

JOHN WEISS & SON, LTD.,
287, OXFORD STREET, LONDON, W.

Reprinted from THE OPHTHALMOSCOPE, September, 1910.

THE TONOMETER OF SCHIÖTZ.

BY

BERNARD CRIDLAND, D.O. (Oxon.), F.R.C.S.E.,

HON. ASST. SURGEON, WOLVERHAMPTON AND MIDLAND COUNTIES EYE INFIRMARY;
HON. OPHTHALMIC SURGEON, STAFFORD GENERAL INFIRMARY.

THE tonometer of Schiötz appears to have met with but little recognition in this country, although it has been in use on the Continent for several years, and has been highly spoken of by those who have worked systematically with it.

As a preliminary note, therefore, a description of the instrument, with its method of use may not be out of place.

Ophthalmotonometers, as is well known, have been devised for many years; they are of two kinds, impression tonometers and applanation tonometers, according to the principle on which they act.

Impression tonometers measure the depth of the indentation of the globe by a given weight or the weight necessary to produce a given depth. Applanation tonometers, on the other hand, measure the area flattened by a given weight or the weight necessary to flatten a given area.

Both kinds are inaccurate as compared with the manometer; but inasmuch as the latter requires perforation of the globe, it is, of course, inapplicable for clinical purposes.

Although tonometers give only a relative measure of the intraocular pressure and are inaccurate on account of certain sources of error which cannot be eliminated, it does not necessarily follow that they are useless for clinical purposes.

Whatever tonometric instrument be employed, if it be thoroughly understood and carefully applied by the same observer, variations in the tension of an eye can be noted and recorded which escape digital estimation—the least accurate method of all. If a standard can be obtained for any given tonometer which will give the limits of what is estimated by digital impression to be normal tension, the value of such an instrument is undoubtedly increased and may fairly be relied on clinically. The writer is at present engaged on the examination of tension in the normal eyes by means of the Schiötz tonometer, but does not consider that any number short of one thousand is likely to furnish trustworthy statistics.

Schiötz's instrument is an impression tonometer, and records the indentation of the surface of the cornea by one of several known weights. It is subject, to a certain extent, to the sources of error present in the application of all impression tonometers. They are chiefly that (1) the indentation of the globe is dependent on the curvature of the surface, a variable quantity in different eyes and in different parts of the same eye; (2) the indentation is dependent on the extensibility of the membranes, a variable quantity in different eyes; and (3) the intraocular pressure increases with any pressure upon the globe, such as the weight of the instrument and the pressure unconsciously exerted by the fingers in applying the instrument. In Schiötz's tonometer, however, the following advantages are present: the area impressed for the purposes of measurement has a diameter of 3 mm. only; the variations in curvature therefore, of so small an area need hardly be taken into account; the pressure

