GLAUCOMA

register as complete and accurate as possible. All information supplied will be treated as strictly confidential.

It is only by the aid of an up-to-date register that schemes for the welfare of the blind, now in operation or to be initiated, can be made to include all those entitled to benefit thereby.

Glaucoma produced by Homatropin

In the American Journal of Ophthalmology for September, 1917, there is a reference to a case of acute inflammatory glaucoma produced by one drop of one per cent. homatropin, recorded by Levitt, of Brooklyn. Why the Editor of the Journal has refrained from stating in what periodical Levitt reports his case, if indeed it has appeared in print at all, it is difficult to understand. But so it is; no reference is given. In Levitt's case it appears that one drop of one per cent. homatropin employed for a fundus examination caused an attack of acute inflammatory glaucoma; but the age of the patient is not stated. All that is stated is that the eye which developed the glaucoma had tension minus one and was myopic.

ABSTRACTS

I.—GLAUCOMA


(1) McCaw has made some experiments to test the colloidal theory of glaucoma as advanced by Martin Fischer. His observations on the swelling of fibrin and sheep's eyes when placed in acid solutions, lead him to formulate the following conclusions:

An abnormal production or accumulation of acids, or conditions predisposing thereto, exist in all states in which we encounter the development of oedema. Pathologically considered, glaucoma is a local oedema, and, clinically considered, all the symptoms of this disease are referable to the increase of intra-ocular pressure induced by the large amount of water held by the eye. An intense glaucoma can be induced without any circulation whatever, whilst you may have an increase of pressure in the circulating fluids of the eye without any symptom of glaucoma. "This leads us to the conclusion that the cause of glaucoma may well reside in the tissues of the eye, and that it becomes glaucomatous, not because there is more fluid pressed into it, but because through changes in it, it absorbs more
water." In a large number of glaucoma cases, circulatory disturbances in the eye, which permit of an accumulation of carbon dioxide and the abnormal development of such acids as are a constant accompaniment of states of lack of oxygen, are unquestionably present. Subconjunctival injections of $1/8$ to $1/6$ molecular solution of sodium citrate are always followed by a fall in intra-ocular pressure and reduction of glaucomatous symptoms, lasting from three to six days. This, however, does not constitute a cure for glaucoma, which involves the removal of the conditions which are responsible for the production of the substances that increase the affinity of the colloids for water. If there are acids, the product of a circulatory disturbance or of an infection, then the real cure of glaucoma resides in the correction of the circulation to the eye or in the removal of the infection. Sodium citrate injections would help this.

Obliteration of the filtration angle is a consequence of glaucoma, and is explained by the unequal swelling of the different colloids of the eye, those posterior to the lens being capable of greater swelling than those anterior to it. Through this unevenness of swelling the ciliary body is crowded against the sclera and presses on the blood-vessels.

J. JAMESON EVANS.


(2) (a) and (b). These articles make another valuable addition to the literature on glaucoma.

Some of the time-honoured ideas concerning certain aspects of the disease are shown to be fallacious, and the reasoning given is clear and convincing.

A few of the main points only will be dealt with in this review.

Diagnosis of glaucoma.—Here an appeal is made to the general practitioner to be ever on his guard against glaucoma. The author strongly objects to the term "prodromal symptoms," as the eye which shows these so-called "prodromal symptoms" is already definitely glaucomatous, an important point that may be overlooked by others than those doing special work. The term prodromal should be abandoned as both unscientific and dangerous.

The disease is divided into three stages for descriptive purposes:
(1) Early glaucoma (replacing the "prodromal" stage).
(2) Established glaucoma.
(3) Late glaucoma (replacing the "absolute" stage).

Congestive and non-congestive glaucoma.—The differences and points of similarity between these two types are dealt with, and the varying conditions are discussed which determine whether the
vascular factor shall, or shall not, enter into and dominate any particular case. The point made is that the difference between the two types is not a radical one. The fineness of the line dividing the two types is better appreciated when we remember that a patient may have simple glaucoma in one eye, and congestive in the other.

The elements of the disease, to the author's mind, are:

1. The disease is relentless and progressive.
2. That its keystone is a rise of pressure within the eye.
3. That the fundamental causes of this rise are protean.
4. That one and all of them act fundamentally by upsetting the balance between the secretion and excretion of the intra-ocular fluid.
5. That the entry of the vascular factor is an accident, although one of the very gravest proportions.

Following these preliminary points, Elliot adopts the plan of making first a general survey of the principal types of the disease from a clinical standpoint; and then proceeding to discuss each sign and symptom individually and at length.

Clinical course of an attack of simple or non-congestive glaucoma is first dealt with in all its aspects. The statement that a patient's central visual acuity may be preserved unimpaired even with extreme constriction of the peripheral field is doubted, and the author believes central vision in such a case is always to some extent affected. Even if such a patient has 6/6 vision, he holds that this is a falling off from what was the vision before the onset of the disease.

The differences in the gait are pointed out of the patient with glaucoma and tubular vision, and one with optic atrophy, and a third with double immature cataract.

"The Glaucoma Triad" is made up of: (1) cupping of the disc; (2) fall in normal acuity of central vision; (3) characteristic limitation of the visual field.

Increase of tension in the globe is omitted intentionally, as in the early stages of many cases of non-congestive glaucoma, a rise in ocular tension is not always to be found on digital examination.

The clinical course of an attack of primary congestive glaucoma.—The early symptoms and signs; the acute attack, its symptoms and signs; the established and late glaucoma, with their symptoms and signs, are described and the whole disastrous story graphically told to its dark end.

"Memory sight" is a term applied to the visions and scenes some patients are positive they can see, when they are absolutely blind on examination.

The signs and symptoms of glaucoma.—(Considered individually and in detail). In this section the more important headings, etc., are printed in bolder type, a considerable advantage to the reader.
Conjunctiva and sclera.—The changes here are first dealt with.

Cornea.—An explanation is given of the symptoms attributable to the cornea from the changes it shows.

Anterior chamber.—Under this heading three methods of examining the filtration angle are described: (1) by using a trans-illuminator; (2) Salzmann's method; (3) the corneal microscope.

Iris.—The colour changes and the cause of dilatation of the pupil are argued.

Ciliary body.—The weakness of accommodation and abnormal increase in presbyopia and their causes are dealt with, and the fluorescein test in the differential diagnosis between glaucoma and iritis.

Lens.—Three changes are considered. The forward movement of the lens, with increase of refractive power of the eye, cataract, and the green reflex.

Optic nerve and retina. Pallor of disc.—Particular attention is here drawn to the sharp edge of the unyielding scleral foramen over which the nerve fibres pass under pressure. A plate well illustrates this point.

Cupping of disc is considered at length. Coloboma of the optic nerve is emphasized in differential diagnosis of the various cups.

Alteration of apparent direction of retinal vessels.—This condition is aptly illustrated by a simple paper-folding device, which should be useful in teaching classes.

Pulsation in the retinal vessels; changes in the calibre of the retinal vessels; in the retina itself; and in the choroid, are dealt with under separate headings. The size of the globe in glaucoma is also considered.

Certain subjective phenomena — pain, photophobia, and diminution of visual acuity are then taken up. Some anatomical points and the vascular theory of the loss of vision in chronic glaucoma are given considerable space.

The question: "Why is the nasal field usually affected earlier than the temporal in chronic glaucoma?" comes in for thorough treatment. The usual explanation given: that it is due to the longer course of the blood-vessels and fibres on the temporal side and their being more subject to damage from a rise in intraocular pressure is dealt a severe blow. The author's points are borne out by measurements, arguments, and statements of fact, together with two diagrams to make the matter clear. The argument is founded on the following facts:—The nasal field of vision only reaches out to the 60° limit, whilst the temporal field passes well beyond 90°. The centre of the blind spot lies 15° to the outer side of the point of fixation, and therefore 75° (blind spot to centre = 15°; centre to nasal limit of field = 60°; total = 75°) from the nasal limit of the field. It likewise lies about the same distance, i.e., 75°, from
the temporal boundary of the field (from centre of vision to temporal limit of field=90°, minus distance from blind spot to centre, represented by 15°=75°)."

Changes in visual field and perimetry.—The author advocates the use of self-lit instruments in perimetry, and he employs an instrument of this type with a metre radius.

Perimetry with large objects (2.6mm. and 2.9mm.) and the various points it demonstrates are described. The findings of large object perimetry are summarized under four headings. The use of the trephine is advocated in patients even when the restriction of the field has reached close up to the centre of vision. Emphasis is put on the point that glaucoma is not to be diagnosed from the presence of any one single symptom or sign taken by itself.

Bjerrum's test is next dealt with and its value emphasized. With the small object (1mm.) a chart is obtained showing (1) that the area over which the field is lost is always continuous in one direction at least, and often in more than one, with the blind spot; and (2) that that portion of the field of vision which still remains, however small it may have become, is continuous to the last with the blind spot. Two plates illustrate this type of field.

Paracentral scotomata and Seidel's sign are discussed, the latter being valuable as one of the earliest signs of glaucoma.

Tonometry.—The value of the Schiötz tonometer is pointed out, the method of applying it is described in detail, and the limitations of mechanical tonometry are discussed.

Examination of light sense.—Beauvieux and Delorme found that the differential light sense was very early attacked, and the absolute light sense was, on the contrary, only diminished when the glaucoma was sufficiently advanced to have produced definite changes in the disc. The colour sense remained normal so long as the absolute light sense was unaltered. W. A. Fairclough.


(3) Sattler deals with the glaucoma question in an article which we fear most readers will give up in despair. Every paragraph requires re-reading several times before its meaning can be appreciated. Even then, one is not always sure that one has interpreted it aright. It is not merely that the writer appears to have selected the longest possible words, and to have used some of them in a sense which will be unfamiliar to most English readers, but, in addition, the construction is so involved and unusual that, even after very careful study, one is still at a loss.

Apart from all this, the views set forth appear, on the whole, to
be sound and academic. It may be questioned whether Sattler is right in speaking of the greater yielding power of the lamina cribrosa, the cornea, etc., as "safeguards" against tension-increase. So far as the young eye is concerned, such an assumption may be justified; but surely not in the senile organ. Again, the importance of the role played by high tension in glaucoma seems to be belittled in this paper.

This drew forth a protest from Koller, of New York, who rightly pointed out that whilst the aetiology of glaucoma is largely a matter for speculation, the importance of relieving the high tension is paramount. That speaker went on to emphasize the importance of reducing the intra-ocular pressure, as far as possible, before proceeding to operation; he also strongly advocated a preliminary posterior sclerotomy, as making the subsequent operation much safer. Marple, of New York, criticized Koller's statement as to the satisfactory results of preliminary treatment, saying that his own experience of it had not been so successful as the latter surgeon's had. Weeks, of New York, spoke favourably of the subconjunctival injection of cocain (2 per cent. solution) before glaucoma operations. Cutler, of New York, thought dionin might lead to a rise in tension in glaucomatous cases. Wilmer, of Washington, considered that whilst surgeons were intent on studying the bio-chemical processes to which Sattler had alluded, they might lose the opportunity of saving the eye by operative measures, and especially so in cases of chronic glaucoma; to his mind, our first duty, as surgeons, is to save the patient's sight.

In replying, Sattler agreed with Wilmer's views. His remark that "it is not the excessive tension—which is the cause of acute glaucoma, etc." seems rather a curious one. No one supposes for a moment that increase of tension is the cause of glaucoma; increase of tension is glaucoma, or, if we prefer it, we may say "glaucoma is increase of intra-ocular pressure." For the causes of the condition we must go much further back. For the treatment of acute glaucoma, Sattler expressed a preference for the lineal incision rather than for the trephine opening. In other words, he was not yet prepared to give a decided opinion one way or the other.

R. H. Elliot.


(4) This article, by Abadie, constitutes a plea for the better recognition of glaucoma secondary to other disease of the eye, especially when the latter is difficult to localize. More than this, it seems to be a plea for non-operative treatment, for treatment of the constitutional cause, most often syphilis. Even in infantile glaucoma Abadie uses mercury and claims to be able at any rate
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to benefit such cases. He does not now operate at all for buphthalmos. 

ERNEST THOMSON.


(5) Gradle raises once again the question of the aetiology of cases of "glaucosa simplex without perceptible rise in tension," and finds his argument on a case, the notes of which he furnishes. His patient, on one occasion, after "the mental disturbance occasioned by a long railroad voyage to the city, and the uncertainty regarding her condition," developed a pressure of 30 mm. Hg. in the right eye as compared with one of 24 mm. Hg. in the left, and as compared with a tension of 20 mm. Hg. in the right eye after massage. Gradle himself says that the exhaustion and the anxiety of the journey "were probably the exciting factors of this passing rise of pressure, which had never before been noticed." He goes on to say that "since her return home to a quiet life, the tension has not again been observed as high as thirty during a period of several weeks, with weekly tonometric readings" (the italics are our own). With this as a text, he proceeds to discuss the aetiology of cases of "glaucosa simplex without perceptible rise in tension." It is, therefore, necessary to point out, first, that this was not a case of such a kind, since on one occasion at least, under the very conditions which usually bring on an attack of increased tension, the patient developed a distinct rise in pressure in the affected eye. B. Cridland, in an exhaustive paper in the BRITISH JOURNAL OF OPHTHALMOLOGY (Vol. I, 1917, p. 352), has found that the average pressure of the normal eye is 20·06 mm. Hg. This finding is the more significant, as in Gradle's case the pressure fell to 20 mm. Hg. under short massage. Cridland, in common with all reliable observers, and after a careful study of the work of others, was disposed to put 15 to 25 mm. Hg. as the ordinary limits of normal pressure. There is a second point of no less importance. Gradle speaks of weekly tonometric readings in his own case, and quotes Fuchs's statement that there are instances of glaucoma in which the tension is never found distinctly increased, and Stock's case in which "the tension taken in hospital at frequent intervals during the period of several days and nights never rose above 23 mm. Hg." The value of tonometric, like that of thermometric, readings is in proportion to the regularity with which they are made. Weekly readings with the tonometer would have much the same value as the same kind of readings with the thermometer. Nor does Stock's case carry any conviction, at any rate to the reviewer's mind. Would a physician exclude the possibility of the occurrence of a fever, which admittedly occurred at irregular intervals, on the strength of a few days' of
even the most regular observations? It has long been held by many ophthalmologists, and amongst others by de Schweinitz, that rises in pressure in these simple cases occur in the early hours of the morning, in other words, after a prolonged period of sleep, and it is at such times that we must seek for relative rises in tension. If this is done systematically, very definite results will be obtained in a certain number of cases. It is, of course, to be borne in mind that to take a patient into a hospital and to place him under conditions of mental and bodily rest is to risk the defeat of our object so far as the recognition of rises in pressure are concerned. The result must obviously be a failure to obtain positive indications in a fair percentage of cases. Apart altogether from this, the surgeon may not have the good fortune to hit the patient off at one of the periods favourable to the diagnosis. The reviewer maintains that the difference between congestive and non-congestive glaucoma is to be sought in the interplay of the two factors (the circulatory and the excretory) on which rises in intra-ocular pressure depend. If this consideration is carefully kept before the mind, it is not very difficult to understand the great varieties of forms in which glaucoma is encountered.

Gradle declines to believe that the cupping in these simple cases can be the result of pressure, for he argues that we would then find a shallow chamber or a partial obliteration of the angle, which we do not. Surely, this must depend upon where the obstruction is. If, for instance, it lies in the pectinate ligament, as suggested by Thomson Henderson, there does not appear to be any reason why the chamber should be shallow.

Gradle suggests that the intermittent rises in tension are not the result of an interference without flow, but rather of a hypersecretion. He suggests that any marked increase in the rate of secretion would tend to carry the intra-ocular pressure towards the upper limits of the normal and possibly above. These statements call for comment on several counts; first, he seems to be undercutting his whole argument by admitting intermittent rises in tension; secondly, the suggestion of an increase in secretory activity would appear to be hypothetical; and, thirdly, we have Henderson and Starling’s observations that a rise in intra-ocular pressure is attended, under laboratory conditions, by the opening up of additional channels, or the enlargement of pre-existing ones. Unless the hypersecretion were very excessive, it seems unlikely that it would overpower the compensatory mechanism of a normal eye. The reviewer regrets to have to differ so widely from Dr. Gradle, for whose work he has the greatest admiration, but he thinks that to accept such views as are put forward in this article is to introduce unnecessary confusion into the vexed subject of the aetiology of glaucoma. In some cases the circulatory factor is strongly in
ACCOMMODATION SPECTACLES

R. H. ELLIOT.


(6) Fischer examined 6,841 out-patients at Kasr El-Aini Hospital, Cairo, and found 259 of them, 3.7 per cent., to be suffering from primary, chronic, non-congestive glaucoma. He explains this unusual incidence of the disease by the fact that Egyptians have a constitutional tendency to the formation of connective tissue which gives rise, among other things, to sclerosis of the ligamentum pectinatum. In proof of his views he points to the fact that a large number of adult patients show a ring of opacity or sclerosis in the margin of the cornea, probably due to degeneration of the healthy tissue. As the sclerosis is a deep one, it would certainly affect the neighbourhood of Schlemm's canal.

In the discussion that followed the reading of Fischer's paper, while there appeared to be general agreement as to the frequency of primary glaucoma in Egypt, there was a divergence of view as to its cause. MacCallan (Cairo) among 347,676 patients seen during the last five years at the Ophthalmic Hospital of Egypt, had found 2.08 per cent. of glaucoma (acute, subacute, chronic, and absolute) and believed that the important factor was a small cornea, a view in which he was supported by M. Gamal-Eddin (Damanhur). Jacovides (Alexandria) thought that small corneae, trachoma, and an excessive liability to the formation of connective tissue, all played a part. Abdel Messih Girgis (Assiut) had measured sixty corneae, and found that in four the diameter did not exceed 9mm. Amin Migalli (Shebin-el-Kom) believed that the excessive formation of fibrous tissue was to be attributed to the diet of the Egyptian peasants. Waddy mentioned some statistical fallacies that might vitiate the Egyptian figures dealing with glaucoma.

S. S.

II.—ACCOMMODATION-SPECTACLES


(1) In this communication, Hans Lauber deals with an ingenious optical contrivance devised by him to afford an artificial substitute for the natural accommodation of the eye in the case of presbyopes, with more or less complete loss of accommodation. The need for such a contrivance, which time and again confronts the ophthalmic surgeon in his practice, was more than ever brought home to Lauber by the following cases.—A patient, 55 years of age, whose distance correction was +1·75 D. sph., required for singing, during which she had to glance over the shoulder of the accompanist at the music book, +2·75 D. sph.; for piano playing, +3·25 D. sph.; and for reading, +4·5 D. sph. Even this arsenal of spectacles was inadequate for her, as she experienced difficulties in painting. One moment she had to get a clear view of the model which necessitated her distance-correction, the next moment she had to see clearly the fine work on the canvas or on the paper in aquarelle painting, the moment after she wanted to get an impression of the painting as a whole at a somewhat greater distance. Thus, for painting she needed three different pairs of spectacles, which she had to change constantly. Seeing that she had to hold the palette in one hand and the brush in the other, changing glasses was by no means a simple matter. A bifocal lens improved matters, of course, but in spite of it a frequent change of glasses was unavoidable.

He tried to solve the problem of producing a lens with variable focus in various ways. The first trial consisted in fixing two hollow hemispheres in a frame, and by contracting the frame, increasing the curvature of the refracting surfaces. On technical grounds and because of the contraction of the circular frame producing a non-spherical bulge, the experiments had to be given up.

The next method employed was to bring about variations in the surface-curvature by increasing the internal pressure of a hollow lens. Here again the curvature of the refracting surfaces induced by the elevation of internal pressure of the lens was non-spherical.

As it appeared practically impossible to produce a theoretically possible lens with changeable refraction, Lauber set about the only alternative—that of constructing a system of lenses, fulfilling the required conditions and compact enough to permit of it being used in spectacles.

von Rohr worked out the mathematical solution of this problem. Such a system of lenses could be employed binocularly only if a correspondence could be established between the convergence and interpupillary distance of the eyes, on the one hand, and the intercentral distances and accommodation of the lens-systems, on the other, such that for all points of fixation between infinity and the reading distance of 25 cm., the axes of the lens-systems coincided with the visual lines of the eyes, coupled with the corresponding amount of accommodation. Lauber worked
out mathematically the table of interpupillary distances and the corresponding inter-central distances of the lens-systems for various distances, and in accordance with the scheme of construction projected by him on these data, and improved upon by O. Henker, of Jena, the firm of Carl Zeiss have manufactured and patented the accommodation-spectacles. Each of the lens-systems in the spectacles consists of two lenses so arranged that the posterior lens at a definite distance from the eye is fixed, while the anterior, separated from the former only by a small interval, is mobile, so that when it is advanced the refraction of the whole system increases. The movement of the anterior lens occurs in a spiral. The possible change of refraction amounts to 4D., so as to allow an individual with no accommodation to focus at will any object between infinity and 25 cm. The outward appearance of the spectacles reminds one of the telescope-spectacles devised for high myopes. The two systems of lenses are so mounted in specially devised spectacle frames, that by turning a single screw are brought about synchronously in the anterior lenses and the two systems all the changes involved in maintaining the coincidence of the visual lines with the optic axes of the lens systems and producing the required amount of accommodation.

By trials on presbyopic eyes in old people and on atropinised normal eyes of young people, the accommodation-system has been found to correspond in its working to the natural mechanism of accommodation. Trials with the accommodation-spectacles have proved satisfactory; not only clear vision but also pure binocular vision for all distances between infinity and 25 cm. are obtained, thus testifying to the satisfactory automatic adjustment of accommodation and distance between centre of lens-systems being in harmony with the convergence of the eye and the distance for which the focussing is required.

According to von Rohr, accommodation-spectacles capable of compensating refractive errors up to 5 D., and astigmatic errors up to 4 D. can be manufactured. Further calculations are necessary to determine whether it would be possible to provide eyes after cataract extraction with accommodation-spectacles.

Although the field of fixation (Blickfeld) with these spectacles is limited to 24°, they are said to be satisfactory in practice, as the object is to obtain a clear detailed view of a small area rather than a panoramic view of an extensive field. When focussed for near objects, the accommodation system magnifies more than a convex lens of the same refraction.

The pair of spectacles constructed for Lauber's investigation weighs 43 grams; but is, nevertheless, said not to be uncomfortable, even when worn for long periods at a time.

Two figures are given—the one a photographic reproduction
III.—PYORRHOEA ALVEOLARIS

(1) Fox, L. Webster (Philadelphia).—The relation between surgical operations on the eyeball and pyorrhea alveolaris. Ophthalmology, April, 1916.

(1) Fox, in an address delivered before the Chicago Ophthalmological Society, dealt at some length with the dangers to operation cases arising from the presence of pyorrhea alveolaris. He thus summarizes the treatment he adopts before performing an operation, especially if the iris be implicated:

"First.—Preliminary treatment: In ordinary cases we have given for many years grey powder (mercury and chalk) doses, 1 to 2 grains, three times daily, for a week prior to the operation. In addition to this, a simple saline eye wash to flush the conjunctiva. The meat diet is cut off, and the vegetable one increased. The best personal hygienic care that is compatible with the surroundings of the patient, is advised. Where there exists the least suspicion of any catarrhal trouble of the nose, he is sent to the rhinologist. If the conjunctiva shows any catarrhal tendencies, specimens are sent to the bacteriologist for examination. If all is satisfactory, we can proceed with the operation and count on good results."

"Second.—Where pyorrhea alveolaris exists, the modern ophthalmic surgeon begins his treatment by referring such cases to the up-to-date dentist, who immediately inaugurates his course of treatment. When the patient is referred back to us as cured, he is placed on a good tonic for four or six weeks, adding iron, arsenic or iodides to try to eliminate all toxins that might still lurk in the system. Yet we are not satisfied, but 24 hours before the operation 5,000 units of diphtheritic antitoxin serum (Mulford's) is injected subcutaneously, and if there is the least suspicion of infection after the operation, this latter treatment is repeated for at least four days. All this may seem heroic, but let me assure you that we are dealing with an enemy not to be trifled with, and experience gained in following out this line of defence in septic wounds of the eye, has caused me to adopt this method of prophylaxis, and with much success in pyorrhea cases."

R. H. Elliott.


(2) Fahmy narrated the histories of 26 cases of iritis where recovery ensued after appropriate treatment of the septic mouth
that was present. In his experience, the cases of severe iritis after cataract extraction occur in those with septic lesions of the mouth. He considers that the best way of treating pyorrhoea alveolaris is with a tooth brush and an antiseptic powder containing pure carbolic acid, 1 per cent., powdered soap, 10 per cent., and prepared chalk, 89 per cent.

S. S.

IV.—EYE LESIONS IN FRACTURED SKULL


(1) Cohen's paper is based on a review of 75 cases of fractured skull, 24 of which ended fatally. He summarizes his conclusions as follows: (1) Inequality of the pupils, with bilateral absence of the light reflex, is very common in fatal cases, and rare in those that recover. (2) When there is inequality of the pupils with unilateral marked amblyopia, or amaurosis on the dilated side, descending primary optic atrophy may follow. (3) Fundus lesions are relatively rare, especially in the cases that recover. (4) Papillitis usually points to meningitis, increase in cerebral pressure, or haemorrhage into the sheath of the optic nerve or its vicinity. (5) Choked disc was not observed in any of his cases. (6) The presence of unilateral optic atrophy suggests a search for a history of a possible previous head injury, if other causes have been excluded. (7) In fatal cases there is generally a dilatation of the pupil on the side of the cerebral haemorrhage. (8) Fundus examination, immediately following skull injuries, may reveal pre-existing contributory factors, and so be helpful from the medico-legal point of view.

R. H. ELLIOT.


(2) Kearney has examined the eyes of 212 patients, diagnosed as suffering from fractured skull, in the service of Professor William Sharpe, at the New York Polyclinic. In cases examined within 24 hours after admission, there was usually a general oedema blurring all details of the fundus, and, when visible, the veins, as a rule, were dilated out of proportion to the size of the accompanying arteries. In cases uncomplicated by an increase in the intracranial pressure, the retinal oedema gradually subsided. Oedema affecting the nasal
edge of the optic disc and its margin was an early indication of a rise in the pressure, an observation confirmed, whenever possible, by measurement of the pressure of the cerebro-spinal fluid by the mercurial manometer. It was less common to find oedema affecting the entire optic disc, the height of which was capable of measurement with the ophthalmoscope. Sharpe treats patients whose intracranial pressure is somewhat raised, by repeated lumbar puncture; but if it is notably increased (to double normal or higher), by a simple cranial decompression operation. Examination of the eyes 24 hours after either procedure usually shows a reduction in the amount of retinal oedema.

S. S.

V. - AMAUROSIS AFTER CONVULSIONS


(1 and 2) In 1903 the reviewer, in conjunction with the late Dr. Henry Ashby, of Manchester (Rep. of the Soc. for the Study of Disease in Children, Vol. III, p. 197), described a series of cases of young children in which violent convulsions were followed by blindness, often terminating in recovery. The amaurosis might be accompanied by aphasia and hemiplegia of a temporary or more lasting type. The cases were distinguished from those in which blindness was due to posterior basal meningitis, and it was suggested that the convulsions themselves, whatever their origin, were the cause of the amaurosis. The nerve storms may involve the visual cortical centres, as well as the Rolandic centres or the speech centre, and the period of discharge be followed by a period of exhaustion. Of eleven cases analysed in all but one there was recovery of sight. In two of the cases the optic discs were whiter than normal. In conclusion, it was suggested: 1. That there was a form of amaurosis in infants which was post-eclampsic, due to anaesthesia of the visual centres. 2. That the convulsions, which might be due to various causes, were apt to be severe, and accompanied by coma. 3. That the amaurosis might be associated with aphasia and paresis of hemiplegic distribution. The hemiplegia might be permanent. 4. That the amaurosis was for the most part transient. It was possible that in some instances there was hemianopia.

Pritchard now describes the case of a child of two years, admitted to hospital in a severe fit which lasted for several hours. On recovering from the fit the patient was drowsy and irritable, and
showed no recognition of her parents. When she could sit up in bed, ten days after admission, it was noticed for the first time that she was blind. The ophthalmoscopic appearances were almost normal. The child slowly recovered her sight. The urine contained albumin, few granular casts, and coliform bacilli. Pritchard explains his case on the lines adopted by Ashby and the reviewer, but this view was not taken by one speaker in the subsequent discussion.

S. S.

VI.—THE RESORPTION OF CATARACT

(1) Verrey, Louis (Lausanne).—Contribution to the aetiology of the spontaneous resorption of cataract. (Contribution à l'étiologie de la résorption spontanée de la cataracte.) La Clinique Ophtal., April, 1916.

(1) The speculations of the late Louis Verrey concerning the practical bringing about of resorption of cataract (speculations based on at least two cases of spontaneous resorption) are of great interest. Verrey had already in 1913 (Arch. d'Ophtal.) reported a case of spontaneous resorption in which, after 20 years of blindness, the patient recovered vision of 1/6 without any operation at all. Then in 1915 he had an interesting experience with another case. This was in a man, aged 56 years, who had already had a cataract in the right eye operated on by Gayet in 1891. On examination of the left eye, Verrey found a very thick and opaque capsule with numerous adhesions to the iris. At the operation an attempt was made to tear away the capsule, but the forceps could get no grip. An iridectomy was then performed and the capsule opened with the cystotome. There immediately followed the outflow of an almost clear fluid, but there was no nucleus, as in an ordinary Morgagnian cataract. A membrane presented at the lips of the wound and was withdrawn without loss of vitreous. This membrane appeared to be most of the lens capsule with exception of a small portion of the posterior capsule. Within this sac was found a nucleus the size of a very small, flat pin's head. Further, whereas in an ordinary Morgagnian cataract the capsule is uniformly thickened, in this case the thickening was only situated in the pupillary portion of capsule. The vision obtained was not very good, only 1/10, because on the seventh day, in spite of every care, a haemorrhage took place into the anterior chamber, and, also, it was eventually found, involved the anterior layers of the vitreous. Now comes the interesting point. It turned out, though whether the patient told Verrey
before or after his operation does not seem quite certain from the context, that on the occasion when the right eye had been operated by Gayet 25 years before, Gayet had said to the patient, “I cannot show you your cataract because there is not any of it to show. When your second eye is involved please come back to me for operation. Your case is very rare and curious.” From these words of Gayet, Verrey concludes that in 1891, as in 1915, the cataract was liquid, with complete or almost complete disappearance of the nucleus. The author then proceeds to show that undoubtedly this was not an ordinary senile cataract, but an inflammatory cataract; that is, a cataract consequent upon previous inflammation of the membranes of the eye. Such cataracts have been said to be due to “phakitis” by L. Dor.

After referring to the literature of spontaneous resorption of cataract, Verrey concludes with the following words:—“The spontaneous resorption of cataract, always a very long drawn out affair, is preceded in the majority of cases by inflammatory phenomena, iritic or otherwise. The intra-ocular infection, penetrating through the lens capsule, brings about a genuine “phakitis.” The lens swells, and this is frequently accompanied by increase of intra-ocular pressure. Then follows liquefaction of the lens fibres, more or less complete resorption of the nucleus itself and, finally, under fortunate conditions, rupture of the capsule. The capsule retracts and leaves a black pupil with restoration of a certain percentage of vision which does not seem ever to exceed 1/6 of the normal.”

The author ends on this note:—Will the future show us how we may imitate nature in bringing about the cure of cataract spontaneously? One may take leave to wonder whether in using the word “spontaneous” the author chose exactly the word to express his meaning. One does not quite see how the cure can be spontaneous if any means whatever are adopted to influence the absorption of the lens. It is to be supposed that he uses the word “spontaneous” as in the main opposed to “operative.” But, even so, it is rather difficult to say what exactly he intended to foreshadow in this final question which he himself has left unanswered.

**Ernest Thomson.**


(2) *Horton Brown* publishes three cases, which are of considerable interest, as they serve to show that opacities of the lens, occurring in persons past middle life, not only do not always progress to the full maturity of senile cataract, but that they may undergo incomplete, or rarely even complete, absorption. The cases have all
been very carefully followed up, and the changes which took place in the refraction of the eye, and in the state of vision both with and without correction, are clearly stated. The importance of such records is twofold. They place the surgeon on his guard in giving a prognosis and they serve to explain some of the "wonderful cures" attributed to osteopaths, faith-healers, and other irregular practitioners.

R. H. ELLIOT.

VII.—HERPES ZOSTER AND GLAUCOMA


(1) Morax records two cases of glaucoma complicating herpes zoster ophthalmicus. In the first the increased tension was limited to the side affected by the herpes and was secondary to definite iridocyclitis with "keratitis punctata." There were no superficial corneal lesions. Treatment with miotics reduced the tension and an iridectomy made it permanently normal. In the second case both the eyes were affected with chronic glaucoma. This had caused no symptoms up to the time when an attack of herpes caused an exacerbation in the eye on the affected side. Treatment with miotics gave only temporary relief but a sclerecto-iridectomy was followed by a satisfactory result which lasted for a year. After this the tension began to get high again, but the patient died before suffering much inconvenience from it.

The author concludes that the possibility of glaucomatous complications of herpes zoster ophthalmicus should be borne in mind and that they may occur either as exacerbation of latent chronic glaucoma or as the result of ciliary inflammation set up by the nervous lesion. In either case Morax recommends treatment with miotics checked by tonometric observations, and in case the result is not sufficient a decompression operation.

R. J. COULTER.


(2) Weeks's first patient, a man of 62, presented, five weeks after an attack of herpes zoster frontalis on the left side, roughening of the epithelium and infiltration of the corresponding cornea. Anterior chamber shallow. Tension +½. Pupil sluggish as regards reaction to light. As pilocarpin failed to improve matters, iridectomy was
performed at a time when L.V. was fingers at twelve feet, tension was raised, and field of vision was contracted nasally. The result, upwards of fifteen months after operation, was L.V. (corrected) 20/70, tension normal, and no cupping of the optic disc. In the second case, a male aged 49 years, temporary obscurations of vision were noticed shortly after a severe attack of zoster frontalis on the left side. Definite intermittent congestive glaucoma of the left eye, for the relief of which a Lagrange operation was performed. The result appears to have been good. In the third case, a male, aged 65 years, acute glaucoma in the left eye came on during an attack on the left side of herpes frontalis. A Lagrange operation was performed with immediate good results. The case was followed for thirty-one days after operation, when V. was 20/40+ and tension was 13 mm. It is to be noted that in all Weeks's cases the nasal branch of the fifth nerve was involved.

S. S.

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VIII.—AVULSION OF EYEBALL DURING BIRTH


Friedenwald first gives an abstract from the literature of 29 cases where, as a birth injury, the eyeball was torn from its socket. These cases are divided into those which occurred in (1) spontaneous and (2) forceps delivery. Included in the four cases under the first heading, it is worthy of note that in two (reported by de Wecker and Bock respectively) the orbit had been emptied by the accoucheur's finger, the orbit having been mistaken for the rectum.

The author then reports an instance of luxation of the eyeball, with prompt replacement of the globe and complete recovery. The result after two years is shown by the illustration that accompanies the communication. Essential facts follow:

Friedenwald was called to see a female infant, born one and a quarter hours before, after a long and difficult labour, terminated with the high forceps. He found a deep impression made by the forceps over the left frontal region, reaching down to the orbit. The left eyeball was completely luxated, the lids lying closed behind the eye. Reduction of the dislocated eyeball was easy after the outer canthus had been incised. Thirty-five days later the eye appeared to be normal. When the child was examined upwards of two years later nothing could be found wrong with the eye. This happy and unusual result was doubtless connected with the fact that the
eyeball was replaced within two hours of delivery, at a time before there was desiccation or clouding of the cornea.

S. S.

CORRESPONDENCE

"GUNN'S DOTS"

The Editor The British Journal of Ophthalmology

Sir,—I have read with great pleasure Mr. Leslie Paton's letter in the March number of the Journal on "Gunn's Dots" and their significance.

I should like to confirm all that he has written there, and to emphasize two of his points: (1) the importance of using a plane mirror to look for the dots; (2) the need to seek for them in the penumbra. For this second purpose the mirror should be slightly tilted, to throw the bright light off the area in which the Crick dots usually lie.

In respect of the first point, I confess that I usually discover the dots in my routine examination of the fundus with the concave mirror, and then switch on the plane mirror for more accurate vision; but those not accustomed to the dots will probably not see them without searching for them very carefully with the plane mirror.

Over and over again I have discovered these dots with smaller errors of refraction, previously to questioning the patient, and then have learnt from him that it is sensitiveness to glare that is troubling him. I am so convinced of a relationship between these dots and dread of glare that I think they ought to be systematically looked for in our consulting rooms. Mr. Gunn suggested that these dots were the ganglion cells of the retina become visible.

One curious case I saw some years back.—An American Jew boy, 14-15 years old, in very poor health, had the whole of his fundus covered with these glistening points, like the stars on a cloudless night. He could not bear the ordinary daylight, and had to wear tinted glasses for a year. At the end of the year the Crick dots could only be seen at the area around the disc, especially above and below. The boy was in much better health, but had increased his myopia 2-3 dioptres. He returned to America, and I have lost touch with him.

Yours, etc.,

Percy C. Bardsley.