Permanent Drainage of the Vitreous in Glaucoma


The writer holds the opinion that direct decompression of the vitreous would be of great advantage in glaucoma. The excavation of the optic nerve, and the pressing forward of the lens and iris furnish evidence that the seat of the hypertonus is in the vitreous. The anterior chamber is shallow in glaucoma because the communication between it and the posterior chamber is more or less completely obstructed. Earlier researches have convinced the author that even in normal conditions the communication...
between the two chambers is neither widely nor permanently open. The iris, applied accurately by its pupillary border to the lens, lies between the two chambers like a valve. The aqueous passing from the posterior to the anterior chamber raises this value, which opens and closes intermittently, as can be plainly demonstrated experimentally.

The communication between the chambers becomes more precarious when, as in glaucoma, the iris is sclerosed and rigid, and the hypertonus established in the vitreous pushes the lens forward and presses it against the iris.

The intra-ocular high tension thus restricts the passage of aqueous into the anterior chamber, the chief path of escape of intra-ocular fluids, and this in turn assists in the obliteration of the canal of Schlemm, the important outlet for the aqueous. As a result there is insufficient drainage of aqueous, leading to its retention and to an increase of intra-ocular tension. To remedy these conditions we may either establish a larger communication between the posterior and anterior chambers (as by iridectomy), or encourage the escape of aqueous from the anterior chamber (as in fistulising sclerectomy). Still another method would be to decompress directly the vitreous, and to allow drainage of intra-ocular fluids through the sclera.

**Weekers** has endeavoured to establish a permanent drain from the vitreous; the method he describes has been employed on rabbits' eyes and on a few human eyes blind from glaucoma and destined for excision for relief of pain. If the sclera be trephined the opening so produced quickly cicatrices and is completely obliterated. To counteract this, Weekers inserts a small gold ring of 2 mm. diameter with a grooved edge. The ring is cut from a small tube, with very thin walls, and is 1.5 mm. in height. The edges of the ring are everted at a right angle; the lower everted edge, which will be on the inner surface of the sclera, is narrower than the upper, which will be subconjunctival. By this procedure a direct and permanent drainage is established, as shown in rabbits by the following experiment:—A small quantity of 20 per cent. solution of fluorescein is injected into the vitreous at a point diametrically opposite the drain. In a few minutes the colour appears under the conjunctiva at the site of the drain, whereas it does not appear in the anterior chamber at the pupillary margin until more than an hour has elapsed.

Weekers operates thus:—The conjunctiva is dissected up in the upper temporal area, from a point near the limbus for a distance of about 7 mm. At this point the sclera is trephined with a 2 mm. trephine. In glaucomatous eyes an appreciable quantity of fluid escapes from the supra-choroidal space. Uveal tissue, recognizable by its colour, appears in the trephine aperture,
PRIMARY SARCOMA OF THE IRIS

and may either be left intact, or picked up by forceps and cut off. By means of small forceps the gold drain is then inserted. By reason of the eversion of its lower lip, its diameter is greater than that of the aperture in the sclera, but the elasticity of the tissue allows of its easy introduction. Once in position the drain is firmly held and by reason of its everted edges cannot escape inwards or outwards. The conjunctival flap is carefully sutured with catgut.

Weeker's longest case is of 4 months' duration; the gold drain has been well tolerated and no reaction has followed.

After the operation intra-ocular tension has quickly been reduced to normal, and hypotonus has not been observed. Concomitantly with the reduction of tension, pain has been relieved and eyes have been retained which would otherwise have been enucleated. After the operation wound has healed the conjunctiva at the site of the gold drain shows a slight and persistent elevation, evidence of a permanent filtration of intra-ocular fluid into the subconjunctival tissue.

J. B. LAWFORD.

II.—PRIMARY SARCOMA OF THE IRIS


Primary sarcoma of the iris is sufficiently rare to justify the reports of individual cases. Fuchs found only 16 examples in his 259 cases of sarcoma of the uveal tract, and Lawford and Collins had only one example in 103 cases. Fage's case was one of leucosarcoma, and of this variety Lagrange, in his work on "Tumours of the Eye" (1900), collected only 8 instances from ophthalmic literature.

Fage's patient, a woman 36 years of age, came under observation in May, 1917. For about 6 months she had noticed a flattened yellowish nodule near the base of the iris. There were no inflammatory signs, the tension was normal and the vision unaffected. The iris, which was grey-blue in colour, was covered in its lower third by a smooth slightly-raised growth, yellowish-brown in colour and devoid of visible blood vessels.

During the three months following, the tumour became appreciably larger, and in August had involved two-thirds of the iris in its lower temporal part. At this time the eye became suddenly glaucomatous and was excised on the 21st August. Eighteen months later the patient was in excellent health and the orbit was sound.
The tumour had its origin posteriorly near the attachment of the ciliary muscle, which was slightly displaced. Its anterior margin reached the pupillary edge, which was much thickened and pushed towards the centre of the pupil. Its posterior surface was covered by the uvea, which was stretched over it. The ciliary body was not invaded. The growth showed the histological characters of a sarcoma, with numerous vascular channels without definite walls. It did not contain any pigment except at a few spots near the posterior surface, where some pigment cells from the uvea had wandered into its substance. Compared with most reported cases of sarcoma of the iris the course of this tumour was unusually rapid.

J. B. Lawford.

III.—RETINITIS FOLLOWING ETHMOIDITIS

Gourfein-Welt, Madame (Geneva).—Retinitis following an Ethmoiditis. (Rétilite consécutive a une ethmoidite.)
Revue Générale d'Ophtalmologie, September, 1921.

A rare and interesting case of retinitis, in a woman aged 40 years, unaccompanied by optic neuritis, following ethmoiditis and occurring during the course of the treatment of the latter, is reported by Madame Gourfein-Welt. The principal facts regarding the eye conditions (on the same side as the sinusitis) were: slight exophthalmos, central scotoma to 20 degrees, macula deep red standing out like a mushroom and surrounded by a brilliant pointed crown of radiating lines, white patch outside of the macula, inferior temporal vein greatly dilated and cloudy, small haemorrhages between the macula and this vein. Optic disc normal. Vision equal to fingers at one metre eccentrically. These facts, as observed by the author, were noted six weeks after the onset of the bad vision, which, in its turn, came on some days after a particularly painful nasal treatment which resulted in severe headaches and epistaxis. As the result of removal of polypi and cleansing of the ethmoidal sinus a rapid improvement in vision occurred so that V.A. ultimately became one-sixth. The central scotoma disappeared, but a nasal paracentral one, corresponding to the white patch, remained. At this time, 3½ months after the first note, the macular changes had disappeared, whilst the white patch had increased and showed haemorrhages on its surface. The further course of this important case is not given, the author passing on to the consideration of certain questions arising from it. The first question is: “Is the retinal affection really due to the ethmoiditis?” The answer is in the affirmative, for reasons
Superior Quadrant Hemanopsia

given, which, being fairly obvious, need not be quoted. The second question concerns the method of propagation: (a) to the orbit; (b) to the retina without affecting the optic nerve. The author prefers the venous route to the orbit rather than the direct contact route, because the orbital symptoms were too moderate for suppuration to be inferred, and because the ethmoidal and orbital veins are in direct intercommunication. The route to the retina is more difficult. The author supposes that a "retrograde venous embolus" starting from a thrombo-phlebitis of an ethmoidal vein, found its way into a branch of the central retinal vein, and so to the macula.

The third question is: "What should be the conduct of the ophthalmologist when faced by a retinal affection which he believes due to an ethmoiditis?" The author replies in these words: "He ought not to advise intervention on the sinus, considering the danger to life of such intervention, unless the gravity of the retinal affection justifies it, and if the aetiological diagnosis has been exactly determined." Further study, she says, is desirable to make such aetiological diagnosis more certain than at present. Intervention having been decided upon, what is the method to be employed? The author follows Siegrist in considering that curettage of the sinus endonasally is dangerous, and that the sinus should be evacuated "by the surgical route." Gourfein-Welt concludes a well written article by hoping for free discussion at joint meetings of ophthalmological and rhinological societies of the treatment of the oculo-orbital complications of the various forms of sinusitis.

Ernest Thomson.

IV.—Superior Quadrant Hemianopsia


Gourfein-Welt (Madame) and Redaille report the case of a woman, aged 54 years, who presented a homonymous hemianopia of the right superior quadrant which did not involve the horizontal and vertical meridians or the fixation point. A right hemiplegia supervened, the patient died, and an examination of the brain was obtained. There were four foci of softening in the left hemisphere, all situated in the course of the posterior cerebral artery and its branches. The appearances of the vessels and chronic basal meningitis suggested syphilis as the cause. From their detailed
examination of the brain in this case the authors draw certain conclusions as to the course of the visual fibres. These conclusions will be given somewhat abbreviated: (1) That the superior quadrant hemianopsia is attributable to a lesion of the inferior lip of the calcarine fissure and constitutes one more proof in favour of the projection of the inferior quadrant of the retina on the inferior lip of the calcarine fissure; (2) that the persistence of vision in the horizontal and vertical meridians, in spite of the extensive lesion of the inferior lip of the calcarine, supports the theory according to which these two meridians receive a double innervation, namely, innervation by the two occipital lobes for the vertical and by the two lips of the calcarine fissure for the horizontal meridian; (3) that the integrity of the occipital pole in this case is in favour of the theory according to which the macula is projected to the posterior part of the calcarine fissure. This is contrary to the view of Henschen, who locates the macula in the anterior portion of the calcarine, and of Dejerine-Monakow who concluded for a cortical macular centre; (4) that (from details of the anatomical examination here omitted) the facts in this case are in favour of the theory according to which the visual fibres would be divided into two bundles, those which go to the superior lip of the calcarine fissure passing above the occipital cornu, those which go to the inferior lip passing below this cornu.

The article, which should be studied by those interested in cerebral localization, is illustrated by two charts of the visual fields and by one very rough drawing of the brain, showing the principal lesion. Regarding the charts, the reviewer has studied them carefully in relation to the text, and can but come to the conclusion that they do not actually bear out the statement of the authors that the vertical and horizontal meridians of the fields were unaffected, since, in one eye the superior vertical meridian is cut by the blind area at about 30 degrees, and in the other at about 20 degrees. Has the reviewer misunderstood the French? Here it is. "L'examen du champ visuel révéla l'existence d'une hémianopsie homonyme en quadrant supérieure droit avec conservation de la vision maculaire et un champ visuel en excès dans les méridiens horizontal et vertical. Il existait en outre un rétrécissement concentrique du champ visuel." How is it possible to reconcile the words "un champ visuel en excès dans les meridiens horizontal et vertical" with the concentric contraction of the visual fields (which is actually shown on the charts)? The expression "en excès" must surely have some other meaning than that here given by the reviewer.

Ernest Thomson.
Köllner, H.—Observations upon the hypotonic action of miotics in glaucoma simplex. (Beobachtungen ueber die druckherabsetzende Wirkung der Miotica beim Glaukom simplex.) Zeitschr. f. Augenheilk., Band XLIII., Seite 381.

Köllner remarks that the problem as to how miotics reduce the tension of the eye is still unsolved in spite of numerous experiments and clinical observations. There are two theories which hold the field. One ascribes the action to contraction of the internal muscles of the eye, which either by smoothing out the iris folds, by contracting the ciliary muscle, or stretching the choroid, assist the outflow of fluid from the eye. The other view sees in the alteration of the calibre of the vessels the factor, which, by diminishing the blood flow and consequently the secretion of fluid, tends to lower the intra-ocular tension. It is possible that both factors may combine their action; and that hypotony is achieved by enlargement of the channels of egress and by diminished secretion. Wessely has shown by experiments that the initial rise of tension which follows the instillation of miotics is actually caused by an ephemeral dilatation of the blood vessels.

It is necessary first to rivet our attention upon the time relations of the dilatation of the pupil and the onset of hypotony. It has been stated that the onset of miosis may preced the fall of tension. Köllner agrees that this can happen, but he gives a number of curves showing the simultaneous contraction of the pupil and fall of tension. If the tension be taken within five minutes of the instillation it may be actually raised, because the drug, as stated above, first dilates the vessels.

If, however, we take the tension fifteen minutes after instillation the hypotony and miosis will march hand in hand. The effects pass off simultaneously after a period of from one to three days. This synchronism suggests that hypotony depends upon miosis. The effect of changes in the circulation can be investigated by the use of adrenalin. A woman of 57 suffering from glaucoma simplex was chosen for the experiment. The tension of each eye was over 70 Schiötz units. Adrenalin was injected under the conjunctiva of one eye and eserin instilled into the other. The pupil of the adrenalin eye dilated to the maximum, and after an hour or so the tension fell to 45. The tension of the eserin eye at once fell to 27. The experiment was repeated more than once, always with the same result. Eventually the adrenalin eye was treated with eserin and the tension fell to 27. The test showed that eserin works more quickly and intensively than adrenalin. If homatropin and eserin be instilled together the effect upon pupil and tension
is small. The pupil contracts slightly or not at all, and the fall of tension is minimal. This experiment tends to show that the hypotonic effect is not due to the vasoconstricting action of eserin, but upon its miotic action. In certain cases the initial vasodilator action of eserin and pilocarpin may cause acute glaucoma.

T. Harrison Butler.

BOOK NOTICE

Dynamic skiametry and methods of testing accommodation and convergence. Ch. Sheard. Copyright 1920 by the Cleveland Press.

This monograph is essentially a plea for the greater use of dynamic testing in refraction work.

It is admirably written, and the explanations are greatly simplified by apt illustrations from the author's own records of actual cases.

By dynamic testing the author means the estimation by retinoscopy of the refraction of the eye under observation while in a state of accommodation. The procedure, as commonly adopted in this method, is first to obtain by static (ordinary) retinoscopy those refractive findings which put the eyes, monocularly, in an optical condition, such that the retina and the distant point, presumably passively fixed, are conjugate points. The distant corrections are then inserted before the eyes under test, and the patient is told to read aloud a series of letters indiscriminately arranged, or count a number of fairly large dots upon a test card attached to the retinoscope. At the same time examiner estimates the refraction with the mirror.

The first test described is that of dynamic skiametry, a method in which the author has obviously acquired great proficiency. He warmly advocates its general adoption, despite considerable skill required in its performance, because, first, it ensures greater accuracy in estimating refraction than does static skiametry; and, second, it affords valuable information regarding the amplitude of accommodation, and its co-ordination with convergence.

Duction and version tests, and those employed in the analysis of tonic, accommodative and fusion convergences are then described, and their significance in solving the "great ocular problem" of the "economic co-ordination of accommodation, and accommodative and fusion convergence," emphasized.