

Philadelphia, are also recorded. This last case is very similar to mine, but was apparently slower in onset and lasted longer. The notching of the vein observed by me does not seem to have been present in either of these cases.

A CASE OF SECONDARY PUPIL*

BY

D. V. GIRI, D.O. (Oxon).

EASTBOURNE.

Miss E. K., aged 23, was seen by me as an out-patient in the Free Eye Hospital, Southampton, on January 30, 1917. She came to the hospital because her friends told her she was becoming "boss-eyed."

In this case careful examination brings to light the following interesting condition :

R.E.—The pupil is ectopic, smaller than the left, almond-shaped, and placed with its long axis extending up and in and down and out, somewhat up and more nasally than usual. Almost in a line with its long axis and about 1 mm. external to it, is seen a pigmented dot which at first sight looks like an ordinary naevus of the iris. If in the dark room, the iris is observed under strong magnification, while the intensity of illumination of the eye is suddenly and markedly varied by bringing the ophthalmic lamp rapidly close up to the eye and then taking it away so as to produce a strong reaction of the pupil, the pigmented spot will be seen to expand and contract with the dilation and contraction of the pupil. When the pupil is dilated by means of a mydriatic, the spot in question presents a circular lumen about 1.5 mm. in diameter, through which a second red reflex is obtained. Like a normal pupil, this aperture has a pigmented border, and there is a suggestion of sphincter-like arrangement of fibres round it; from between it and the pupil, the iris fibres run down and in and up and out as the rays in a pencil of light or the hair in a painting brush. The pupil recedes most up and in; down and out, out and up and out, a broad area of iris tissue remains unretracted.

R.V. 6/5. No Hm. L.V. 6/5. No Hm.

There is about 0.5D. of latent hypermetropia in each eye. B.E. pupils active. Fundi normal. T.n. No squint.

The left pupil is normal in shape and position, and dilates uniformly and fully under mydriasis.

*Case shown at the Oxford Ophthalmological Congress, 1917. It was examined by most of the members present, both before and after the instillation of homatropin. No exception was taken to my view that it was an instance of genuine secondary pupil and not of diplochoria.

The patient has no brothers and sisters, and is not aware of any relations having a similar abnormality.

Remarks

In the chapter on congenital abnormalities, in Vol. III, Part 1, p. 801, of his "Pathology of the Eye," Parsons says: "Polycoria is the condition in which there are holes in the iris.

They are not true pupils since they have no sphincter. The name should be restricted to actual holes in the iris, and should not include divisions of the pupil by bands of persistent pupillary membrane, bridge colobomata, etc. Diplocoria, or two pupils, is the commonest condition. . . Franke distinguishes two groups:—

(1) Rounded or slit-shaped holes near the pupillary edge; (2) holes at the ciliary border, resembling iridodialyses or colobomata.

The false pupils, having no sphincter, do not react to light, but vary in shape passively under the pupillary movement.

The condition is found associated with minute anterior synechiae (Treacher Collins), typical coloboma of the iris in the other eye (Schapring), corneal opacities, congenital cataract, and coloboma of the choroid."

Now the question arises: Is the present case one of mere diplocoria, or of genuine double pupil? In this instance the condition is unaccompanied by any of the above enumerated associate abnormalities: viz., anterior synechiae, typical coloboma of the iris in the other eye, corneal opacities, congenital cataract, and coloboma of the choroid.

It is obviously not an example of bridge coloboma of the iris or of persistent pupillary membrane. Under normal conditions there is no obvious aperture but only pigmentation to mark its position. If its dilatation and contraction under the influence of light were passive and dependent on the reactions of the other pupil, one would expect it to contract when the pupil dilates and to dilate when the pupil contracts. But the reverse is the case. Again, when the pupil is well dilated by means of a mydriatic, the aperture in question, instead of becoming obliterated in the furled tissue of the iris, becomes large enough to let a distinct red reflex through. These considerations lead one to look upon its reaction to light as active and not passive. Furthermore, the peculiar retraction of the iris in the various directions under mydriasis points to its having a sphere of influence of its own as distinguished from that of the main pupil. The possession of a pigmented border by it as by a normal pupil and the peculiar arrangement of the iris fibres in its neighbourhood, when considered with its behaviour to light and mydriatics, make it highly probable that it is provided with a

sphincter. Of course in the absence of anatomical examination, no direct proof of the presence of a sphincter is possible.

All the points considered make out a strong case for the condition here being looked upon as one of genuine secondary pupil.

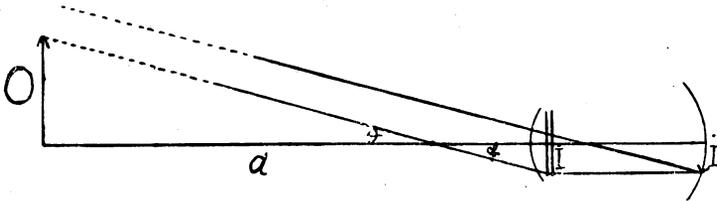
My thanks are due to Mr. Arthur Zorab, surgeon to the Southampton Eye Hospital, for permission to show the case.

NOTE ON RECORDING VISUAL ACUITY

BY

G. F. ALEXANDER, Major R.A.M.C.

IN the annotation on visual requirements of soldiers in THE BRITISH JOURNAL OF OPHTHALMOLOGY of January, 1918, I am troubled, though not surprised, to read the statement that "the practice of regarding 6/18 as 1/3 of normal vision, and so on, cannot



be too strongly condemned." Why should it be condemned? It is perfectly correct, the contrary view being an error which might with advantage be abandoned.

(1) In Snellen's types the letters in all of the lines are constructed so as to subtend the same angle, viz., $5'$ at the distance marked for the line they are in, 6M, 9M, 12M, etc., hence if O be the size of any letter and D the distance at which this angle is subtended by it O varies directly as D .

(2) In the accompanying diagram if O be any object, d its distance from the anterior focus of the eye, θ the angle subtended by O at this point, *i.e.*, the visual angle, f the anterior focal length of the eye, and I the image of O , as $I = f \tan \theta$, $i = f \frac{O}{d}$ hence, granted that the visual acuity, V varies inversely as i , V varies directly as d and inversely as O , *i.e.*, from (1) inversely as D , so that if V of 6/6 be taken as normal or unity, V of 6/9, 6/12, 6/18, etc., accurately expresses $\frac{2}{3} V$, $\frac{1}{2} V$, $\frac{1}{3} V$, etc.

It may be objected that Snellen takes the visual angle as being that subtended at the nodal point, N , and not the anterior focus of the eye, but as the rays from the letters enter the eye parallel the visual angle is the same in either case.
