According to the generally accepted views regarding the distribution of the nerve fibres, those in the outer third of the disc supply the macular area, the most peripheral fibres of the disc supply the retina in its immediate neighbourhood, while those in the centre are the long distance fibres, which supply the periphery of the retina. Between these three sets of fibres there would be a horseshoe shaped zone on the disc (Fig. 34), the fibres from which would pass to the portion of retina corresponding with the above-mentioned ring field. It would hardly appear credible that a complete "ring" field could have been left, yet it has to be accepted as fact, since the field was taken most carefully on two separate occasions, at an interval of several weeks, and the two fields were practically identical.

The important fact which emerges from this case, is that *a wound of the disc led to a double concentric defect of the field*. The case thus falls into line with certain cases of optic nerve disease such as are met with occasionally associated with Ring Scotoma, e.g., Tabetic Atrophy, and Retrobulbar Neuritis, and it also gives support to the possible view that retinitis pigmentosa, with its concentrically defective fields, may be primarily a disease of the nerve.

Lastly, it appears to prove that the nerve fibres which are in association with the various concentric zones of the retina, and which will be distributed to the corresponding zones in the appropriate superior and inferior calcarine areas of the occipital lobes, are arranged in definite zones in the optic nerve.

THE ARROW TEST FOR ASTIGMATISM

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THOUGH arrows have long ceased to form a part of modern "artillery," their shape has become so impressed upon the mind of both young and old that they make excellent test objects for astigmatism. The figure of an arrow printed upon a rotating disc locates the axis, both by means of its feathers, and of the two barbs of the arrow head. There is an advantage in the double choice, for some eyes are more sensitive in comparing groups of lines than single ones, while other eyes too rapidly experience chromatic sensations from the former to make them of service for testing. Here the two barbs of the arrow head can come to the rescue, being single lines, and thus free from chromatism.

To make use of the test, the patient need only be armed with the spherical lens (arrived at by retinoscopy or otherwise) which makes one meridian emmetropic and the remainder myopic, in other words the highest plus (or weakest minus) lens compatible with best vision of the test types. Then the inverted fan will show approximately where to place the arrow to start with. Its point should touch the blackest spoke of the fan, or occupy the middle of the blackest group. If the brightest spokes are scattered in different parts of the fan the astigmatism is "irregular," and the case more suitable for the test types only. The arrow should then be turned in the direction of the cleanest feather, or the faintest barb, till the two sides agree in clarity. If the patient's

head be truly erect the point of the arrow indicates the axis with great exactitude.

After locating the axis, it remains to measure the amount. The eye should now be emmetropic for that square whose lines are parallel with the shaft of the arrow, but if not should be made so by modification of the spherical lens before it. The disc is provided with a mark upon its edge at 90° from the arrow point which at once indicates the axis of the minus cylinder required to bring the square of transverse lines into equal clarity with its fellow. Before prescribing, it is as well to ascertain from the test types how much of the full correction is appreciated.

As in all fan and line tests the one difficulty without a phorometer is that of keeping the patient's head erect. A simple expedient may be suggested; if a slight tilt of the head seems incorrigible, the instrument as a whole can be tilted by an equal angle in the same direction. Clearly, however, no correction is so satisfactory as a well placed head.

The apparatus is made by Messrs. C. W. Dixey and Son, of 3, New Bond Street, London.