 139.	Opaque-disk Revolver and Forceps,	10 00
B. 140.	Boxes containing 24 Disks,	5 50
B. 141.	Trays containing 24 Disks,	5 50
B. 142.	Three-pronged Forceps, in German Silver, with Screw Adjustment.	7 75
B. 143.	Three-pronged Forceps,	6 75
B. 144.	Stage Forceps,	4 00
B. 145.	Stage Mineral-holder,	9 50

B. 146. Eyepiece Micrometer, with Jackson's Adjusting Screw,	\$9 50
B. 147. Stage Micrometer, mounted in brass,	4 50
B. 148. Stage Micrometer, mounted in card,	2 25
B. 150. Maltwood's Finder, in case,	4 00
B. 152. Indicator to each Eyepiece,	2 25
B. 154. Leeson's Goniometer,	22 00
B. 155. Wollaston's Camera Lucida,	9 00
B. 156. Neutral-tint Glass Camera Lucida,	4 00
B. 157. Steel-disk Camera Lucida,	7 00
B. 159. Brooke's Double Nosepiece,	13 75
B. 160. Quadruple Nosepiece,	31 00
B. 161. Quadruple Nosepiece, in Aluminium,	45 00
B. 162. Lever Compressorium,	9 00
B. 163. Parallel Compressor,	9 50
B. 164. Reversible Compressor,	9 50
B. 165. Wenham's Compressorium, for use with Wenham's Parabola,	4 00
B. 166. Screw Live-box,	6 75
B. 167. Large Live-box,	4 25
B. 168. Smaller Live-box,	3 25
B. 169. Large Glass Trough, with Wedge and Spring complete,	4 25
B. 170. Smaller Glass Trough, with Wedge and Spring complete,	3 25
B. 171. Glass Slip, with Ledge	60
B. 172. Growing-cell, for preserving objects alive in water for many days,	5 00
B. 173. Set of Six Live-traps and Trough, in Case, complete,	13 75
B. 174. Live-trap,	3 50
B. 175. Frog-plate, with Bag, &c., complete,	5 00
B. 176. Glass Slip, with Hollow and Ledge,	90
B. 177. Glass Slip, with Hollow and Ledge and Lip,	2 25
B. 180. Glass Tubes, Set of Three,	90
B. 181. Key for Tightening joint of First-Class Instruments,	2 25
B. 182. Opal Glass, for moderating the light, 3×1 inch,	60
B. 183. Blue Glass, for moderating the light, 3×1 inch,	60
B. 186. Astral Oil Lamp, with flat wick,	6 75
B. 190*. Lamp Chimneys for No. 186,	25
B. 191*. Flat Wicks for No. 186, per dozen,	25
B. 191. Gallon Can of Astral Oil,	1 00

THIRD-CLASS MICROSCOPES.

B. 220. **The Binocular Popular Microscope.** Price, \$137 50

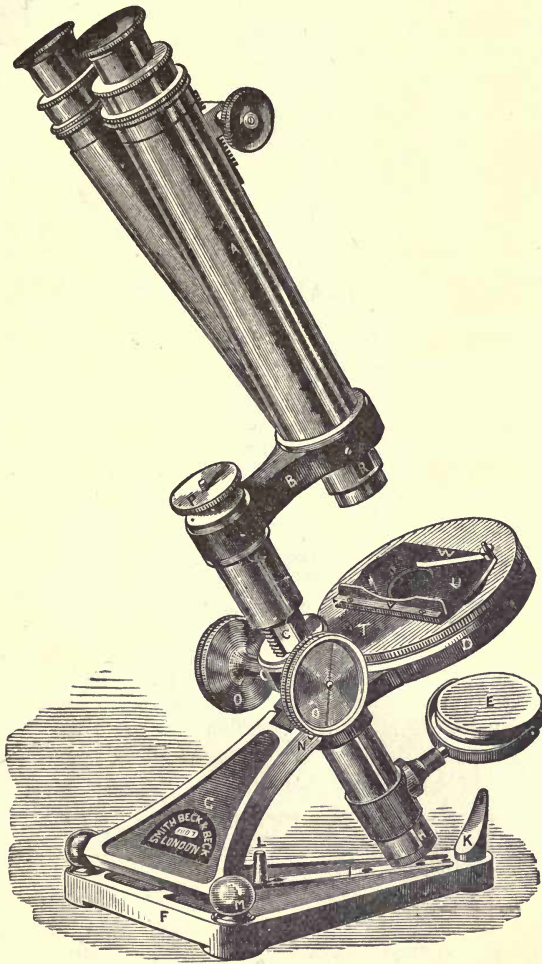
With 2-inch, 1-inch, and $\frac{1}{2}$ -inch Object-glasses, having the respective apertures of 10, 22, and 75 degrees, and 2 pairs of Eyepieces; a new improved Stand with arrangement for varying the position, quick and slow motions to the body; Stage with improved object-holder and concentric revolving fitting; Concave Mirror with complete adjustments; a Side Condensing Lens on Stand; Diaphragm with perforated revolving disk; improved Forceps; Glass Plate, and a pair of Pliers, packed in a strong French-polished Mahogany Case, with brass hooks, a good lock and strong handle, together with Two Trays provided with the necessary fittings for the complete series of Object glasses and Apparatus.

B. 221. **The Binocular Popular Microscope.** Price 95 00

With 2-inch Object-glass; one pair of Eyepieces; Concave Mirror; Side Condensing Lens on Stand; Diaphragm; Forceps; Glass Plate, Pliers, &c., in Mahogany Case.

B. 222. **The Monocular Popular Microscope.** Price, 95 00

With 1-inch and $\frac{1}{2}$ -inch Object-glasses; 2 Eyepieces; Concave Mirror; Side Condensing Lens on Stand; Diaphragm; Forceps; Glass Plate, Pliers, &c., in Mahogany Case.



B. 220.

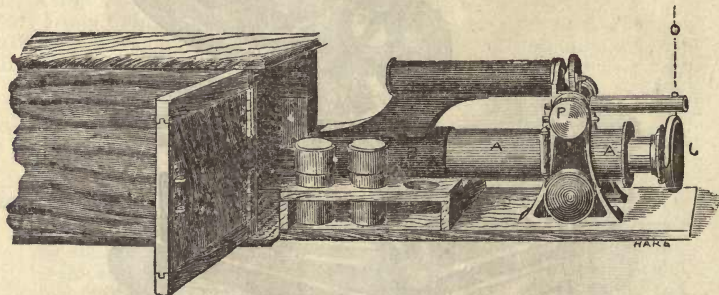
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| B. 223. The Binocular Popular Microscope Stand, with one pair of Eyepieces; Concave Mirror; Diaphragm; Forceps; Glass Plate, Pliers, &c., . . . | \$82 50 |
| B. 224. The Monocular Popular Microscope Stand, with One Eyepiece; Concave Mirror; Diaphragm; Forceps; Glass Plate, Pliers, &c., . . . | 50 00 |
| B. 225. Mahogany Case for the Popular Microscope, | 7 25 |
| B. 226. Side Condensing Lens, on Stand, | 4 00 |
| B. 227. Improved Stage-Forceps, | 2 50 |
| B. 251. Stage, with Horizontal and Vertical Mechanical Movements, Sliding Object-holder, and Revolving Fitting, complete, | 25 00 |
| B. 252. Glass stage for Popular Microscope, | 10 00 |

PRICE LIST OF OBJECT-GLASSES AND LIEBERKUHN'S.

No	Focal length.	Linear magnifying power nearly, with eyepieces.		Degrees of angle of aperture.	Price.	No.	Object-glass.	Price.
		Draw-tubes	No. 1.						No. 2.
B. 229.	3 in.	closed	12	20	8			\$ c.
B. 230.	2 in.	closed	24	40	10			
B. 231.	1½ in.	closed	29	48	15	B. 237.	1½-in.	4 50
B. 232.	1 in.	closed	55	90	22	B. 238.	1-in.	3 75
B. 233.	½ in.	closed	120	200	40	B. 239.	½-in.	3 75
B. 234.	¾ in.	closed	210	350	75			
B. 235.	⅝ in.	closed	420	700	85			
B. 236.	⅓ in.	closed	800	1200	100			

ADDITIONAL APPARATUS.

- B. 238. Lieberkuhn to 1-inch Object-glass, \$3 75
- B. 240. Dark Well, 2 00
- B. 241. Achromatic Condenser and Fitting, 9 50
- B. 242. Wenham's Parabolic Reflector, for Dark-field Illumination, 9 50
- B. 243. Flat Mirror (in which case a double one is substituted for the concave single one, which has to be returned), 3 50
- B. 244. Polarizing Apparatus, complete with Prisms, Plate of Selenite and Adapter, 16 50
- B. 245. Wollaston's Camera Lucida, for drawing an object, 7 25
- B. 246. Glass Micrometer, ruled into 100ths and 1000ths of an inch, 2 25
- B. 247. Small Live-box, 2 25
- B. 248. Glass Trough, complete with Wedge and Spring, 3 25
- B. 250. All the above Additional Apparatus, from Nos. 238-248, if ordered at once, 45 00

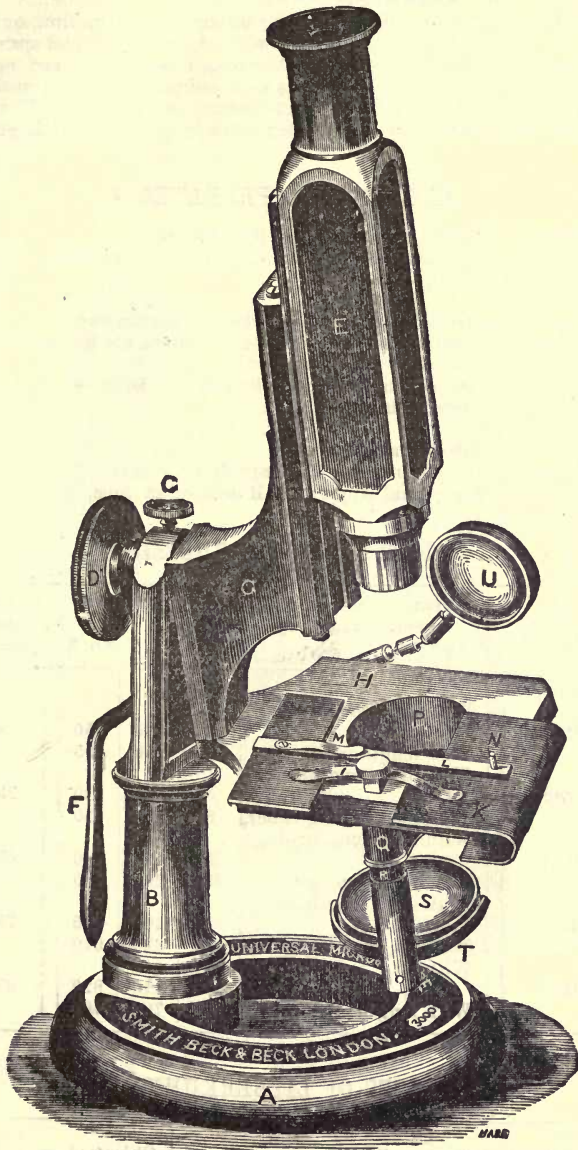


B. 260.

- B. 260. **The Educational Microscope.** Price, 75 00
 With 1-inch and ¼-inch Object-glasses, having the respective apertures of 22 and 75 degrees, and 2 Eyepieces; a firm Stand with a joint for varying the position, quick and slow motions to the body, a Stage with springs that allow any motion to be given to the object; a Supplementary Stage; Concave Mirror with complete adjustments; a Side Condensing Lens; Diaphragm with a Shutter; Forceps; Glass Plate, and a pair of Pliers, packed in a strong Mahogany Case.
- B. 261. **The Educational Microscope Stand.** Price, 35 00
 With two Eyepieces; Supplementary Stage; Concave Mirror; Side Condensing Lens; Diaphragm; Forceps; Glass Plate and Pliers, in a strong Mahogany Case.
- B. 262. Eyepieces for Educational Microscope, 6 00

ADDITIONAL APPARATUS.—The same as with the Popular and at same prices.

- B. 269. Mahogany Board, required for packing any of the additional parts, 3 50
- B. 272. Springs for Stage of Educational Microscope, each, 60



B. 275.

FOURTH-CLASS MICROSCOPES.

B. 275. The Universal Microscope. Price, \$50 00

The Stand with firm circular base; an axis for inclination, quick and slow motions to the body; Stage with object-holder and spring; Diaphragm with shutter; Concave Mirror in a semi-circle and on a sliding tube; Side Condensing Lens with complete ball and socket movements; 1-inch and $\frac{1}{2}$ -inch Object-glasses; two Eyepieces; Pliers; Forceps; and Glass Plate; the whole packed in an Upright Mahogany Case.

ADDITIONAL APPARATUS.

- B. 245. Wollaston's Camera Lucida, for drawing an object, 7 25
- B. 246. Glass Micrometer, ruled into $\frac{1}{100}$ ths and $\frac{1}{1000}$ ths of an inch, 2 25
- B. 248. Small Glass Trough, 3 25
- B. 280. Third Eyepiece, 5 00
- B. 281. Wenham's Parabolic Reflector, for Dark-field Illumination, 9 50
- B. 282. Flat Mirror (in which case a double one is substitute for the single concave one, which has to be returned), 3 50
- B. 283. Polarizing Apparatus, complete with Prisms and Selenite, 16 50
- B. 284. Dark Well for Lieberkuhns, 2 00
- B. 285. Small Live-box, 2 25
- B. 288. Small Box for Additional Apparatus, 3 50
- B. 290. Lengthening Tube, to increase the Magnifying-Power, 1 75
- B. 292. All the above Additional Apparatus, if ordered at once, 45 00

PRICES OF OBJECT-GLASSES.

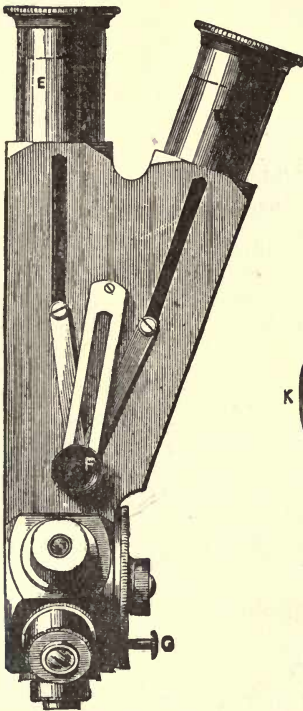
No.	Focal Length.	Linear magnifying power, with eye-pieces,				Angle of aperture.	Price.
			No. 1.	No. 2.	No. 3.		
B. 294.	2 inches	Without lengthening tube,	20	30	50	9	\$ 13 50
		With lengthening tube, . . . . .						35	50	95
B. 295.	1 inch	Without lengthening tube,	45	60	120	25	13 50
		With lengthening tube, . . . . .						80	110	220
B. 296.	$\frac{1}{2}$ inch	Without lengthening tube,	85	120	240	45	22 50
		With lengthening tube, . . . . .						150	200	400
B. 297.	$\frac{1}{4}$ inch	Without lengthening tube,	140	200	400	75	13 50
		With lengthening tube, . . . . .						230	320	640
B. 298.	$\frac{1}{8}$ inch	Without lengthening tube,	300	410	820	85	37 50
		With lengthening tube, . . . . .						500	700	1400

PRICES OF LIEBERKUHN'S.

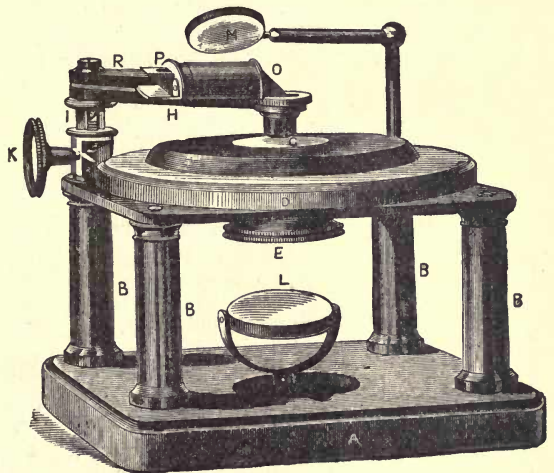
No.	Object-glass.	Price.	No.	Object-glass.	Price.
B. 299.	1-inch	\$3 75	B. 300.	$\frac{1}{2}$ -inch	\$3 75

ADDITIONS TO STAND.

- B. 303. Binocular Body, with Adjustment for distance of eyes; Revolving Disk for Three Object-glasses; complete fittings for Prism, and Two extra Eyepieces, \$85 00
- B. 304. The Combined Body, with Revolving Disks, capable of receiving Three Eyepieces and Three Object-glasses at the same time, 10 00
- B. 305. Stage, with Vertical, Horizontal, and Revolving Movements, the latter being always central with axis of body, 20 00



B. 303.



B. 308.

SINGLE MICROSCOPES.

- B. 308. Improved Dissecting Single Microscope. Price, \$50 00

Stand with complete sliding and revolving Stage-plates; One Arm to carry the lenses, with rack-and-pinion adjustment; Side Condenser on lengthening arm; Mirror with complete adjustments; Two single lenses and Two Coddingtons, $\frac{3}{4}$ and $\frac{1}{2}$ -inch focus, the whole packed in a strong Mahogany Case.

CODDINGTON LENSES, &c.

B. 343. Combination of Three Lenses, mounted in Tortoise-shell, on Brass Stand, with Adjusting Arm and Sliding Forceps for holding an object,	\$13 50
B. 344. Combination of Three Lenses, in Tortoise-shell, on Brass Stand, with Adjusting Arm,	9 00
B. 346. Combination of Three Lenses, mounted in Tortoise-shell, for pocket,	6 00
B. 347. Coddington Lens, $\frac{3}{4}$ -inch focus, mounted in Silver,	11 00
B. 348. Coddington Lens, $\frac{3}{4}$ -inch focus, mounted in Aluminium Bronze,	11 00
B. 349. Coddington Lens, $\frac{3}{4}$ -inch focus, mounted in German Silver,	9 00
B. 350. Coddington Lens, $\frac{1}{2}$ -inch focus, mounted in Gold,	27 50
B. 351. Coddington Lens, $\frac{1}{2}$ -inch focus, mounted in Silver,	10 00
B. 352. Coddington Lens, $\frac{1}{2}$ -inch focus, mounted in Aluminium Bronze,	9 00
B. 353. Coddington Lens, $\frac{1}{2}$ -inch focus, mounted in German Silver,	7 25

MOUNTING MATERIALS.

B. 360. Collection of Mounting-Materials and Dissecting Instruments. Price,	\$115 00
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Consisting of Wood-cutting Instrument and Chisel; Instrument for cutting circles of thin Glass; Glazier's Diamond; Writing Diamond; Cell-making Instrument; Brass Table and Lamp; Page's Forceps; Case of Dissecting-Instruments, containing 4 Knives, 2 Hooks, 2 Points, 3 pairs of Scissors, 3 pairs of Forceps, and Needle-holder; Valentin's Knife; 1 oz. Thin Glass; 9 dozen Slips, 3 inch by 1 inch; 3 dozen Wooden Slips; 3 dozen Cells; 200 Labels; 5 Capped Bottles, containing Canada Balsam, Asphalt, Gold Size, Glycerin, and Marine Glue; Bottle of Deane's Medium; 3 Stopped Bottles for containing Chloroform, Nitric Acid, and Liq. Potassæ.

The whole packed in a strong Dovetailed Mahogany Case.

B. 361. Collection of Mounting-Materials. Price,	\$50 00
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Consisting of Writing Diamond; Cell-making Instrument; Brass Table and Lamp; Page's Forceps; Case for Dissecting-Instruments; 1 oz. Thin Glass; 6 dozen Slips, 3 in. by 1 in.; 3 dozen Wooden Slips; 2 dozen Cells; 150 Labels; 5 Capped Bottles, containing Canada Balsam, Asphalt, Gold Size, Glycerin, and Marine Glue; Bottle of Deane's Medium.

The whole packed in a strong Mahogany Case.

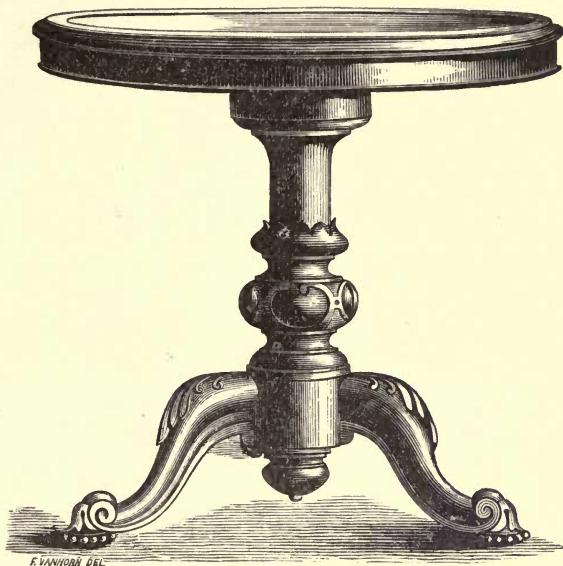
B. 362. Collection of Mounting-Materials. Price,	\$27 50
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Consisting of a Writing Diamond; Cell-making Instrument; Brass Table and Lamp; Page's Forceps; $\frac{1}{2}$ oz. Thin Glass; 3 dozen Slips, 3 in. by 1; 1 dozen Cells; 100 Labels; 5 Bottles, containing Canada Balsam, Asphalt, Gold Size, Glycerin, and Marine Glue; Small Bottle of Deane's Medium.

The whole packed in a Mahogany Case.

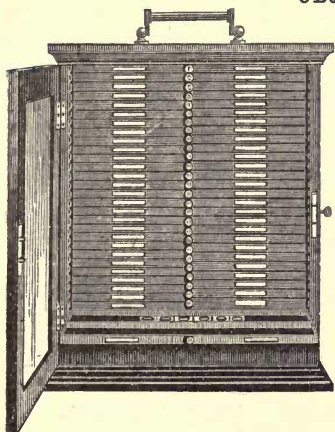
B. 368. Improved Wood-cutting Machine, with Chisel, packed in Mahogany Case,	\$13 50
B. 491. Revolving Table, especially arranged for Microscopic purposes, in Walnut, Rosewood, Mahogany, or Oak, with handsome Leather Top, Gilt Border,	75 00
B. 492. Iron Centre, for the above,	11 00
B. 495. Walnut-wood Stand, with Leather Top, on Rollers, to carry a Microscope and Lamp round a Table,	10 00
B. 496. Bell-Glass Shade and Stand, with handsome Leather Cover, to place over a Microscope.	11 00

REVOLVING MICROSCOPE TABLE.



B. 491.

OBJECT CABINETS.



B. 466.

- B. 466. *Best Spanish Mahogany Cabinet*, with glass panel and deep drawers at bottom, to hold 1000 objects, \$75 00
- B. 467. *Honduras Mahogany Cabinet*, without glass panel or deep drawers, to hold 1000 objects, 60 00
- B. 468. *Best Spanish Mahogany Cabinet*, with glass panel, to hold 750 objects, 55 00
- B. 469. *Honduras Mahogany Cabinet*, without glass panel, to hold 750 objects 50 00
- B. 470. *Best Spanish Mahogany Cabinet*, with glass panel, to hold 500 objects, 40 00
- B. 471. *Honduras Mahogany Cabinet*, without glass panel, to hold 500 objects 35 00

In the above cabinets there are porcelain tablets let into the fronts of the drawers. The drawers are numbered and the specimens lie flat.

GENERAL REMARKS.

The difference in the price of "*First-class Microscopes*," as numbered in this Catalogue, is dependent upon the number of *Object-Glasses* and the amount of *Apparatus* supplied, the *quality* being the same throughout.

The *Eye-pieces* should be frequently wiped with a clean cambric handkerchief, or a piece of soft wash leather. The *Object-Glasses* should never be touched, except by the makers.

Full instructions, as to the best mode of using all the foregoing instruments, are given in Richard Beck's Treatise on the Construction, Proper Use and Capabilities of R. & J. Beck's Achromatic Microscopes. Royal 8vo, with 27 plates. Price, \$8.75.

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