sojourn of the lens in the anterior chamber and the total impossibility of binding the wanderer there by any ophthalmological trick, sadly disallowing the study of the lenticular border under the slit-lamp.

ABSTRACTS

I.—CORNEA


(1) Bauer reports two cases of Krukenberg's spindle and critically reviews the literature on the subject. A tabulated summary of the findings in published cases is given. The association of Krukenberg's spindle with myopia, adult life, female sex and familial disposition is stressed. Persistent pupillary membrane and other malformations that have been observed are regarded as coincidences. No evidence for any congenital origin of the condition is found. The conflicting views as to the site of the pigment, whether in front of, or behind the endothelium are discussed. That pigment deposits in the cornea may occur apart from Krukenberg's spindle is pointed out.

On the nature of the pigment, Bauer finds no support for the view that it is haematogenous in origin. He holds that it is derived from the melanin so abundantly present in the pigmented tissues of the eye, the pigment being liberated by chronic degenerative processes. Once it is freed it is only a matter of physics to explain the characteristic appearance of the spindle. Ehrlich's experiment in injecting fluorescein into the ear-vein of a rabbit and seeing it trickle down in the anterior chamber as a centrally placed vertical line is recalled, as is Türk's further work showing this phenomenon to be based on convection currents induced by slight differences in temperature. Given a very slow entry of pigment cells into the fluids of the eyes, the differences in temperature between the anterior chamber and vitreous (up to 5° according to Michel and Silex) is more than enough to set up convection currents (only 2/10° being necessary according to the author's experiments). The formation of the spindle is facilitated by a slowing down of the convection current, and also by the deep anterior chamber seen in high myopia and megalo-cornea. Physiological bedewing of the endothelium in the pre-pupillary area, shown to be present in about 50 per cent. of children (Lüsni), is another factor which helps the deposition of the pigment.

Arnold Sorsby.

(2) Poe's patient was first seen at the age of 21. He had a circular brownish green pigmentation which extended round the cornea at the limbus. The pigment, by slit-lamp examination, was found to be located in Descemet's membrane. The ring was about 2.5 mm. broad and shaded gradually into the normal cornea. Examination with the gonioscope showed that the abnormal pigmentation was limited to the cornea and did not involve the sclera, iris or other structures. The lens appeared to be unaffected, though other observers have found in this disease the so-called Purtscher pseudo-cataract. This is a very delicate, shimmering membrane, situated in the anterior capsule of the lens and visible only by oblique illumination. It is said to be pathognomonic of the presence of copper in the eye. While there is no accepted explanation of the pathological processes which bring about pigmentation of the cornea, it is thought that the material responsible is derived from substances which are washed into the circulation in the course of the cirrhotic destruction of the liver. The same substances are probably responsible for the degenerative processes taking place in the lenticular nuclei. Special investigations were made in the present instance for evidence of icterus, but nothing very definite was found except that the van den Bergh test gave an increase in the icterus index. With regard to the general condition, the patient showed tremors of which the coarseness and severity were variable, the face was immobile and stiff and the fingers made pill-rolling movements. The arms were rotated inwards, the legs extended and at times spasms of the hips involved the flexors of the joints so that the extended legs were raised from the bed. The arms and legs were hypertonic, the ocular movements markedly limited, and the vestibular reactions to caloric tests exaggerated.

F. A. W-N.


(3) This research was carried out on a series of thirty patients, varying in age from 10 to 45 years. These patients were found to be all affected with tuberculosis and all highly sensitive to tuberculin. In none could any relation between the type of the tuberculous process in the lung and the character of the ocular disease be observed. The von Pirquet reaction in 20 cases was of the exudative type, while in the others it was hyperaemic-normallergic and hypallergic.
In 14 cases subcutaneous injection of old tuberculin was followed by a focal reaction in the eye. This reaction occurred only when the eyes showed either phlyctenules at the limbus and on the ocular conjunctiva, or more or less diffuse opacities of the cornea. It occurred too only in acute cases, so that there was an undoubted connection between the degree of sensitiveness of the eye to tuberculin and the degree of activity and character of the scrofulous disease.

The occurrence of a reaction in the eye coincided with that of the exudative type of the von Pirquet reaction, which indicated a certain parallelism between the degree of sensitiveness of the eye to the general tuberculin-intoxication and the degree of the skin sensitiveness to the local action of the tuberculin. There was also a certain relation between the character of the von Pirquet reaction and the type of the eye affection.

As regards the allergic state of these patients it was found that in practically all the sensitiveness of the affected eye to tuberculin varied in conformity with the general tuberculous-anaphylactic sensitiveness to this virus.

In all probability the scrofulous lesions in the eye are sensitized with living tubercle bacilli which later disappear from the eye, while relapses of the disease depend on the anaphylactic sensitiveness of the previously affected parts to tuberculin, which comes from the pulmonary or other, even though inactive, tuberculous foci.

From the results of this research Towbin and Rawic-Scerbo feel justified in their view of the tuberculous-allergic character of scrofulous keratoconjunctivitis, which they include among the tuberculides.

THOS. SNOWBALL.

II.—UVEA


(1) Finoff’s paper opens with an allusion to the rarity of this condition, since tuberculosis is essentially a chronic disease. It does happen, however, that the nodular form of tuberculous iritis is sometimes preceded by a diffuse, acute iritis and it is therefore conceivable that in some cases of this lesion, recovery may occur before the development of nodules. Vigne had a singularly well attested case of recurrent acute iritis, in which he performed iridectomy, hoping to cure the condition. The excised iris was introduced into a guinea pig with a positive result, and the patient’s iritis progressed to the nodular form, the patient himself eventually dying of general tuberculosis.

(2) Moore's paper is a valuable contribution to the literature on this subject and contains observations of 249 patients under his care. Of these, 111 had early secondary syphilis, 29 had recurrent secondary syphilis, and 109 late syphilis. In general, iritis is twice as common in coloured patients as in white. It occurs in 4.5 per cent. of secondary syphilis, about twice as frequently as a manifestation of recurrent syphilis and is fairly common in late syphilis. The Wassermann reaction of the blood is positive in 97 per cent. of the early cases of iritis, in 55 per cent. of the recurrence cases and in 81 per cent. of the late cases. The history and results of general clinical examination are therefore of great importance in the last types of case. Spinal fluid findings indicate that neurosyphilis is more common in patients with iritis than in those without it, which suggests a similar explanation for the two diseases, viz., that the tissues of the central nervous system and of the uveal tract do not have an opportunity of developing their natural resistance owing to the institution of antisyphilitic treatment which cuts short the normal inflammatory responses. A few spirochaetes are left, however, and these develop, as it were, on virgin soil, though the other tissues of the body, on account of their quicker reaction are already at any rate partially immune before treatment is instituted. For this reason, among others, the author recommends a year's full treatment without any intermissions, after the Wassermann reaction of the blood and cerebro-spinal fluid have become negative. While most of the cases of early iritis had easily recognisable associated lesions of secondary syphilis, 25 per cent. had lesions so insignificant as to be easily overlooked. In late iritis only 50 per cent. of patients showed other manifestations of syphilis. Recurrent iritis usually appears within four months after the inadequate treatment of early syphilis, and late iritis about nine years after infection. The diagnosis of this condition is frequently missed, and many patients lose teeth, tonsils, and appendix before even a Wassermann reaction is done. The diagnosis of a non-syphilitic cause for iritis in a syphilitic patient is necessarily difficult, though Zimmerman estimates that 6.7 per cent. of cases are of this nature. The therapeutic test is the most reliable one, but there are two fallacies. (1) That certain syphilitic lesions, particularly those of the cornea, are difficult to cure as quickly as those occurring elsewhere; (2) That the arsenical preparations exercise a markedly beneficial effect on non-syphilitic eye disease. Repeated relapse is frequent in late syphilitic iritis, but not in the early form, and the same is true of secondary glaucoma. The results of treatment were good in 70 per cent. of patients in the early group, 58 per cent. in the recurrent group and in 42 per cent. in the late group.

F. A. W-N.

Gifford's article consists largely of a resumé of various papers on this subject, supplemented by a tabular analysis of the causes of acute iritis among his own cases. The latter comprise 118 seen in private during the last ten years and the percentages are as follows:—syphilitic 16·9, tuberculosis 8·5, gonorrhoea 6·8 (prostatic 5·1, pelvis 1·7), tonsillar 22, dental 12·7, sinus infection 6·8, diabetic 1·7, undetermined 32·6 (8·5 combined infection, 16·1 no cause found). It is interesting to note that most of the cases in which a supposed cause was not removed, did not have recurrences. In Brown and Irons' series, however, where 50 cases had been followed for 3—12 years, 43 remained free of recurrence after removal of the supposed cause, although 23 of these had had several attacks before. In continental statistics, tuberculosis is a more aetiologic factor. A typical figure is that quoted by Gilbert, 45·6 per cent. cases of iritis due to tuberculosis and only 2·8 per cent. due to focal infection. Gifford explains this discrepancy as due to three causes (1) that many of the continental cases are serous iritis; (2) that the majority of American reports concern private cases in which the incidence of tuberculosis would be lower; (3) mistakes in diagnosis; the tendency, in America, being to over-emphasize the importance of focal infection and on the continent of tuberculosis. Various papers are quoted on the subject of elective localization. Some of these give positive and others negative results, a typical positive one is that of Benedict who used streptococci from 14 cases of iritis, chiefly from dental foci for intra-venous injection into rabbits. Five of these cases had acute iritis and material from four of them produced iritis in the rabbits, while that from the nine chronic cases caused no iritis. Back, on the other hand, injected 14 animals with streptococci from cases of iridocyclitis without producing any ocular lesions.

F. A. W-N.


The credit of first describing this disease probably belongs to Heerfordt, who in 1909 reported three cases observed in Copenhagen during 1905 and 1906 though cases with similar symptoms had been described in 1889 and 1903. The aetiology is still in doubt, syphilis, tuberculosis, mumps, diphtheria being some of the causes invoked by various writers. Merrill and Oaks consider that the weight of the evidence up to date points to the cause being "some specific virus, bacterium or agent, as yet unknown." An equivocal statement which is true of many diseases of unknown
aetiology. The symptoms comprise uveitis showing a great tendency to the formation of synechiae and deposition of pigment on the cornea; bilateral, usually painless swelling of the parotid glands and a low grade chronic fever manifest during the first half of the disease. Frequent concomitants are, paralysis of the cranial nerves, particularly the seventh, a prodromal rash like erythema nodosum, marked dryness of the mouth, polyuria, prodromal malaise and sleepiness and pareses in other than the cranial nerves. In a few instances the lacrimal glands and the submaxillary glands may be swollen. The case reported by the authors occurred in a woman aged 43 years, who showed the ordinary symptoms, though the parotid swelling lasted for the unusually long period of two years and ten months and the fever (up to 100° F.) for two months. The latter subsided after withdrawal of two litres of straw-coloured pleural effusion. Although all tests were negative—including skin tests and X-ray examination for evidence of tuberculosis, the authors consider that tubercle should be considered as a possible aetiological agent in production of the disease. The paper contains a tabulated resumé of 30 cases culled from the literature.

F. A. W-N.

III.—RETINA


(1) From a microscopic examination of both eyes removed from a man, aged 81 years, who during life had shown fully developed typical disciform degeneration of the macula in one eye, and the early stage in the other, Hanssen holds that the primary lesion is in the chorio-capillaris, and not in the retinal vessels as Junius and Kuhnt believe. In the retina he found perivascular collections of lymphocytes, but the vessel-walls themselves were intact. That these collections of lymphocytes had any bearing on the macular lesion is excluded by the fact that they were more numerous at the periphery than centrally. In the chorio-capillaris, groups of lymphocytes were confined almost entirely to the macular region, and associated with these were marked vascular changes, together with secondary changes in the surrounding tissue. In broad outlines, Hanssen’s findings agree with those of Behr (Zeitschr. f. Augenheilk., Vol. LXIX, p. 1).
Hanssen draws attention to cases simulating disciform degeneration of the macula, which on microscopic examination show extensive degeneration over the whole of the retina, with heavy involvement of the retinal vessels. These cases are best considered a separate group, having only superficial resemblance to the group described by Junius and Kuhnt. Likewise disciform degeneration can be simulated by an old traumatic hole at the macula, causing glial proliferation, as illustrated by one of the excellent microphotographs accompanying this article.

Arnold Sorsby.


(2) Parker and Cullen have seen two cases of this disease and have had the opportunity of making some valuable observations. The first case was a young farmer with mild diabetes who had been on a high fat diet and came to the clinic in acidosis. His fundi showed typical lipaemia and the total fat content of the blood was 11'6 per cent. The fundi became normal in 16 days under insulin treatment, although the fat percentage was still 2'26. The patient was then put on to a high fat diet for 26 days without demonstrable change in the fundi, thus controverting the theory that lipaemia is due to fat in the diet. For 27 days he was allowed to develop a gradually increasing glycosuria which again caused no lipaemia. When, however, acidosis supervened he developed lipaemia when the blood fat was 3'65 per cent. This disappeared rapidly with the use of insulin. The second case occurred in a diabetic in acidosis whose blood contained 4'28 per cent. of fat. The lipaemia disappeared after nine days of insulin treatment, when the acetonuria had also disappeared and the blood fat had fallen to 2'83 per cent. He was allowed to redevelop acidosis and at the end of a week the blood lipoids had risen but not sufficiently to produce lipaemia. The following observations were made from a consideration of 37 cases recorded in the literature. Males are more affected than females, the proportion of the former being 86 per cent. The average age is 25 years, the youngest case being nine and the eldest 50, only one showed retinal haemorrhage. There is great disparity in the recorded percentages of blood lipoids, due to differences in the methods used. The normal is probably 0'4 per cent. to 0'5 per cent. and one observer has found as much as 48 per cent. of fats in a case of lipaemia. Every case in the literature except one had diabetes and was probably in acidosis, the exception was a boy who had X-ray treatment for leukaemia. Of 18 cases in which insulin was not given, only one recovered, while of 15 cases treated by insulin only one died. The
prognosis is not therefore affected by the development of this complication, except in so far as it points to the disease being of a severe type.

F. A. W-N.


(3) Calhoun emphasizes by the description of six cases, the truth of Frost's statement "that our present knowledge of retinal exudates points to the conclusion that identical ophthalmoscopic appearances may be due to different pathological processes." The cases were briefly as follows:—(1) "Bilateral neuroretinitis" with reduction of vision to 20/2,000 in each eye, and symptoms pointing to acute hyperpituitarism. There was a complete star figure at each macula, and some exudate in the retina surrounding the discs. Within two months vision had returned to normal, and the exudates had almost entirely disappeared. (2) Bilateral neuroretinitis with complete star figure at each macula, in a case of nephritis due to pregnancy. An interesting feature in the case was the presence of numerous glistening punctate spots in the deeper layers of the retinae, extending far out to the periphery. (3) "Bilateral papillitis" with a macular star in a case of hypophyseal syphilis. It was notable that the star figure increased in the right eye as the oedema of the disc and retina subsided, after decompression and ventricular drainage. (4) Unilateral neuroretinal oedema with a macular star, due probably to partial venous thrombosis and endocrine imbalance. (5) Bilateral papilloedema and macular stars probably due to a cerebellar tumour. In this case, the star figures appeared the day after spinal drainage had been performed, when the swelling of the discs was beginning to become less. (6) Concussion injury of the eye with commotio retinae and formation of an incomplete macular star.

The mode of formation of the star is a matter of controversy, and Marcus Gunn's explanation would still appear to hold the field. He argued that as the retina is, so to speak, pegged down at the fovea, any distension of the thick surrounding portion will tend to produce fine folds radiating from the fovea. If exudates form, they will tend to be deposited along the lines of these folds, and produce a star. Oedema of the retina is thus a prerequisite for its formation. If the oedema be generalized, a complete star figure will result, but if it be localized, only a few radii will appear. An example of this latter is seen in the well-known macular fan, occurring in conjunction with papilloedema of sudden origin, when the oedema spreads out towards the fovea from the temporal edge of the disc, and there results a fan-shaped figure, and not a complete star.

F. A. W-N.
IV.—MUSCLES


(1) Peter's case occurred in a patient recovering from Graves' disease who had a residual palsy of the left superior rectus muscle. The operation was performed under local anaesthesia and consisted in the following procedures. (1) Advancement of the paretic muscle. (2) Splitting of the internal and external recti for 12 mm. and attachment of the superior halves of these muscles to the internal and external borders of the superior rectus stump. (3) Recession (3 mm.) of the inferior rectus. The result was that the patient could rotate the left eye upwards 22° above the horizontal, though there was still some hyperphoria. The author has operated by similar method on five cases of external rectus paresis and has had varying results from central fixation, to 25° of external rotation. He is of opinion that at least half of each tendon should be transplanted, that the paralysed muscle should be very freely advanced, and that a complete tenotomy or a recession should be performed on the muscle antagonist to the paralysed one.

F. A. W-N.

(2) Adler, Francis Heed Adler (Philadelphia).—Reciprocal innervation of the extra-ocular muscles. *Arch. of Ophthal.*, March, 1930.

(2) Adler's paper opens with a short review of the literature on the subject, and an account of some of the work done by Sherrington and by de Kleyn. The latter removed an eyeball in a decerebrate rabbit and connected the internal and external recti to recording levers. Irrigation of the ipsilateral labyrinth caused a slow contraction of the external rectus and a corresponding relaxation of the internal rectus followed by a sudden contraction of the internal rectus. The author then goes on to describe two cases which appear to show evidence of reciprocal innervation in the extra-ocular muscles. The first was a case of bilateral paralysis of the third and fourth cranial nerves, with consequent divergent strabismus when the lids were raised. When directed to look, say to the right, the right eye moved outwards and the left to the middle, even after thorough injections of procaine hydrochloride into the left internal rectus. This movement was interpreted as being due to relaxation of the external rectus of one side when that on the other contracted. The second case was one of paralysis of the third and fourth nerves of the left eye in which the left eye moved towards the mid-line when the right eye was abducted.

F. A. W-N.
V.—GENERAL MEDICINE


Margotta has investigated the acuity of vision, both central and peripheral, together with the limits of the visual field, in a number of cases of delirium tremens alcoholicum, whom he examined in the Asylum at Padua. Many of these had suffered from repeated attacks. The fundus changes have been slight or wanting, but the functional changes have been considerable; in the majority, Margotta found contraction of the visual field especially in the vertical meridian, both above and below. The peripheral acuity was reduced almost proportionately to this loss. He never found any central or paracentral scotoma.

HAROLD GRIMSDALE.

(2) Rossi (Naples).—Familial macular degeneration associated with calcification of the dura mater, and the epiphysis. (Degenerazioni Maculari Retiniche Famigliari Associate a Calificazioni della dure Meninge e della Epifisi).

The family, whose history is reported by Rossi, consists of seven sisters. Of these, six presented some retinal change; four of these were comparatively slight and concerned the macular region only, allowing considerable vision and not apparently increasing in extent; in two there was extensive degeneration of the peripheral region, with contraction of the visual field and continued deterioration of vision.

In four of the sisters X-ray examination showed calcareous plates in the neighbourhood of the epiphysis.

Though the parents of the family showed no signs of syphilis, Rossi concludes, from the history of the maternal grandfather that the real cause is hereditary syphilis of the third generation. (No indication of name of journal).

HAROLD GRIMSDALE.

(3) Maxwell, E. M.—A note on cases of hypermetropia developing during treatment in diabetes mellitus. The Irish Journal of Medical Science, April, 1931.

Miss Maxwell gives the details of five cases of diabetes in which a rapid decrease in the refractive power of the eye followed a decrease in the blood sugar content. In four of the cases, treatment was by insulin injection—in the fifth, a sudden starvation for two days produced the changes in refraction. No one of the cases showed definite signs of hypoglycaemia and in the course of a few days vision returned to its normal level.

A. E. J. LISTER.

'Friedenwald's cases are of interest, in that they represent a type of late syphilis in which antiluetic treatment has been relatively successful. The paper contains reports of three cases of tabetic optic atrophy with considerable field loss and associated retinal changes. The latter were of the kind usually seen in congenital syphilis and bore a strong resemblance to retinitis pigmentosa.

In two cases, vigorous anti-syphilitic treatment with arsenic and bismuth injections resulted in checking the progress of the optic atrophy and in bringing about some absorption of the pigmented areas. The third case refused treatment. The author concludes that "the nature of the bodily reactions (allergy and immunity) to the spirochaete of late neuro-syphilis resembles that found in congenital lues."

F. A. W.-N.

---

**BOOK NOTICES**


The Sixty-seventh Annual Meeting of the American Ophthalmological Society was held at Asheville, N.C. The *Transactions* of this meeting are recorded in a volume of 591 pages, including the index, and the papers reflect a high standard of scientific and clinical work in ophthalmology and allied sciences. There are 78 full page illustrations and photographs, mostly in monochrome, but some in colours, together with diagrams, drawings, charts, and tables in the text.

A list of the officers and council of the American Ophthalmological Society is given, also the presidents, members, and Emeritus members. Four obituary notices precede the minutes of the proceedings.

There are many papers on subjects of current interest, and these will be abstracted in greater detail and published at a later date. Davis (Madison, Wisconsin) has made a contribution to the literature of avertin as an anaesthetic in ophthalmic surgery. He reports his experience with 90 cases, 48 intra-ocular operations, and 42 extra-ocular. The method of preparation, dosage, administration, dangers, after-effects, complications and contra-indications are described faithfully. He believes that avertin is a valuable adjunct