

i 36 776567

79



UNIVERSIDAD COMPLUTENSE



5325403424

An Illuminating Device to be
Used as an Attachment to
the Binocular Corneal
Microscope for Gonioscopy
and Goniophotography

RAMON CASTROVIEJO, M.D.
NEW YORK, N. Y.

*Reprinted from the Transactions of the
American Academy of Ophthalmology and Otolaryngology
1935*

PRINTED IN U.S.A.

Exemplar unico

AN ILLUMINATING DEVICE TO BE USED AS AN
ATTACHMENT TO THE BINOCULAR CORNEAL
MICROSCOPE FOR GONIOSCOPY AND
GONIOPHOTOGRAPHY

RAMON CASTROVIEJO, M.D.

NEW YORK

THE OBJECT of this presentation is to demonstrate an illuminating device that can be attached to any standard corneal microscope, which, thus equipped, may be used for gonioscopy and gonio-photography.* With the aid of the contact glass for fundus examination, and the corneal microscope equipped with the illuminating device, observations of the fundus can be made with high magnifications.

The instrument (Fig. 1) consists of a 3.5 V. 3.8 Amps. straight filament lamp of special design, adjustably mounted in a vertical lamp housing (Fig. 1-a). Below the lamp are mounted a totally reflecting prism of 87° deviation and a condenser of 2.5 cm. focal length (Fig. 1-b). The vertical adjustment of the filament near the focal plane of the condenser permits the use of a collimated, diverging, or converging beam, as desired, of narrow cross-section and high intensity. The illuminating system, as a unit, is mounted on a tilting hinge for adjustment (Fig. 1-c) at various angles to the axis of the microscope, to avoid reflexes. Back of the hinge joint, a vertical adjustment by a quick-acting screw (Fig. 1-d) permits a rapid leveling of the entire accessory.

This device attaches directly to the mounting of the binocular corneal microscope by means of a clamp screw (Fig. 1-e, and Fig. 2). Located between the objective mounts, it provides central illumination close to the object, with provision made on the mounting to avoid direct reflex into the objectives of the microscope. The axis of illumination in relation to the axis of the objectives may vary vertically between 3° and 18° .

* Castroviejo, Ramon: *Goniophotography*, American Journal of Ophthalmology, Vol. 18, No. 6, (June) 1935.

GONIOSCOPY AND GONIOPHOTOGRAPHY IN HUMAN EYES

The patient is placed in the recumbent position and the eye anesthetized with several instillations of holocaine hydrochloride, 1% solution. The conjunctival sac is freely irrigated with normal saline solution to wash out mucus and other foreign substances which, interposed between the contact glass and the cornea, may disturb the observation. The Zeiss-Koeppel contact glass with full hemisphere for iridic angle, also called "C" glass when made by Bausch and Lomb Optical Company of Rochester,

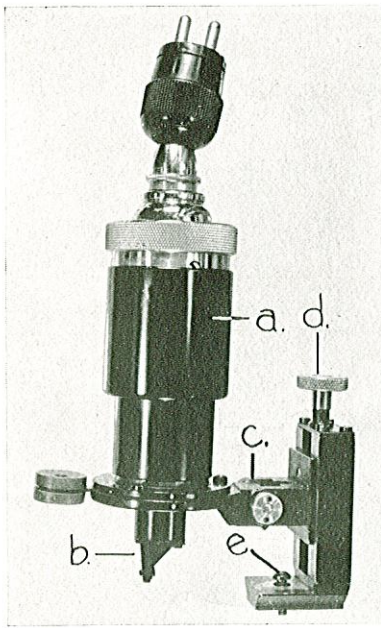


FIG. 1 — (Castroviejo) — Author's illuminating device.

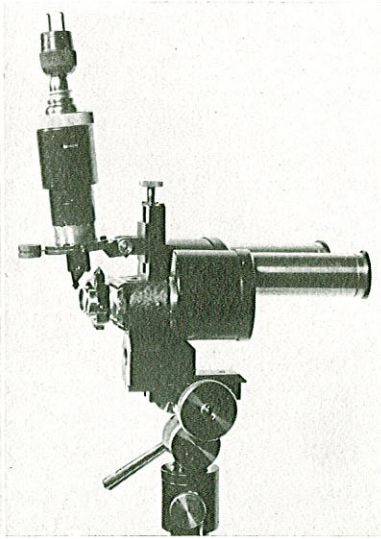


FIG. 2 — (Castroviejo) — Illuminating device mounted on the binocular corneal microscope.

N. Y., is placed in position with the margins of the eyelids surrounding the glass and lying in the groove around its border. The glass is thus held by the eyelids and pressed tightly against the eyeball. Normal saline is then injected to fill the space left between the concave surface of the contact glass and the cornea. For this maneuver, a small canula attached to a rubber bulb, similar to that which is used for the irrigation of the anterior chamber of the eye, may be employed. The external surface of the glass is then washed with distilled water and carefully dried

with a piece of gauze. If the saline solution comes in contact with the external surface of the glass, the rapid evaporation of the fluid leaves a coating of salt deposit which greatly disturbs the view.

The observation of the angle is made with the microscope, equipped with the illuminating device, as indicated in Fig. 3. Different magnifications can be obtained by using different objectives, but best results will be obtained with the objectives of low power, which, having more depth of focus, permit the simultaneous observation of different planes. The stereoscopic view of the angle of the anterior chamber obtained with the binocular microscope, used as described, provides greater ease in the interpretation of histological and pathological details which may be puzzling when monocular observations are employed. For demonstration purposes the binocular microscope may be used by two observers simultaneously, each one looking through a different ocular. In this fashion the instructor points out the interesting details to be observed by the second person and thus it becomes most useful for teaching.

If a photograph of the angle is desired, one of the oculars is replaced by a miniature camera (Fig. 4), equipped with a lateral view finder. The observation of the angle is made through the lateral view finder. When the desired field of the angle has been brought into focus, the prism action which deviates the image towards the lateral view finder is automatically interrupted by making exposure with a special cable release. Photographs may be taken with exposure of $\frac{1}{20}$ of a second (Fig. 5).

For photographic purposes the microscope with the accessories should be mounted upon a heavy compound base for the binocular microscope, which permits a free and fully controlled movement of the camera in every desired direction for adjustment and focusing without being subject to vibrations.

EXAMINATION OF THE FUNDUS

For this purpose the most recent Zeiss model of contact glass for fundus examination is required. This contact glass has a flat anterior surface of 15 mm. diameter, the previous model having a 9 mm. flat surface. The new model makes it easier for the pupil to lie beneath the examining area of the glass, when it is placed in position. The pupil should be widely

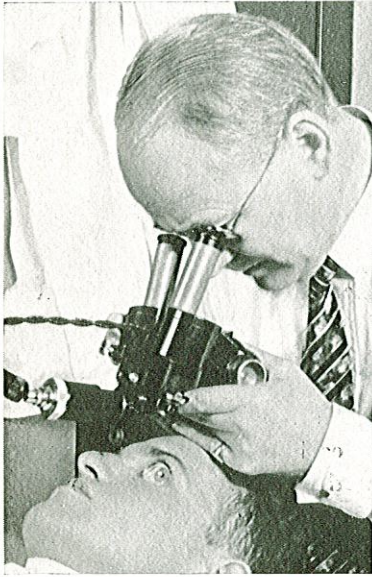


FIG. 3 — (Castroviejo) — Photograph showing how the examination of the angle of the anterior chamber is conducted.

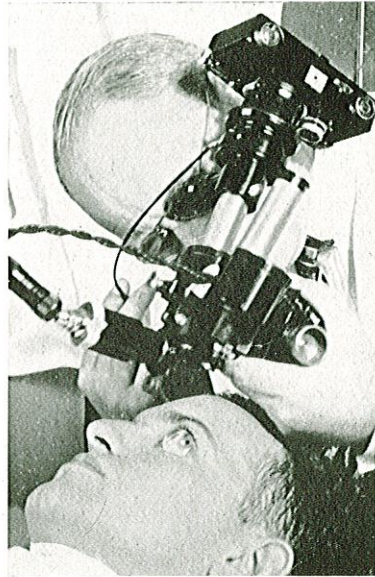


FIG. 4 — (Castroviejo) — Photograph showing how the equipment is assembled for photography of the angle.

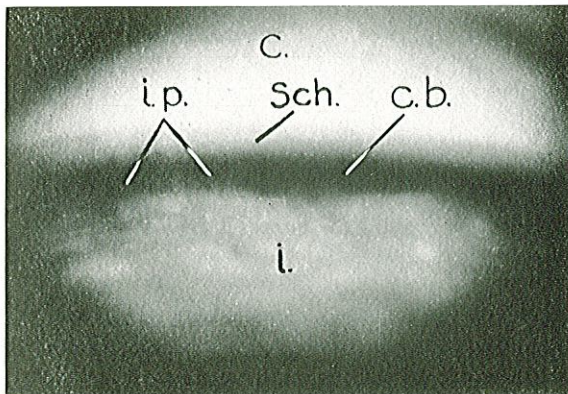


FIG. 5 — (Castroviejo) — Photograph of the angle of the anterior chamber of a normal eye. *C.*, Cornea. *Sch.*, Schlemm's canal. *C.b.*, Ciliary body. *I.p.*, Iris processes. *I.*, Iris.

dilated, the contact glass placed in position and the space between the eye and the glass filled with normal saline solution. The observation is now made in the same way as when the anterior segment of the eye is examined with the binocular microscope and the slit-lamp. The patient sitting down, the head kept steady in the head and chin rest, and the fundus is observed with the binocular microscope equipped with the illuminating device. It is convenient to have the microscope mounted on a heavy stand, equipped with a cross slide adjustable movement, to facilitate focusing.

Very clear observations of the fundus can be made in this way with magnifications ranging from 15 to 60 diameters, depending on the objectives used. The author has been able to obtain photographs of the fundus, using the equipment described above, but for this it is necessary to have a maximum dilatation of the pupil and a very cooperative patient. However, photography of the fundus with standard cameras and methods which do not necessitate the use of contact glasses is more practical. I wish to express my appreciation to Mr. Victor M. E. Koch, of Carl Zeiss, Inc. — New York Agents for Carl Zeiss, Jena — for his cooperation in making the instrument here presented.