A RECORDING SCOTOMETER*

BY

E. O. MARKS, B.A., M.D., T.C.D.,

BRISBANE.

THERE appears to be a general agreement that the black screen of Bjerrum affords the most accurate, though laborious, method of detecting and mapping out the finer defects in the central and paracentral portions of the visual field. The ordinary perimeter is not sufficiently delicate in its action for such purposes, though invaluable in dealing with gross defects, especially if these are situated towards the periphery of the field where the use of a plane surface is impracticable or impossible.

The perimeter has, in addition to its smaller size, the very great advantage that it is capable of automatically recording its results on a chart. The importance of the saving of fatigue to the patient, and of time and labour to the surgeon, by such an automatic device as the McHardy perimeter, needs no emphasis.

The desire to combine the advantages of the two methods has given rise to several modifications of the Bjerrum screen with which the writer is acquainted. There are probably many to which he has not found reference in the literature at his disposal. So far as he is aware, the device now put forward has not previously been utilized. None of the instruments in use appear to be entirely automatic—either concentric circles or meridians, or both, requiring to be read off and marked on the chart, or noted, and later plotted on the chart. Moreover, the instruments all work in circles or meridians, a feature which usually shows itself in the peculiar outlines of the scotomata as charted, and is a handicap in following the outline of a scotoma when under investigation.

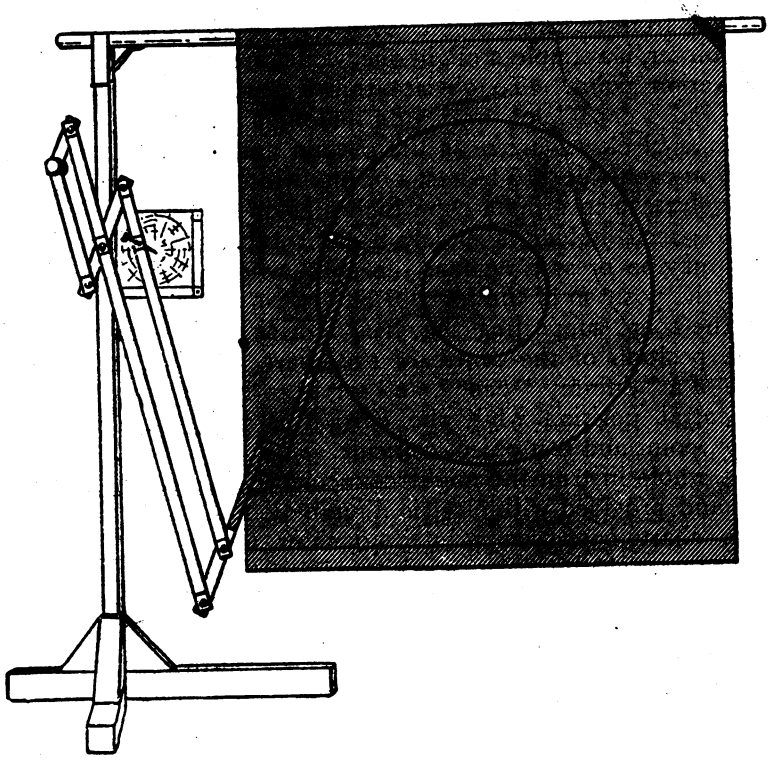
The present instrument, which is really a recording attachment for a Bjerrum screen, has been designed to obviate these defects by providing a test object which moves freely about the field in any direction, in a manner entirely regardless of circles or meridians, while at the same time providing a means of automatically recording on a chart the position of the test object in reference to the fixation point.

It has been constructed to a scale to suit the ordinary Bjerrum curtain, and at a working distance of one metre can record to beyond the 30° circle on a chart 8 inches square. By using charts drawn to corresponding scales, the same instrument could if desired be used for other working distances. It has been designed for a curtain 15 metres square, but the same device could be utilized for smaller or larger instruments.

* Read at the 11th Australasian Medical Congress, Brisbane.

The mechanical principle adopted is that familiar to engineering draughtsmen in the reducing instrument known as the pantograph. It is both simple and mathematically exact in theory. Any error that occurs must be due to faulty construction or use, or to that predominant factor in any subjective examination—the patient.

The instrument consists of a suitable base, from which springs a vertical standard to a height of 6 feet. Supported by a bracket and round hole in the top of the standard, a rod projects horizontally 6 feet, and has attached to it the black velveteen curtain. By



pushing the rod horizontally through the hole in the standard, or by twisting it in the manner of a roller blind, the position of the curtain (and fixation object) may be adjusted to the rest of the instrument. Attached to the standard, 4 feet from the floor and on the same side as the curtain, a board holds the chart by means of suitable slots into which the chart is slipped into position.

The moving part of the instrument is suspended on a pivot attached to the standard on a level with the chart. It consists of two jointed parallelograms and a pointer. The larger parallelogram and pointer (which is continuous with a short side of the parallelo-

gram) form the essential portion of the instrument, the smaller parallelogram serving merely to carry a balance weight. They are constructed of thin wooden laths, the bearings and pencil holder being of metal. The dimensions, which have been adopted merely for the sake of obtaining a suitable range of movement and magnitude of chart, give a reduction of 7 to 1 and are

Long side of parallelogram	...	3 feet 6 inches	Between centres
Short side ,, ,,	...	6 inches	
Pointer, from test object to near bearing	...	3 feet	
Pencil, from bearing	...	6 inches	

The pointer, if a simple straight one, would in some positions obscure the fixation point. To obviate this it has been given a double elbow and is capable of turning on its long axis. It is covered with the same black velveteen as the curtain and provided with a test object on each side. The test objects, white and coloured, are on black velveteen covering a clip which slips on the end of the pointer.

The pencil holder is merely a short tube, through which the pencil may be pressed against the chart whenever it is desired to record the position of the test object.

In the board supporting the chart is a small hole corresponding to the position of the centre of the chart. This takes the wire centre of a "dummy" pencil, and serves to hold the instrument in the central position while the curtain is adjusted so that the fixation point and test object coincide.

The whole instrument might conveniently be arranged as a wall fixing and provided with electric illumination.

The chart has been printed to show (on tangent scale) the concentric circles at 5° intervals up to 30° and meridians at 30° intervals. On the curtain the 10° and 25° circles have been marked in black silk, in deference to Priestley Smith's opinion of their diagnostic importance, and to act as a check on the accuracy of the instrument.

A POINT IN FAVOUR OF PROFESSOR ARTHUR THOMSON'S THEORY OF THE PRODUCTION OF GLAUCOMA

BY

JADAVJI HANSRAJ VAIDYA, D.O.M.S.,

INDIA.

IT is a common observation, which I have often confirmed, that an attack of acute glaucoma comes on between midnight and early morning, i.e., after a few hours sound sleep. The history is to the