

TREPHINES FOR KERATOPLASTY WITH MICROMETRIC REGULATION

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IN order not to perforate the cornea while performing lamellar keratoplasty, it is essential to regulate the depth of penetration of the blade accurately, both in the eye of the host and in that of the donor.

At the eighty-fifth annual meeting of the American Ophthalmological Society, I presented a trephine with a micrometric device which permits accurate regulation of the depth of penetration

feature, I have devised another trephine* with the following characteristics (fig. 1): Within the trephine blade, there is a tightly fitted plunger or piston which permits accurate and easy regulation of the depth of penetration of the blade (fig. 1, A and B). Each complete turn of the plunger moves the blade 1 mm., and with partial turning the plunger, which is provided with a scale in tenths of a millimeter, can be easily and

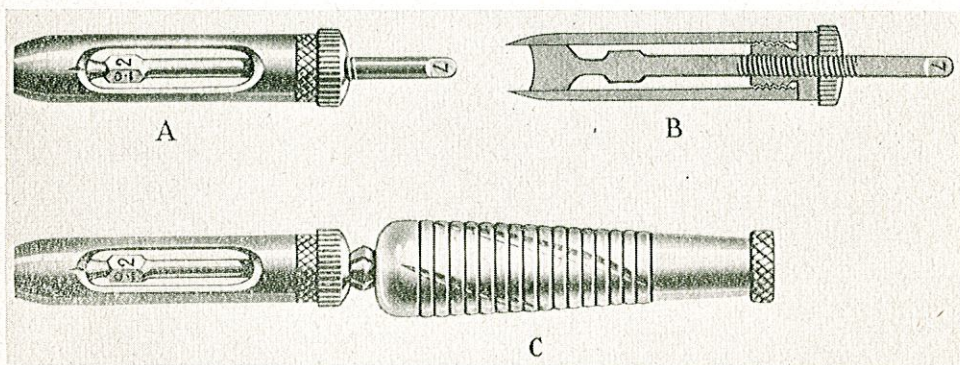


FIG. 1—Improved micrometric trephines for keratoplasty.

of the blade. Although good results were obtained during the operation with this trephine, it had one very undesirable feature, namely, the plunger regulating the depth of penetration of the blade had to be removed and reinserted through the cutting end of the blade. This exposed the blade to damage.

In order to correct this undesirable

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*This instrument is manufactured by Storz Instrument Co., 4570 Audubon Ave., St. Louis 10, Mo., and E. B. Meyrowitz, Inc., 520 Fifth Ave., New York 18, N. Y.

quickly regulated to a depth of $1/10$ or even $1/20$ of a millimeter.

A set screw immobilizes the plunger in the desired position. Another screw arrangement permits the removal of the plunger through the end opposite the cutting edge, thus facilitating cleaning and sharpening of the blade. The surface of the piston (fig. 1, B) which comes in contact with the cornea is concave to conform to the corneal curvature and to prevent the piston from making an uneven pressure on the cornea. This trephine may also be used for penetrating keratoplasty by simply setting the stop to conform to a depth of

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1½ to 2 mm. or more, depending upon thickness of the cornea to be excised. A rather pronounced beveling of the blade towards the cutting edge tends to seal the opening in the cornea. Complete dissection of the leukoma and the graft can generally be carried out without collapse of the anterior chamber because the aqueous is prevented from draining out of the eye by the abruptly beveled blade of the trephine being tightly held against the cornea and by the close fit of the piston inside the blade. Since the dissection of the leukoma can be completed without collapse of the anterior chamber, the danger of lens injury is diminished.

The size of the trephine is marked on the shaft. There are 17 trephines manufactured in sizes varying from 4 to 12 mm. The most frequently used are those from 5 to 7 mm. in the smaller size range, and from 9 to 11 mm. in the larger. Sizes from 4 to 9 mm. are used for partial lamellar or partial penetrating keratoplasties, and sizes from 10 to 12 mm., for total lamellar or total penetrating keratoplasties.

All sizes of the trephine can be mounted in an Elliot handle (fig. 1, C). A new blade can be affixed to the rest of the instrument when the blade of the trephine is no longer usable because of repeated sharpenings.