as the phorias, anomalies of the vergencies, size of retinal images, and some other factors—will render the prescribing of spectacles less of an art and more of a science.

Summary

A table of the optical power of obliquely crossed cylinders, and the implications of oblique cylinder ideas for retinoscopy with cylinders are presented.

The basis of streak-retinoscopy is a band-like retinal image of the immediate source of light, which can be rotated in the principal meridians of astigmatism.

Similarities exist between cylinder-retinoscopy and streak-retinoscopy as regards ascertaining the axis and the amount of the required cylinder.

A survey of different instruments of the streak retinoscope group, and their practical use is given.

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A CASE OF ANGEOID STREAKS OF THE RETINA*

BY

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THIS condition must be somewhat rare for until I examined the present case, I had never seen one in my own hospital or private practice. Nor could I find any member of the Staff of the Birmingham Eye Hospital who had any personal knowledge of the

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cc lition. Fortunately I had examined one or two examples at the Clinical Meetings of the Section of Ophthalmology of The Royal Society of Medicine, otherwise I might have been in doubt of the nature of my case. The chief interest lies in the fact that I was able to examine the fundi before there was any ophthalmoscopic evidence of abnormality, and also in the somewhat rapid changes that were observed subsequently.

On December 22, 1942, I examined in my consulting room at Birmingham, Mr. H. R. S., aged 37 years, a non-ferrous metal moulder. He complained that recently he had noticed distortion of objects with the right eye and diplopia.

Condition on examination

V.R.=6/9 partly with -0.75 D.Sph. = 6/6 mostly. V.L.=6/18 with $+1.5$ D.Sph. and $+0.5$ D.Cyl. axis 90° = 6/12 mostly.

Naturally, with a complaint of metamorphopsia a very careful examination was made of the fundi. Both appeared to be perfectly normal. There was one degree of right hypophoria, and six degrees of near esophoria.

There was a very hollow bridge to the nose so a Wassermann reaction was performed with a negative result. X-ray pictures of the sella turcica and of the sinuses were normal. There was no evidence of any general disease, and later on when the angeoid streaks were found examination shewed no trace of Paget's disease or of pseudoxanthoma elasticum.

Because the patient was complaining of diplopia he was sent to Miss Lavinge of the West Bromwich Hospital for orthoptic treatment. He started this treatment on January 7, 1943, and his vision was taken and found to be 6/30 and 6/24. Unfortunately this result was not brought to my notice and I did not see him again till July 1, 1943. It is obvious that between the dates of December 22 and January 7, that is to say in a fortnight, the visual acuity had fallen from 6/6 mostly and 6/12 mostly to 6/36 and 6/24.

On July 1, 1943, there had been a further deterioration in sight, especially in the right eye, which now had an acuity of less than 6/60. The conditions of the fundi that I found are shewn in the pictures kindly made for me by Messrs. Theodore Hamblin Ltd. in August, 1943; with the exception that the mass at the right macula originally suggested a large soft exudate rising up from the surface of the retina. This mass appeared to harden and become whiter. Unfortunately my Gullstrand ophthalmoscope had been put away out of danger from the blitzes, but I have no doubt that the mass projected into the vitreous region. The left macula shewed no abnormal changes. The white areas round the discs were first noticed on July 22. They at first appeared to become denser giving the appearance of a waxy mass with crinkled edges, and here

and there on the surface of the mass were nipple-like buds of dense white wax-like material. A suggestion of these buds is seen in the drawings.

The angeoid streaks are well shewn in the drawings and are quite characteristic. I think that they were rather more marked when I first saw them than they were three weeks later when the drawings were made. In addition to the major changes there was a diffuse choroiditis of the "pepper and salt" variety.

I last saw the patient on November 20, 1943. The vision of the right eye was 1/60 that of the left 6/12. The fundus changes were far less evident. The mass at the right macula had contracted down to a white nodule, and the streaks were less evident, especially in the left eye. Some of the original streaks would pass unnoticed if one did not know where to look for them.

I have had the great advantages of Mr. Law's experience in these cases, and he very kindly examined the patient on August 11, 1943. He found that the vision of the right eye was only finger counting at 1 metre. The left eye with his correction obtained 6/6. The

FIG. 1.

FIG 2.

right field shewed an absolute central loss to 8/2000 white, roughly central and of 5 degrees extent. The left field was normal. Mr. Law found the same fundus lesions that I have mentioned; he states that they are unusual and have probably arisen as the result of a subsiding exudative retino-choroiditis.

At the Congress of the Ophthalmological Society of the U.K. in 1938, Mr. Law read a most valuable paper which will be found in the *Transactions of the Society*, Vol. LVIII, part II, p. 191, in which he came to the conclusion that in a case he was able to examine after death the probable cause was folding of the retina with a deposit of pigmentary debris between the rods and cones and the pigment layer.

I think that my case supports Mr. Law's view because we know that the change took place with extreme rapidity (in a fortnight), if we are to take the evidence of the diminution of vision. But the deterioration in vision must have been largely due to the central macular lesion and judging by the left eye the streaks seemed not to have affected the vision. But we have the solid fact that on

December 22, 1942, I found that the fundi were normal, and on July 1 the fundus pictures shewn in the drawings were fully developed. This all speaks for some rapid mechanical act, and does not suggest a slow pathological process such as the formation of new vessels.

I shall present the original coloured drawings to the Nuffield Ophthalmic Institution where they will doubtless be open to inspection. This Institution also houses the original drawings made by Robert Doyne of the original case he described in 1889.

AN OPERATION FOR SHRUNKEN SOCKET

BY

DR. J. KRAUS

SHRUNKEN socket is a frequent aftermath of war injuries of the eye. Scarring, loss of conjunctiva, and adhesions are the causes. When we consider the operative procedures available for its correction we can see that they constitute a territory in which many attempts have been made and many failures have occurred.

Of all the available methods of operation at the present time, only those of Esser (modified) and Czapody are worthy of consideration. Both these methods have the same sound basic theory, but both have to a greater or lesser degree the same basic defect.

1. In Esser's method, the force which should work against shrinkage comes not from within outwards (as it should), but from without inwards, i.e., by closing the lids when the cavity is filled with "Stent," or other material. In Czapody's method the force is from within outwards, but in a linear direction (see Figs. 6 and 7).

2. The method of Esser does nothing and that of Czapody does very little to overcome the retraction due to shrinkage of the graft and adhesions which occur after covering the newly produced bare area. (Czapody makes several small incisions at the base of his covering graft.)

A method has been devised which is not subject to the faults of the above operations and is here described. A modified technique and a new design of cavity-dilator (see Figs. 8 and 9) are employed.

Details of operation (Note: This description applies to a lower lid only, but can be equally applied to an upper lid or both lids).

Stage 1.—After a large canthotomy to the orbital margin, three stitches are inserted into the lower lid margin, and with these the lid is pulled down (see Fig. 1). Two or three millimetres from the lid margin and parallel to it the conjunctiva is cut. It