ABSTRACTS

I.—PHYSIO-PATHOLOGY OF OCULAR FATIGUE

Oblath, Prof. G. (Trieste).—Physio-pathology of ocular fatigue. (Physio-pathologie de la fatigue oculaire.) Paper read before the Congress of Hygiene, Paris, 1924.

Prof. Oblath begins by pointing out that as modern life makes a much greater demand on the visual apparatus than did the life of the past, functional and even grave anatomical trouble may arise, especially when the work required is done under unsatisfactory conditions. In the present paper the author does not deal with the results on the ocular apparatus, but makes an analysis of the direct and indirect causes of ocular fatigue.

Among the direct causes of ocular fatigue he places at the head of the list the intensity of the light. Deficient illumination is of the first importance, since it causes the workman to approach too near his work and so affects his convergence and accommodation, and finally the whole visual apparatus. Thus in a plaster mine at Baden the workmen suffered from lacrimation, photophobia, conjunctivitis, rapid fatigue when reading, and involuntary disordered movements of the eyes. All these symptoms diminished and finally disappeared on improving the illumination. He also points out how the ocular and general fatigue due to insufficient illumination predisposes to industrial accidents. Excessive illumination also produces its own evil effects, but is not so common in industrial conditions.

In this connection the annular scotomata, limited to the paracentral zone and described by Zade, Jess and Wagner, which are met with in aviators, are instanced. Ocular fatigue depends equally on the brightness of the source of illumination and on the nature of the work and its relation to the light distribution. Light contrasts are also of importance in certain occupations. The brightness of the source of illumination has much more influence on the pupillary movements than has its distance. The irregular contractions of the pupil produced by too intense a source of light deprive the eye of part of its natural protection. It is also of importance that the source of light should be stable and not vitiate the atmosphere or raise its temperature. Rules have been drawn out for the position of the source of light, due attention to which reduces both ocular fatigue and the risk of accident. Further, the position of the source of light is of importance for the effect produced on the retinal periphery. This depends partly on the intensity of the light and partly on whether the light beam reaches
the eye through the sclerotic or through the pupil. Central colour perception may be affected by a disproportion between the light on the work and the lateral illumination. The quality of the light is of great importance. The eye only perceives one-tenth of the solar spectrum, that is to say, radiations of a wave length between 0.76 and 0.396\( \mu \). The invisible rays may produce serious damage from their thermal or chemical action. Ultra-violet rays in solar light are not present in excessive quantity and are largely absorbed by the atmosphere. Those which reach the eye are absorbed by the cornea and lens, but in particular conditions of individual susceptibility, most frequently in young persons, a minimal amount of such rays may reach the retina and produce some functional disturbance (diminution of visual acuity and field, scotomata, photophobia). Snow-blindness and the erythropsia described by Fuchs are due to the action of the ultra-violet rays. Artificial light in schools and factories should have a spectrum as nearly similar to that of the sun as can be obtained. The intensity of artificial light increases with the amount of more refrangible and ultra-violet rays, which, if present in excess, may be injurious to the eyes. Schanz considers that the retinal disturbance produced by these rays is due to the fluorescence they excite. Cinematographic actors suffer from ocular troubles, mainly affecting the superficial parts of the eye, but which may also affect the iris and retina. Intra-red rays are still more important in the pathology of industry (glass-blowers’ cataract, etc.). In the estimation of the sufficiency of illumination the colour factor should receive attention. The human eye is best adapted to radiations corresponding to the middle part of the solar spectrum; blue is the most fatiguing colour, and green the least. Thus monochromatic green and yellow are favourable for central vision, but, according to some authors, may produce retinal fatigue. Red light has an exciting effect, while the light of the right half of the spectrum has a sedative one. The neon lamp of Claude, in which rays between orange and red predominate, is well tolerated, and does not cause ocular fatigue nor provoke any marked disturbance of the chromatic sense.

Amongst the indirect causes the attention necessary to certain responsible work (engine-drivers, chauffeurs) is of great importance. To this must be added the fatigue due to strained position. Other causes are to be sought in the smallness of the work (tailors, watch-makers, workers in precious stones) and in the unsatisfactory physiological conditions of life led by the workers. The correction of errors of refraction is of great importance as these, especially marked degrees of astigmatism, predispose to ocular fatigue. High degrees of ametropia are frequently accompanied by heterophoria, which is also a cause of ocular fatigue. Much has been written on the connection of near work and myopia. The natural selection of
work best adapted to their visual conditions combined with heredity accounts for the predominance of myopes in certain professions. The fact that myopia is less frequent in rural populations is probably due to the better hygienic conditions. It is of great importance that the individual should not be allowed to select a profession for which his visual acuity, extent of visual field, fusion capacity, and light and colour sense are not sufficiently good.

Prof. Oblath finished his paper with the following conclusions:

"Leaving on one side technical prescriptions concerning the lighting (see L. Gaster's report), let us draw attention to a certain number of points from the medical side.

"The school doctors should be consulted on the choice of a profession especially in relation to the visual function. In addition to the central vision it is necessary to take account of the peripheral retinal functions, of the light and colour sense, and finally of the predisposition to congestion of the lids and conjunctivitis. Persons with only one eye should not be allowed to choose a profession which implies a permanent risk to the sight.

"Ocular fatigue will be avoided by a careful examination of individuals at the time of entry into a profession. Ocular troubles (errors of refraction, of accommodation, or of the muscular apparatus) incompatible with the exercise of a profession should be rigorously treated and verified in the course of later visits. It has been noted that the visit on engagement has considerably reduced the number of accidents, and renders the work of the experts engaged in estimating the sequelae of industrial accidents easier. In so far as there is no real professional myopia, this preventive visit will permit of the determination of the aptitude of the individuals for special work, and will suggest further the hygienic measures suitable for the elimination of the causes of injurious complications.

"The use of appropriate glasses will prevent the troubles of ocular fatigue and the pathological changes due to injurious radiations. The spectacle frame should be simple, not easily heated, and capable of being worn continuously. The choice of lenses will depend entirely on the nature of the work; they should arrest all injurious radiations and be controlled spectroscopically.

"In addition to these fundamental principles of hygiene in connection with the visual apparatus, a satisfactory organization of the work will aid in the struggle against ocular fatigue. The work should not be excessive, nor prolonged beyond physiological limits; the duration being naturally proportional to the nature of the operations performed. In work necessitating minuteness and rapidity, frequent interruption (pauses intercalaires) of the work will act as an efficacious means of preventing ocular fatigue."

E.E.H.
TRACHOMA

II.—TRACHOMA

(1) *Revue du Trachome.* Published at 19, Rue de Bourgogne, Paris, January, April and July, 1924.

(1) The above-mentioned Journal is the organ of the Anti-Trachoma League, which came into being on April 30, 1923, at the Institut Pasteur, with the full approbation of the Société française d'Ophtalmologie, principally by the efforts of Charles Nicolle, Morax, Aubaret, Cuenod and Paul Petit. The Central Committee, in addition to these, includes Sergent, Coutela, Truc, Lagrange, Mawas, Bailliart and Tendron. The honorary presidents are Dr. Roux, Director of the Institut Pasteur, the Ministers of Foreign Affairs, of the Interior, of the Colonies, and of Public Health, the Governor General of Algeria, Maréchal Lyautey, the Resident General of Tunisia and the Governor General of Indo-China. The honorary members are Gouzien, Calmette, Abadie, de Lapersonne, Leon Bernard, MacCallan, Cirincione, Marquez, Gallemarets and Manolescu. The annual subscription for ordinary members is 20 francs.

Numerous interesting papers have been read at the various meetings of the League at the Institut Pasteur and have been published in the *Revue du Trachome* which will be briefly noticed here.

Jeandelize and Bretagne speak of the incidence of trachoma in the industrial centres of Lorraine and of the increase in the disease since the war.

Sedan and Hermann, of Marseilles, recommend for the treatment of corneal ulcers the detachment of the conjunctiva around the cornea and suturing it over the cornea, entirely burying the cornea.

Aubaret, Rouslacroix and Hermann, of Marseilles, publish new histological and cytological researches. They recall the recent work of Solovief in the *Archives des Instituts Pasteur de l'Afrique du Nord,* in which he shows that the corpuscles of Prowazek are not of a parasitic nature, but products of the destruction of the cellular nucleus.

Morax has an interesting article on the difficulties in the diagnosis of trachoma. He mentions the following conditions as of importance in the differential diagnosis: follicular conjunctivitis in persons who are in the habit of using certain public swimming baths; syphilis of the conjunctiva of follicular type; acute follicular conjunctivitis in association with a chronic suppurative dacryocystitis; follicular conjunctivitis; spring catarrh.

Talbot describes his attempt to introduce prophylactic measures in the schools of Annam, and his arrangements for treating the pupils who are infected with trachoma. The percentage of infected
pupils varies from 34 per cent. to 86 per cent. in various places. This important work shows that the Annamese authorities have been brought to realize that there is only one way of attacking trachoma in a country which is heavily trachomatized.

Charles Nicolle states that in Tunisia there are numerous strains of the Weeks bacillus and in order to prepare a vaccine or a serum efficacious against all varieties, it is necessary to work with several strains.

Several authors have referred to the treatment recommended by Nicati for florid trachoma or what in Egypt is called stage two of trachoma. This consists in the injection underneath the conjunctiva just behind the tarsus of 0.5 per cent. solution of copper sulphate, combined with an anodyne such as novocain. This is employed once a week for five or six weeks.

It is important to know that from April 1, 1924, trachoma has become a notifiable disease in France, by Presidential decree, and disinfection of the sufferer is obligatory.

A. F. MacCallan.


(2) In Western Australia Paton found 3.26 per cent. of 10,000 consecutive private patients trachomatous, while among out-patients at the Sick Children’s Hospital, Perth, 8.3 per cent. were similarly affected. These important statistics deserve the attention of the Public Health Department of the Australian Government. If properly organized an ophthalmic campaign under government auspices should be able to stamp out trachoma in ten years; but it would of course cost money.

A. F. MacCallan.

(3) Telles, Rudge, W. (Sao Paulo).—Trachoma and its prophylaxis in the State of Sao Paulo. (O Trachoma e Sua Prophylaxia no Estado de Sao Paulo.) 1924.

(3) This is Telles’ thesis for the degree of Doctor of Medicine and Surgery which was approved with distinction; it forms a well got up brochure of 160 pages, illustrated by a map and eight cuts in the text. Trachoma is trachoma all the world over, from Paris to Spitzbergen and from Bassorah to Baghdad * (“Oh blessed Joseph Finsbury”)† and so it is not necessary to abstract this booklet very fully, but it is interesting to note that the disease is of quite recent development in Sao Paulo. Before 1889 there were no cases in the State; emigrants introduced it and it has flourished

* “The Wrong Box,” by R. L. Stevenson and Lloyd Osbourne.
† Kipling. “A Diversity of Creatures.”
amazingly. At the present time there must be, at the lowest computation, 200,000 trachomatous persons in the State; in the municipality of Cantaduva more than 20 per cent. of the population are affected by the disease. The author is insistent on the necessity of compulsory notification of the disease with isolation of the sufferers. The map is valuable as it shows in a graphic manner the percentage of the population affected with trachoma in the various parts of the country; it is interesting to see that the sea coast areas are practically free from the disease, with the exception of the Capital which is not far from the Atlantic Ocean. From the Capital the disease follows the lines of railway, the heaviest shading occurring at Cantaduva, which appears to be situated on a branch of the Rio Grande. Judging from the map, the disease would appear to be railway and road borne rather than water borne by way of the great rivers.

R.R.J.

III.—INTRA-Ocular FOREIGN BODIES


(1) Davenport reports three cases of penetrating injury, and illustrates with clear drawings and micro-photographs.

The first is the case of a penetrating wound of the cornea by a broken eye-glass. An implantation cyst in the anterior chamber followed, and as the cyst grew, an implanted eye-lash was visible on the surface of the cyst. An iridectomy was performed and the lash removed. Seven months later, there was a recurrence of the cyst. By means of incision into the eye behind the limbus in the angle of the anterior chamber beneath a large conjunctival flap turned forward, the cyst was removed completely. Examination a month later revealed the eye to be without any sign of recurrence of the cyst. It was in a satisfactory condition apart from some resulting astigmatism.

Case II was a soldier who lost one eye as the result of the explosion of a detonator, and injured the second eye at the same time by penetration with a metal fragment. The foreign body was retained on the anterior aspect of the suspensory ligament of the lens at six o'clock, as was discovered later, after a period of four years. Owing to the development of slight iritis and X-ray evidence of the presence of a foreign body, an iridectomy was performed below, but without success in removing the foreign body, which was not discovered at the time. When the eye quietened
down, the foreign body was detected. As all inflammation had subsided, no further treatment was adopted.

The third case was of penetration of the eye-ball by a link of a gold chain, with wound of the iris, traumatic cataract and retention of the foreign body. It was not found possible to remove the link and so, owing to danger of sympathetic ophthalmitis and to the persistent inflammation of the injured eye, this eye was removed.

HUMPHREY NEAME.

(2) Donovan, F. A.—Foreign bodies in the lens. Jl. of Amer. Med. Assoc., October 11, 1924,

(2) Donovan reports three cases in which the lenses were injured simultaneously by the same explosion of giant blasting powder.

"In the case of a boy, aged 13 years, which I reported in 1911, both of the lenses contained several pieces of giant cap, which were extracted by a regular combined cataract extraction six days after the injury, on the two eyes at the same time, under a general anaesthetic. At present, after 13 years, this boy has practically normal vision with only one pair of lenses for near and distance R. + 6.00 D. sph.  + 3.25 D. cyl. ax 105°; L. + 6.00 D. sph.  + 3.25 D. cyl. ax 30°. However, not all cases have so fortunate an outcome.

In three extractions of the lens by the regular method from one eye of each of three boys injured by exploding several giant caps, two were entirely satisfactory, but in the third, at a later examination, I found a piece of brass in the remaining capsule, which, by the way, after four years, still remains there, apparently inert. In the other eye, a piece, which, at the time, was obscured by the upper edge of the iris, fell down after several weeks and became embedded in the lower anterior capsule, and, with a small scar surrounding it, remains there; the body of the lens and the rest of the capsule are transparent. The boy lives in the country, and attends school regularly. Circumstances prevented his being able to remain in the city under observation, which may have been to his advantage. For four years this boy has had one piece of brass cap in the posterior remaining portion of capsule in one eye, and another piece in the anterior capsule of the other eye, and they still appear to produce no irritation. Incidentally, giant, or blasting caps contain the very highest fulminate explosives, in comparison with which, for its concussion effect on the eyeball, dynamite is almost a plaything."

These cases impressed on the author the necessity of finding some more reliable method for removing a small non-magnetizable foreign body from the lens. Therefore in the next case he had he removed the foreign body by suction by the following method:
"A small puncture is first made in the cornea with a knife. Through this the bevelled, sharp pointed, aspirating needle is inserted into the lens, care being taken to have the hole in it cover the foreign body. It should be gently pressed into the lens matter so that a complete vacuum is obtained.

This method has the additional advantage of being able to extract two-thirds or more of the lens at one sitting, after the foreign body has been removed, thus avoiding the complications resulting from the subsequent swelling. When an attempt is made to extract all the lens this way, there is much danger of including some vitreous with it; so one should err on the safer side. The remaining lens matter usually appears to take care of itself in time. I use a simple piston syringe connected with an aspirating needle by a short, pliable rubber tube."

The needle used is about the same size as the needle used for spinal puncture.

A. F. MacCallan.

IV.-IMMUNITY AND PREVENTIVE OPHTHALMOLOGY

(1) Teulières, Dr. M. (Bordeaux).—Stock vaccines in ophthalmology. (Les stock-vaccins en Ophtalmologie.) Arch. d'Ophtal., October, 1923.

(1) Teulières gives an account of his experiences with stock vaccines in 71 cases of varying inflammatory (microbic infections) ocular conditions. He has preferred to make use of lipo-vaccines as he has found that it is possible to inject with safety a greater dose of this preparation than of the watery one. He has used the doses prescribed by the Pasteur Institute or by the makers of the various special vaccines. On the whole the results have been encouraging. The local reaction has been slight as has also the general reaction with monomicrobian vaccines. With the pluri-microbian vaccine (lipo-vaccin antipyogène) the general reaction has been very various. Thus when used as a preventive injection for cataract operation the reaction is very mild, but may be very severe, though never, in the author's experience, alarming, in such cases as localized suppuration following cataract extraction. The author concludes his paper by a brief discussion of the theoretical basis underlying the use of stock vaccines, serums, milk and peptone.

E.E.H.

(2) This is Paton’s opening address as Chairman of the Ophthalmological Section of the Australian Branch of the British Medical Association. The author is well acquainted with continental literature.

The method of Lindner of examining epithelial scrapings from each lid and from diametrically opposed areas on the bulbus has led to the valuable observations that smears of secretion and cultures made from the same source may give a negative, but an epithelial scraping preparation from the same case a positive finding; a most probable explanation of post-operative infection where the usual bacteriological examination gave no warning.

The obvious moral is in suspicious cases not to be content with an initial failure to grow bacteria from a secretion smear, but to corroborate it by an epithelial preparation from the lower and upper lids. These investigations have further demonstrated the frequent invasion of the bulbar before the palpebral conjunctiva by pathogenic organisms which apparently continue the pathological process, as Lindner suggests, by passing from one minute area of acquired immunity to another, as yet unprotected.

The value of his method in early diagnosis is exemplified in the case of a student who presented himself for examination, as he feared he had infected his eye with gonococci about 18 hours previously. There was only a slight hyperaemia and no purulent discharge, but the epithelial specimen from the inferior portion of the conjunctiva displayed gonococci. Only eight hours later did flecks of muco-pus appear. The case turned out to be one of unusual severity leading to perforation and subsequent reduction of visual acuteness, in spite of iridectomy, to one-tenth of normal.

This case is a very dreadful one. No description is given of the treatment adopted. It is difficult to believe that adequate applications of silver nitrate were used, in conjunction with irrigation of the conjunctival sac. It may have been the patient had been inadequately nourished, causing defective vitality, as has been so frequent in Central Europe especially amongst medical students and practitioners. This inadequate nourishment of individuals, affecting of course those who are about to be operated on for glaucoma, is responsible, we believe, for the insufficient barrier to post-operative intraocular infection, which is afforded by the abnormal tenuity of the flap of conjunctiva and episcleral tissue which closes off the trephine hole. This is the real reason in all probability for the unpopularity of the sclero-corneal trephine operation of Elliot, to which the author refers as existing in Central Europe.

A. F. MacCallan.

3. Woods gives an excellent survey of the work done by various observers including himself, on protein sensibility as applied to ophthalmology. The broad principles underlying sensitization and anaphylaxis of the tissues of the eye are:

1. If general sensitization of the body occurs, the ocular tissues are also sensitized.

2. If, with the body in this condition, an intoxicating injection is given in the eye, local inflammation of the eye results, but if the injection be given in the body, there are symptoms of general anaphylactic shock only.

3. If the sensitizing injection be given in the eye, the eye becomes specially sensitized in addition to the general sensitization of the body, and with an ocular injection focal inflammation is obtained and little general reaction. If, instead, the intoxicating injection be given in the body, not only is a general anaphylactic shock obtained but there is also an especial local inflammation in the eye.

With regard to conjunctivitis, the varieties occurring in hay fever, pollen hypersensitivity, food anaphylaxis and phlyctenular disease are of the nature of immune reactions. Fort studied 28 cases of spring catarrh; 12, out of 19, in whom blood counts were made, showed eosinophilia, and in each of the 19 a definite pollen hypersensitivity was found. Desensitization was attempted in 15 cases. One case was completely cured, 13 showed definite improvement, and one was lost sight of. Three cases of conjunctivitis due to food anaphylaxis are reported by Condon. The first was dependent upon dietetic indiscretions, the second upon hypersensitivity to certain fish protein. The conjunctivitis disappeared on abstention from the suspected food.

Phlyctenules are possibly an allergic phenomenon related to a tuberculous infection. In support of this, is (i) the observation that 801 out of 942 cases collected from the literature showed a tuberculin hypersensitivity. (ii) In a certain percentage of tuberculous animals, phlyctenules may be produced by the instillation of tuberculin into the conjunctival sac. (iii) Phlyctenules have been found as part of the Calmette reaction.

For phlyctenules to develop there must probably be an especial hypersensitivity of the ocular tissues to the tuberculo-protein such as would be produced by the presence at some time or other, of a minute focus of tubercle in the eye. In support of this is the observation that a patient who has previously shown a positive Calmette reaction will develop an inflammatory reaction in the tested eye, and none in the untested eye, after a subsequent injection of tuberculin.
If one cornea of an animal be sensitized by intra-lamellar injection of the antigen, a later intoxicating injection of the same antigen into the same, the fellow eye, or through the blood stream, produces an interstitial keratitis. Thus a negro scratched his right eye with a blade of corn and developed a violent keratitis. General and special examinations, Wassermann, etc., were negative, but there was marked hypersensitivity to corn pollen, and treatment by desensitization was eminently successful. The interstitial keratitis of syphilis is probably dependent upon a sensitization of the cornea by the spirochaete or its products early in life and a subsequent anaphylactic keratitis on further absorption of the syphilitic virus. Similar reasoning may apply to the tuberculous variety.

The lens is organ specific and not species specific, and an animal can be made sensitive to its own lens protein by injection of the lens protein of a different species, so that subsequent absorption of its own lens protein will produce allergic phenomena. This is the basis of Verhoeff's and Lemoine's work on phakoanaphylactic endophthalmitis, recently abstracted in this Journal.

Römer and Gibb have demonstrated in the blood serum of a young diabetic with cataract, specific anti-bodies for lens protein. They showed that the lens capsule was permeable to cytotoxic bodies and were of the opinion that cataract was due to a reaction taking place between the blood serum and lens protein. Ginger and Smith produced lenticular lesions in the offspring of a rabbit by immunizing it, while pregnant, with rabbit lens protein. The ocular defects, moreover, became hereditary.

Elschnig believed that in sympathetic ophthalmitis the pigment epithelium injured in the exciting eye was absorbed from the eye of the patient. A hypersensitiveness to pigment was thus created, especially in the fellow eye and any further absorption of pigment caused an anaphylactic reaction in it. Woods has found that in wounds of one eye involving the uveal tract, where sympathetic ophthalmitis does not occur, antibodies to pigment can be demonstrated in the blood serum and in cases where it does occur, a definite cellular hypersensitiveness to pigment can be demonstrated in the blood serum by a skin test. It is possible that the presence of focal infection or systemic disease may cause the development of a hypersensitivity to uveal pigment rather than an immunity to it.

The author now proceeds to discuss methods of diagnosis. For tuberculin hypersensitivity, he advocates the intradermic injection of 1/20 cc. of dilutions of tuberculin "of known potency," the dilutions used being 1: 100,000, 1: 10,000 and 1: 1,000, using stronger solutions if there is no reaction. For pigment reactions he uses three solutions, "a normal suspension," a 1: 10 dilution, a 1: 50 or a 1: 100 dilution. Intradermal injections are made on the flexor
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surface of the forearm and in positive cases, a local hyperaemia and elevation comes on in from one to twenty-four hours.

F. A. WILLIAMSON-NOBLE.


(4) This article by Rovirosa appears to be a translation from the Spanish and to have as its main object to draw attention to the previous work of the author in various Spanish journals in 1915 and 1916. One can well understand that if this work could be made more available to English readers than its appearance in Spanish implies its interest would be very considerable. The present article, however, is too general to be of much service. It recapitulates the general principles of the use of sera and vaccines, and their great value in the treatment of infective eye diseases, but, since there are no case records and no statements as to the various dosages required, in fact, no precise instructions how to obtain the author’s results, its value seems to be limited to the direction of attention to what has already been published in, notably, Revista Ibero Americana de ciencias medicas and Revista de medicina cirurgia practicas.

ERNEST THOMSON.

V.—GLAUCOMA AND INTRAOCULAR TENSION


(1) On the Baluch-Persian frontier Dr. Holland, of the C.M.S. Hospital, Quetta, came across three brothers, Mahommedans, all blinded by double chronic glaucoma at ages of about 55 to 60 years. Iridectomy had been performed by Col. Smith, of Amritsar upon one of the patients without benefit. Later, a fourth brother was discovered, also blind in both eyes from glaucoma; and enquiry elicited the history that their mother, too, had lost her sight in the same way at about 50 years of age. Finally, a glaucomatous male member of the third generation, aged 30, came to Dr. Holland, with vision of one eye quite lost; and of the other eye nearly so. A broad iridectomy produced some slight improvement in the latter eye.

This patient is the only member of the third generation yet affected. He has a brother and three sisters, and his three blind uncles all have children; two of them have each a son and two daughters, and the other one has two sons alive. Though the fact is not definitely stated, one infers that there were no members of the second generation alive who had escaped the disease.

H. HERBERT.

Gradle gives an attractive explanation of the origin of an attack of acute glaucoma by correlation of various well known factors in the production of the disease. These factors are:

1. Anatomical depth of the anterior chamber, location of the scleral spur, size of the spaces of Fontana, character of the endothelium, closure of the filtration angle by the base of the iris, etc.
2. Lack of tonicity of the vasomotor sympathetic nerve fibres.

Magitot is quoted to the effect that “the choroid is in reality a vascular reservoir which has for its purpose the maintenance of normal intraocular tension.” This blood reservoir is under the control of the sympathetic. Leriche reports a case where the sympathetic chain round the internal carotid was resected and there resulted miosis, dilatation of the retinal vessels and increased intraocular tension. It is suggested that the cavernous plexus of the internal carotid artery is responsible for regulating the size of choroidal vessels when changes occur in systemic blood pressure, so maintaining a constant intraocular pressure. Thus the regulation of intraocular pressure is to some extent dependent on the capability of this mechanism to function.

3. A temporary rise in systemic blood pressure.

Gradle then assumes that we have an individual with an eye anatomically predisposed to glaucoma in whom there is for some unknown reason, a lack of tonicity of the vasomotor sympathetic nerve fibres. In consequence of this, the cavernous spaces of the eye are filled to their maximum. A rise in systemic blood pressure now occurs, due to a heavy meal, an emotional crisis, or any of the factors which commonly precipitate an attack of acute glaucoma; this rise cannot be compensated for within the eyeball, and the pressure within the vitreous chamber rises. This produces forward movement of the lens, zonule and iris, thus establishing the well known vicious circle in acute glaucoma.

F. A. Williamson-Noble.

Vollaro, Prof. Lieto (Florence).—The technique and results of Lagrange's sclerectomy in the treatment of chronic glaucoma. (Indication technique et résultats de la sclérectomie de Lagrange dans le traitement du glaucome chronique simple.) *Arch. d'Ophthal.*, June, 1923.

In this contribution to the records of the treatment of chronic glaucoma, Vollaro gives the results obtained by him during seven years. He has, in an earlier paper in the *Bolletino di Oculistica*, 1922, published his cases in greater detail. The numbers operated upon and watched over periods of one year and upwards.
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was 49. In all an appreciable lowering of tension was obtained and in the majority this reached the physiological level, or descended below it. The actual degree is given in millimetres of Hg. In only three cases was there continued slow deterioration of central vision. The technique adopted by the author is described and illustrated. It does not differ in essentials from that advocated by Lagrange.

While there is nothing especially noteworthy in Vollaro's paper, it is an interesting study and report of a series of cases, with careful clinical observations extending over long periods after operation.

J. B. LAWFORD.

(4) Lobel, A. (Bucharest).—Can we guard against late infection in Elliot's operation? (Peut-on prévenir les infections tardives dans l'opération d'Elliot?) Arch. d'Ophth., April, 1924.

(4) Lobel, after referring to the catastrophes reported by various operators, whereby eyes have been destroyed as long as seven years after trephining, and noting that statistics of late infection have ranged from 3 per cent. (Hegner) to 14 per cent. (Pillat), describes the procedure he has adopted in an endeavour to safeguard his patients. Recognizing that the danger of late infection is greater if the covering of the trephine aperture is thin, as is usually the case after an operation on the lines laid down by Elliot, Lobel aims at obtaining a thicker conjunctival covering and limiting the subconjunctival area occupied by escaping aqueous.

He has so far operated upon 28 cases by this method, with good results in every instance. The longest time since operation is three and a half years.

The steps of the operation are:

1. The bulbar conjunctiva is dissected up from its corneal insertion over one-third of the circumference of the cornea, taking care that the whole of the subconjunctival tissue is included in the flap.
2. A few small snips with the scissors at the base of the flap facilitates its movement at a later stage.
3. The free edge of the flap, 2mm. in depth, is resected, in order to remove the thinnest and most fragile portion of the conjunctiva.
4. Two silk sutures are inserted, one end in the flap, the other in the undisturbed ocular conjunctiva near the end of the original incision.
5. The trephine is applied in the usual position and an iridectomy performed.
6. With a fine galvano-cautery point, the cornea is gently touched, in a semi-circle at the lower edge of the trephine aperture.
7. The sutures are tightened, pulling the flap downwards, so
that it covers nearly half the cornea. The threads are then tied and a thick well-nourished conjunctiva lies over the scleral aperture.

(8) The stitches are removed on the fifth day. The conjunctiva is then adherent to the cauterized surface.

The author states that a point of interest to note is the difference between the almost transparent thin conjunctiva over the trephine wound, in the operation as usually performed, and the milky-white thick covering obtained by his procedure.

The article has four illustrations showing the steps of the operation. It is worth reading.

J. B. Lawford.


(5) Bailliart describes his new tonometer which seems to be rather an ingenious instrument. It is invented in order to get rid of certain inconveniences of the Schiötz instrument. The latter can be used only vertically and necessitates the patient being in the recumbent posture: this is apt to frighten the patient and causes, in addition, a waste of time. Alternatively, the head must be held horizontally, which cannot be done without great difficulty in elderly people. Bailliart’s instrument can be applied in any position of the patient and is specially designed for application to either the cornea or sclera, in which latter case an anaesthetic is not required. On the dial there are three scales, the outer recording millimetres of mercury for the sclera, the middle one millimetres of mercury for the cornea, and the inner is marked in grammes for the purpose of setting and verifying the instrument.

The principle of the instrument is that of a spring which pushes the stem instead of a weight which loads it as in the Schiötz, and the object of the graduation in grammes is to make sure that (by application of the instrument to a gravity balance in the manner described in the text) the gramme-figure on the dial corresponds to the actual weight applied. Since the Bailliart tonometer works by spring pressure, the horizontal could not be compared with the vertical position because in the latter case the weight of the instrument would be added to the spring pressure and the reading thereby falsified. Accordingly there is a special mechanism in the Bailliart instrument which comes into play when it is used in the horizontal position. This mechanism is not described in detail. It is apparently not automatic, but requires to be attended to by the operator. With regard to scleral versus corneal application, this is arranged for by the provision of alternative “feet” for application to the sclera or cornea. The exterior appearance of the instrument is illustrated but the working parts are neither illustrated nor fully described. Nor are any records of tension given, and, consequently, no comparisons are made with records.
BOOK NOTICES

by the Schiötz instrument. One assumes, therefore, that this is an article intended to give a preliminary account of a new and relatively untried instrument.

ERNEST THOMSON.


(6) Weekers, after a brief review of some of the physiological work on the intraocular pressure, comes to the conclusion that under certain conditions it is possible to diminish the intraocular pressure by increasing the molecular concentration of the blood. He made a series of experiments on rabbits by injecting distilled water subcutaneously, intraperitoneally, and intravenously. The ocular tension was measured with a Schiötz tonometer. His results were as follows: "Injections of distilled water, whether intravenous, intraperitoneal, or subcutaneous, cause an increase of the ocular tension. That increase of tension is but little marked, and is not lasting, so that it may easily pass unobserved. It is probably due to the diminution of the molecular concentration of the blood, and to the modification of the intraocular fluid, which is the result of this. The brief increase of the ocular pressure under the influence of injections of distilled water is followed by a fall of that pressure, more extensive and of greater duration. This is the result of a toxic effect which is produced whatever the method of administration may be. Large injections of distilled water provoke in the animal general disturbances and even death. For these reasons the clinical use of distilled water does not seem to be of any value."

E. E. H.

BOOK NOTICES


The first part of this book comprises a short section on Anatomy and Physiology followed by a description of disease of the eye on the lines of the ordinary textbook of ophthalmology. In other words, the eye is considered in its different parts, cornea sclerotic lens, etc., and an account given of the various diseases liable to affect these structures. This account does not always coincide with accepted teaching. For example, in the section on correction of amblyopia in concomitant convergent squint the need for correction