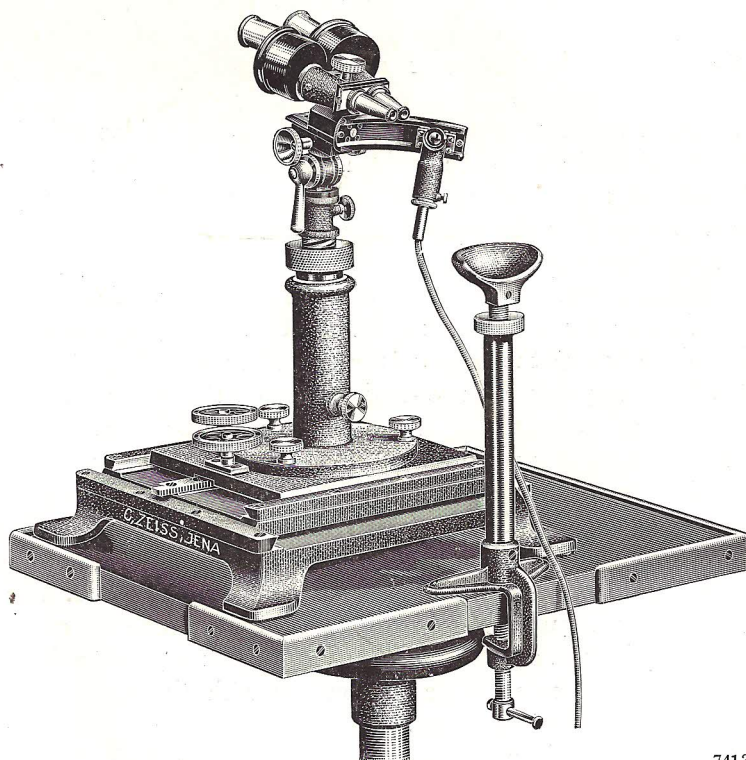


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## Corneal Microscope



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Fig. 1.

Corneal Microscope with paired Objectives  $a_2$  and Eyepieces  $e_2$ , fitted with Dr. Lucanus' Illuminating Quadrant, on mechanically extensible stand mounted on compound metal slides, with instrument table and chin rest.  
(About  $\frac{1}{8}$  Full Size.)

The Corneal Microscope is a binocular instrument which in many cases is indispensable in the examination of the eye. It is equipped with interchangeable pairs of objectives and eyepieces giving magnifications ranging from 8 to 103 diameters. When required for the examination of the anterior segment of the bulbus and for operations on the eye it is used in conjunction with an illuminating device capable of displacement along a slide rail. Incidentally, the instrument serves for the focal illumination of the eye in conjunction with Gullstrand's Slit Lamp.

The object is examined in stereoscopic relief through a pair of image-erecting microscopes. Being provided with erecting eyepieces having Porro prisms, the microscopes are readily adjustable to suit varying distances between the observer's eyes, ranging from 62 to 80 mm. (2.44 to 3.15 in.) In the event of the eyes being abnormally close together, this should be stated when ordering.

A curved rail mounted under the objectives provides a sliding base for an illuminating device which will suffice in most cases for the examination of the anterior segment of the eye. The curvature of the quadrant is such that the optical axis of the illuminating system and of the two microscopes always meet at the same point, so as to ensure a good illumination in any position of the slide fitting. The arrangement projects a uniformly bright spot of light with a sharply defined boundary into the plane where the object is seen in greatest distinctness.

The lamp requires a current of 0.4 amp. at 4 volts, which may be derived from an accumulator or the electric supply system, an appropriate resistance being put in with the lamp in the latter case.

The illuminating rail is made in two patterns. One of these, as suggested by Prof. Gullstrand, is a semi-circular slide rail, along which the illuminating device may be displaced either way with respect to the objectives. The other pattern, as devised by Dr. Lucanus, has the form of a quadrant which leaves the space on one side of the microscope free so as to provide convenient access to the eye and admits of the light being directed upwards with the quadrant placed in a vertical or oblique position.

The binocular microscope, together with the illuminating rail, can be detached and replaced with ease and is fitted to a horizontal slide within which it can be displaced by a rack and pinion as a means of sharply focussing the image. The entire microscope apparatus together with the illuminating device is inclinable about a clamping hinge. The

whole of the optical apparatus is mounted upon an elevating device consisting of a column and a four-threaded screw actuated by a knurled nut. The microscope can be turned about its vertical axis and clamped in position by means of a screw fitted at the foot of the column.

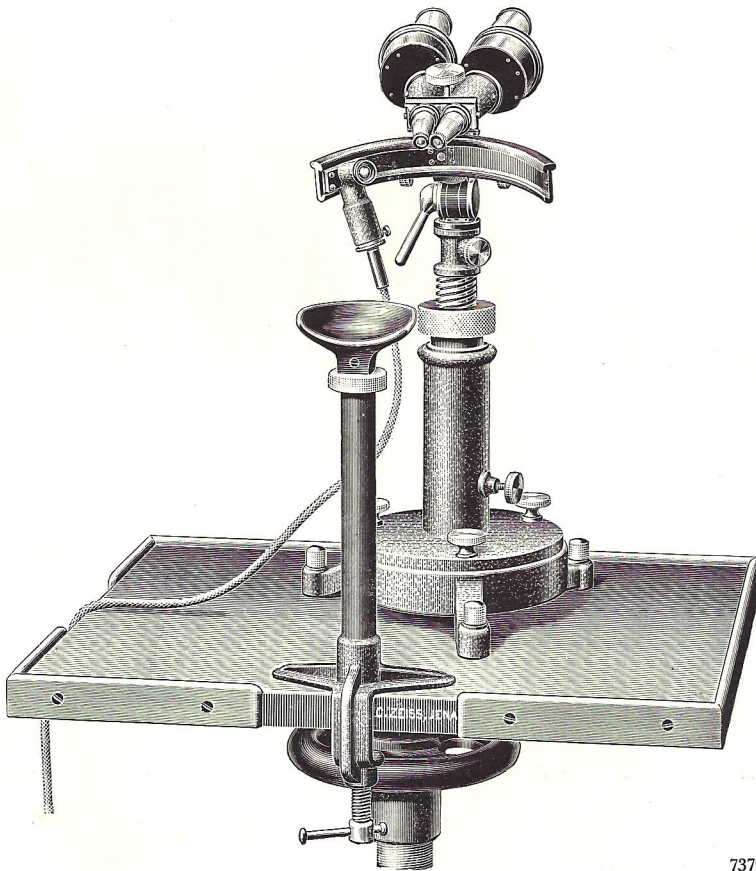


Fig. 2.

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Corneal Microscope with Gullstrand's semi-circular illuminating rail, set upon an annular base.  
(About  $\frac{1}{6}$  Full Size.)

The corneal microscope may be set up either on an annular base or a compound slide. The latter is fitted with a rack and pinion motion and furnishes a convenient and exact means of adjusting the position of the apparatus transversely and towards and from the object. When



the instrument is set up on the annular base it is best to place on the instrument table a glass plate upon which the microscope on its base may be easily moved about.

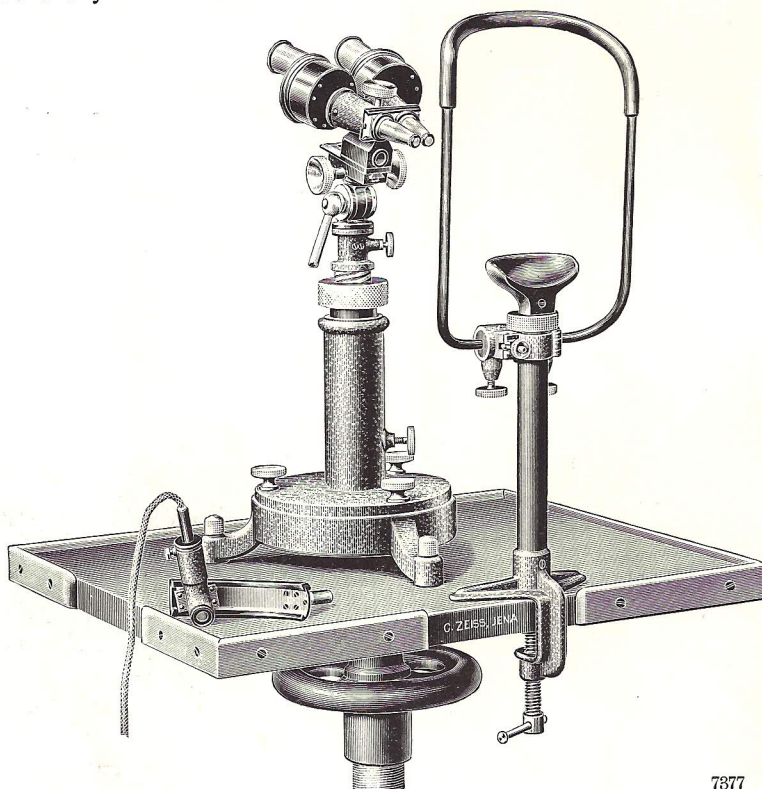


Fig. 3.

Corneal Microscope, showing Dr. Lucanus' semi-circular illuminating rail detached, the whole being set up on an annular base and instrument table with chin and head rests attached thereto.  
(About 1/8 Full Size.)

The microscope is provided with interchangeable pairs of objectives and eyepieces. The resulting magnifications, free working distances and diameters of the field of view are shown in the table on page 6. The most generally used combinations are those made up of the paired Objectives (55) (a<sub>2</sub>) and Eyepieces 2, 4. The paired objectives require to be specially adjusted for each microscope. When ordering paired objectives for use with an instrument purchased on a previous occasion, it will therefore be necessary to send us the

microscope portion of the instrument, if the purchaser is not prepared to apply the requisite adjustments in accordance with directions drawn up for the purpose.

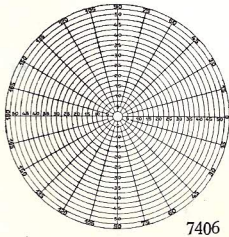


Fig. 4.

Eyepiece Micrometer suggested by Prof. Kraus, being 9.8 mm divided into 48 parts, each division measuring  $1/5$ th mm. About 3 times actual size.

chamber in tenths of a millimetre, whence the actual depth may be computed.

Photographs of the eye can be obtained with the aid of Drüner's Stereo-Camera in conjunction with the paired objectives (55) and the vertical motion of the corneal microscope, the latter being set up on the annular base or the compound slide.

The Stereo-Camera and combinations of the Corneal Microscope with Gullstrand's Slit Lamp or the Simplified Large Ophthalmoscope are described in separate pamphlets. We have also issued a descriptive booklet on Binocular Telescopic Magnifiers, one of which magnifying 3.75 diameters, and in special cases also those magnifying 7.5 to 15 diameters, are well adapted for the examination of the eye.

\*) Dr. Krämer: On Dr. Ulbrich's chamber depth micrometer, Meeting of the Ophthalmological Society of Vienna, 15th June 1914.

The microscope eyepieces may be fitted with micrometers. These consist commonly of two glass discs ruled for linear measurements into tenths and twentieths of a millimetre (viz. 5 mm divided into 50 parts and 5 mm divided into 100 parts). Prof. Kraus has suggested an eyepiece micrometer for linear and circular measurements.

For measuring the anterior chamber of the eye in depth Dr. Ulbrich\*) has devised a graduated drum for attachment to the microscope. This is a disc fitted to the left hand pinion head and so graduated as to read the apparent depth of the

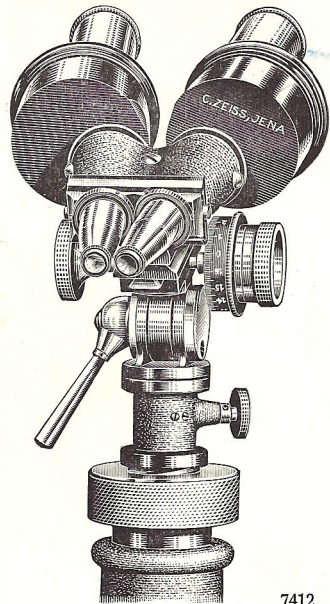


Fig. 5.

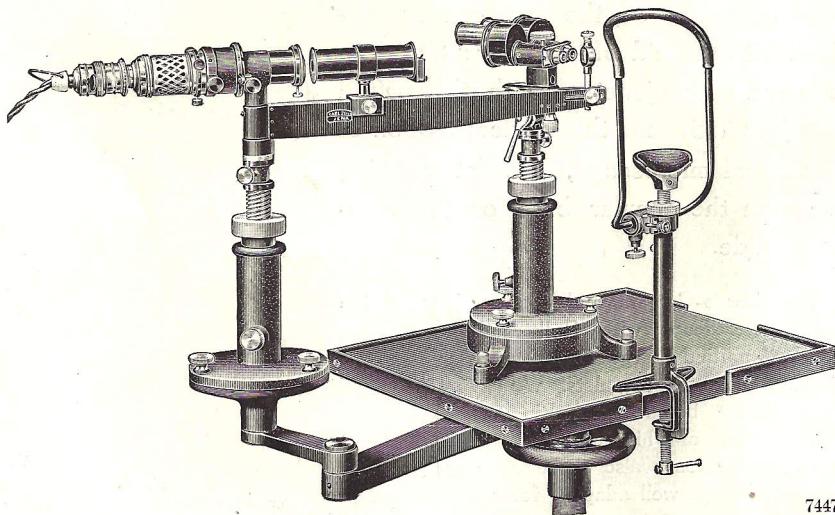
Microscope Head with Dr. Ulbrich's Graduated Drum attached.  
(About  $1/4$  Full Size.)



**Table of Magnifications, Free Working Distances between object and objective, and Extent of Object comprised within the field of view of the various combinations of paired objectives and eyepieces.**

| Designation                |                     | Paired Objectives           |                                   |                     |                              |               |                        |               |                        |
|----------------------------|---------------------|-----------------------------|-----------------------------------|---------------------|------------------------------|---------------|------------------------|---------------|------------------------|
|                            |                     | $\textcircled{55}$ $\times$ | $\textcircled{a_0}$ $\times$      | $\textcircled{a_2}$ | $\textcircled{a_3}$ $\times$ |               |                        |               |                        |
| Equivalent Focus           |                     | f = 55 mm                   | f = 45 mm                         | f = 37 mm           | f = 28 mm                    |               |                        |               |                        |
| Free Object Distance in mm |                     | 70                          | 54 without stops<br>40 with stops | 40                  | 30                           |               |                        |               |                        |
| Paired Eyepieces           |                     |                             |                                   |                     |                              |               |                        |               |                        |
| Designation                | Equivalent Focus mm | Magnification               | Field of view Diam. mm            | Magnification       | Field of view Diam. mm       | Magnification | Field of view Diam. mm | Magnification | Field of view Diam. mm |
| 1                          | 50                  | 8                           | 13                                | 14                  | 7.5                          | 20            | 5                      | 31            | 3.3                    |
| 2                          | 40                  | 9                           | 13                                | 15                  | 7.5                          | 23            | 5                      | 35            | 3.3                    |
| 3                          | 30                  | 13                          | 10.5                              | 22                  | 6.5                          | 32            | 4.2                    | 50            | 2.7                    |
| 4                          | 25                  | 16                          | 8.5                               | 27                  | 4.8                          | 40            | 3.3                    | 61            | 2.2                    |
| 5                          | 20                  | 23                          | 6.2                               | 39                  | 3.6                          | 57            | 2.5                    | 88            | 1.6                    |
| *5a                        | 20                  |                             |                                   |                     |                              |               |                        |               |                        |
| *6                         | 15                  | 26                          | 7.1                               | 46                  | 4.1                          | 67            | 2.7                    | 103           | 1.8                    |

\*) The paired Eyepieces 5 a and 6 are orthoscopic.



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Fig. 6.

The Corneal Microscope and Gullstrand's Slit Lamp (see reference Med 110).

**For Prices see Med 98A.**