formed Association, comprising fifteen “articles” were brought forward and after being discussed and amended were adopted.

The officers of the Association are: President, Professor de Lapersonne, France; Vice President, Dr. Park Lewis, United States of America; Secretary-General, Dr. Humbert; Treasurer, Monsieur Demachy (Treasurer of the League of Red Cross Societies). An executive committee of 11 members, representing 11 nations was also elected. The British representative is Mr. A. B. Cridland, of Wolverhampton.

The unanimity and enthusiasm of the opening assembly augurs well for the future activity of the Association. It has a world-wide area in which to operate and its efforts to control the scourge of blindness will undoubtedly command the sympathetic interest and support of all nations.

For copies of this report of the meeting at Scheveningen, and of the constitution and byelaws of the Association, application should be made to the Secretary, 2 Avenue Velasquez, Paris.

ABSTRACTS

I.—DISEASE OF CONJUNCTIVA

(1) Lindner, K. (Vienna).—Is the bacterium granulosis (Noguchi) the causative organism of trachoma? (Ist das Bacterium granulosis (Noguchi) der Erreger des Trachoms?) Arch. f. Ophthal., Bd. CXXII, S. 391, 1929.

(1) An interesting feature of Noguchi’s work on trachoma was the fact that neither in the patients from whom the inoculation material was taken, nor in the monkeys inoculated, could inclusion bodies be demonstrated. This raised the question whether the American-Indian trachoma on which Noguchi had been working was not a different affection from trachoma as seen elsewhere. It was on this account that preparations were made for Noguchi to investigate the disease in Egypt and Europe, when his untimely death interrupted these researches. Noguchi’s collaborators, however, invited Professor Lindner, of Vienna, to proceed to the United States to examine the inoculated monkeys and to study American-Indian trachoma.

Lindner reports that the monkeys submitted to him showed not trachoma but typical follicular conjunctivitis. In all cases the conjunctiva itself was soft and transparent, with no trace of papillary hypertrophy or thickening. The follicles present were mainly at the fornices, but were also seen on the tarsal conjunctiva,
DISEASE OF CONJUNCTIVA

and in most animals small, sharply limited follicles were present on the bulbar conjunctiva. In all secretion and injection were absent. Admitting that the monkeys in question (macacus rhesus) do not take trachoma well, Lindner stresses the fact that the clinical picture presented by these animals bore no resemblance to that obtained when the macacus is inoculated with the virus of trachoma bodies.

Having disposed of the problem of the inoculated monkeys as an error in diagnosis, Lindner expected to find that American-Indian trachoma was indeed different from European, and was in reality follicular conjunctivitis. He found, however, that this was not the case, the trachoma being in all respects, clinically and pathologically, of exactly the same nature as that seen in other countries. Inclusion bodies were found in 13 out of 19 cases examined, and the clinical pictures corresponded very well with the classification of trachoma as proposed by MacCallan and which has been used by the author throughout the investigation. As Lindner points out MacCallan's classification is useful not only in distinguishing between doubtful and established trachoma, but also in indicating the severity, duration, and anatomical state of the lesion. On the basis of the clinical and pathological findings in these nineteen cases Lindner concludes that American-Indian trachoma is definitely the same as trachoma elsewhere, and of the four cases from which Noguchi isolated his organism two were undoubtedly cases of trachoma (third stage trachoma, MacCallan) whilst the remaining two were perhaps trachoma, possibly follicular conjunctivitis.

Lindner holds that Noguchi failed to find inclusion bodies in his patients because of faulty technique, in not employing contrast staining. He further went wrong in considering the follicle as the characteristic feature of trachoma, thus confusing follicular conjunctivitis with trachoma. That it was indeed follicular conjunctivitis with which Noguchi was experimenting, Lindner advances the further evidence that the orang-utan which Noguchi found unsatisfactory for inoculation is a satisfactory animal for inoculation with inclusion-bodies virus, whilst the macacus, satisfactory for Noguchi's experiment is unsatisfactory for inclusion-bodies virus. Furthermore, Noguchi's organism gives a localised lesion and is unaccompanied by secretion, but inoculation with trachoma gives a diffuse conjunctivitis associated with secretion. Lindner holds that trachoma is a superficial epithelial lesion, in which secretion is absent on account of chronicity, whereas Noguchi's organism produces a dry, deep-seated lesion confined to the adenoid tissue.

The merit of Noguchi's work according to Lindner is the clear separation into two groups of lesions often confused, trachoma and
follicular conjunctivitis. It is of the latter lesion, and not of trachoma, that the bacterium granulosis is the causative organism.

REFERENCES

A. Sourasky.


(2) Fehmy and Choukri have investigated two hundred trachomatous children attending a special school at Constantinople to determine whether there is any relationship between trachoma and syphilis, as is claimed by certain writers. Their findings are entirely negative, for only four out of the 200 gave a positive Wassermann reaction, and in these four, and in no others, the Meinicke reaction for syphilis was likewise positive.

A. Sourasky.

(3) Morax, V. (Paris).—Has trachoma increased in Paris since the War? (Le nombre des trachomateux a-t-il augmenté à Paris depuis la guerre.)

(3) Morax gives statistical tables of the incidence of trachoma among the new patients at the Lariboisière during 1903—1927. The incidence has always been below one per cent., and of recent years has shown a slight rise. Analysing the data for several years as to the country of origin of the patients, Morax shows that the largest single factor responsible for the increase in trachoma is Algeria, whence France is now drawing labour. Other countries (including England) have supplied isolated cases.

At the Quinze-Vingts conditions are very similar. Nida shows in his study extending over the period 1914-1928 that trachoma is responsible for only about 0·33 per cent. of new patients, and of the trachomatous patients about fifty per cent. are Algerians or have been infected in Algeria.

A. Sourasky.
DISEASE OF CONJUNCTIVA


(4) Hirschberg used to say that a country is trachomatous when out of 1,000 eye cases, 150 are of trachoma. By that standard Poland is only about half trachomatous, for in four different university clinics, the percentage of trachoma cases varied between 5·6 and 10·8 during 1924. Zachert also gives the results of the routine examinations conducted among school-children and among recruits for the Polish army. Amongst nearly three quarters of a million secondary school children the percentage of affected was 0·76, a rate which is distinctly lower than that obtained for over 100,000 children in elementary schools in whom trachoma affected 3·01 per cent. Among over 800,000 candidates for the army seen during 1924-1926, 1·14 per cent. were found to be trachomatous. By a quite unjustifiable calculation Zachert concludes that in Poland the rate of trachoma is 14 per 1,000. It is surely inadmissible to take 700,000 secondary school children (i.e., a selected population) and only 100,000 elementary school children (i.e., a more typical example of the population) and add to these data obtained from recruits of districts that give such varying percentages of affected candidates as 27·3 and 0·7, and on this highly incongruous mixture calculate an average per 1,000.

A. SOURASKY.


(5) In a preliminary note read before the Ophthalmological Society of Egypt (recorded on p. 36 of the Bulletin for 1928) Wilson reported the isolation of an organism similar to the bacterium granulosis of Noguchi in some cases of trachoma. He has since carried out further investigations to determine whether this organism can cause trachoma in inoculated monkeys.

The problem is, however, one of considerable complexity, for animals, especially cats, dogs and monkeys are susceptible to a follicular conjunctivitis of their own, often simulating the trachoma of man. This follicular conjunctivitis may come spontaneously (Wilson saw it in 12 out of 16 monkeys in the Zoological Gardens of Cairo) or may develop after trauma, and therefore when a trachomatous-like conjunctivitis is produced experimentally in an animal, it does not follow that the particular organism introduced was responsible for it. The question is still further complicated by the fact that Wilson can find inclusion bodies in trachoma only
exceptionally, and that he is thus unable to determine whether a particular conjunctivitis is trachoma or not on the basis of histological findings. He is therefore compelled to rely upon the clinical picture in deciding the nature of the lesion, and this procedure has a complication of its own in the fact that if trachoma can be inoculated in monkeys it seems to take a modified form; Wilson was unable to establish true trachoma in two monkeys inoculated with trachoma virus.

Of monkeys inoculated with the organism suspected to be the cause of trachoma, one showed no change and three developed conjunctivitis which had a strong resemblance to trachoma, but in Wilson’s opinion was not trachoma. It was conjunctivitis only, with no tendency to corneal complications. As Wilson had to judge by the clinical picture it must be said that in his view the characteristic features of trachoma are not follicles but scarring and corneal involvement, and it is owing to the absence of these or other evidence of stage III (MacCallan’s classification) that he concludes that the organism is not the one responsible for trachoma.

A. Soursasky.


(6) Canis, who examined all the natives aged 20 years, living in a large area in Algeria, has drawn up tables showing the incidence of trachoma in the different communities, and from these he concludes that trachoma follows the lines of communication of this country, being high wherever the two main railway lines pass through the land. That it is indeed the lines of communication which determine the spread of trachoma, and not merely valleys or waterways along which these railway lines often stretch, he shows by the fact that separate communities along the same stream may show the extreme variation of one having no trachoma at all and others being highly infected. Altitude does not appear to play any part in the distribution of trachoma in Algeria, for in the district investigated by Canis the two main centres are about equally affected, yet one lies on the sea and the other has an altitude of 650 metres; furthermore some outlying villages on this high plateau are entirely free from trachoma, and this, in the author’s opinion, is due to the fact that they are very difficult of access, the journey necessitating two days travel and the employment of mules.

Canis therefore rules out climatic conditions as the source of spread of trachoma, and holds direct contamination responsible.
But the problem of the infectiousness of trachoma is not so simple. He recalls the evidence that though in some French regiments consisting of both European and colonial elements as many as 30 per cent. of native soldiers have trachoma, yet French soldiers are not infected in spite of close and prolonged contact. And there is the further fact that in spite of the great number of infected non-European soldiers in France during the war, trachoma never gained a footing in that country. The author brings forward a formidable list of authorities who doubt the infectiousness of trachoma, quoting amongst others Morax and Truc. Morax is of the opinion that the contamination of an adult is exceptional, only children being susceptible. In this connection the results of an investigation in Amsterdam are of interest. In that city it was found that school-life makes but little difference in the incidence of trachoma, as the trachomatous children are already infected by the time they enter school, and that the disease is spread among children before the school-age, the means of spread being not so much the family as the children playing together in dirty streets. Another fact of interest is the observation by Bidault that amongst tribes living on the border of the Sahara, as many as 90 per cent. of the children show trachoma by the age of 8.

Canis concludes that trachoma is spread by direct contact, children being highly susceptible, susceptibility diminishing rapidly so that the adult is but exceptionally infected.

A. Sourasky.

II.—MISCELLANEOUS

(1) Bücklers, Max (Zürich).—Experimental and histological research on the effect of highly concentrated ultra-violet rays on the eye of the rabbit. (Experimentelle und histologische Untersuchungen ueber den Einfluss von hochkonzentriertem Ultraviolett auf das Kaninchenauge.) Arch. f. Ophthal., Vol. CXXI, p. 73, 1928.

(1) This paper by Bücklers records work that is a continuation of the researches done in Vogt’s Clinic on the action of light upon the eye. His findings go to show that isolated ultra-violet of 400-285 μμ even in concentrated form causes only temporary and superficial changes in the eye. It is only by the highest concentration of the total energy of the mercury vapour lamp that it is possible to produce burns in the anterior portion of the eyeball; this result is due not only to the ultra-violet with its enormously
increased intensity but also to the action of the visible spectrum and the infra-red rays.

In the production of these burns, which lead to necrosis of the cornea and severe changes in the iris, the lens is obviously also affected in the pupillary area but not in the parts protected by the iris. It was not possible to determine the action of the different parts of the spectrum in causing these changes. The experiments bring out very clearly the totally different action of the ultra-violet and the infra-red rays; while the latter after an exposure of half-an-hour cause extensive opacities in the lens, the main effect of the ultra-violet rays is to set up changes in the cornea and temporary opacity of the aqueous.

Histological examination confirms the fact that it is impossible to produce changes in the lens with ultra-violet rays even in high concentration, while they are readily induced with infra-red rays. Bücklers is of opinion that for examination of the anterior portion of the eye, and particularly of the anterior chamber, slit lamp microscopy is superior to the histological method.

THOS. SNOWBALL.


(2) The technique employed by Weekers (Arch. d’Ophthal., XLV., S.20 1928), (Brit. Jl. of Ophthal., Feb. 1929, p. 84), in the treatment of spastic entropion has been modified and adapted by Zborowsky. Weekers employed 0.5 to 0.75 c.c. of 80 per cent. alcohol which was injected under the skin of the eyelid 3 mm. from the lid margin, 5 to 10 minutes after a preliminary injection of novocaine. The present author, however, found in a test case that this technique was followed by massive necrosis, cicatricial ectropion and epiphora. He therefore injected 0.8 c.c. of 80 per cent. alcohol more deeply, along the whole length of lid superficial to the tarsus. The entropion was cured: but some deep necrosis occurred in the neighbourhood of the punctum which was followed by a partial ectropion and epiphora. A further modification was therefore tried wherein 0.4 c.c. was injected, along the outer 2/3 of the lid only, so as to avoid the region of the punctum. The subsequent necrosis and contraction in two cases gave good and satisfactory end-results after a reaction-period lasting some days.

W. S. DUKE-ELDER.

Elschnig has met the condition of a small hyphaema forming in the vitreous prolapse into the anterior chamber which sometimes occurs after the intra-capsular extraction of cataract. Knapp, speaking of the late results of this type of extraction at the Ophthalmological Society of the United Kingdom in 1925, mentioned this as a rare complication, and noted that the blood staining remained unchanged for several months. In the present case a considerable amount of fluid blood remained in the protrusion of the vitreous through the pupil, and absorbed very slowly. There were no ill-effects.

W. S. Duke-Elder.


In an instructive article on the differential diagnosis and the treatment of acute exophthalmos Rönne lays special stress on what he calls the collateral inflammatory oedema of the orbit caused by an extra-orbital focus of inflammation. The exophthalmos caused by this condition is but a part of the clinical picture: the severe oedema of the orbit also manifests itself by very swollen lids, chemosis and limitation in all directions of movement of the globe. Indeed the exophthalmos may be be overlooked owing to the severity of the other lesions.

Exophthalmos of this type, i.e., the result of an orbital oedema, may occasionally be present in cases of panophthalmitis, but far the commonest, "if not the only," cause of pure orbital oedema is infection of the nasal sinuses. The nasal origin of acute exophthalmos has been very much overlooked, according to Rönne. He himself has seen it frequently, especially as a complication during infectious fevers in children, more particularly in scarlet fever. In these cases the orbital oedema with its associated exophthalmos is the direct result of acute ethmoidal sinusitis. It is important to recognise these cases as their course is favourable and under conservative treatment they subside. The prognosis is good in spite of the alarming appearances of some of these cases. Operative treatment in the way of making incisions into the orbit is particularly to be condemned, as these expose the patient to the very serious risks of secondary infections, which are specially prone to supervene in scarlet fever. Rönne remarks that this type
of exophthalmos appears to be better known to epidemiologists than to oculists.

A more serious problem is presented by those cases where this orbital oedema masks a septic focus in the orbit. An uncomplicated localised abscess in the orbit would give focal symptoms, such as limitation of movement, being more marked in one direction than in another: but with superadded inflammatory oedema there is danger of overlooking a collection of pus in the orbit—a danger which carries with it risks not only to the eye but to life. Unfortunately there appears to be no way of conclusively solving this difficulty, and Rönne's practice appears to be based on the principle of not interfering if the sinus infection is fresh, but operating if the sinus infection is an acute recrudescence of an old infection, the reason for this attitude being that orbital oedema associated with an old sinus infection probably points to a sinus empyema having broken through into the orbit, whereas orbital oedema in a fresh sinusitis is probably part of the oedema associated with the inflamed sinus. Spontaneous healing may therefore be expected in the latter case, but an empyema breaking through into the orbit requires radical treatment promptly carried out.

Old sinus infections breaking through into the orbit are more likely to take the form of sub-periosteal abscesses than definitely intra-orbital abscesses. The associated inflammatory oedema may or may not be sufficiently severe to mask the local nature of this type of abscess—and exophthalmos need not be a feature in this clinical picture.

It would therefore appear that orbital cellulitis is not common either as a complication of sinus infection or as a cause of exophthalmos. Rönne holds that erysipelas of the face is, however, prone to give rise to orbital cellulitis by direct extension. In his experience abscess formation of the lower lid is an intermediate step, and these abscesses should be surgically treated to avoid further extension. Extension through the cavernous sinus is, however, possible.

Finally Rönne also advances "rheumatic tenonitis" as a cause of acute exophthalmos. Apparently it is to be diagnosed by its mild course, by its tendency towards bilateral involvement, and uveal lesions.

Rönne's article emphasises the conservative treatment of acute exophthalmos, and it must be noted that when operative interference is decided upon the subperiosteal route rather than incision into the orbit is to be preferred, as an abscess of a sinus breaking through is more likely to track subperiosteally than into the cellular tissues of the orbit.

A. Sourasky.

Diaz-Caneja refers to a paper by Magitot discussing Boes's experiments on the electric current in the retina of certain fishes. Stimulation of the separated retina by a bright light is stated to be followed in the dark by recurrent electrical oscillations. Caneja designed a coloured figure for study in a stereoscope, composed of concentric circles in the two temporal fields. Lines intersect in the centre of each so as to facilitate fixation of these central points by the two eyes. Steady fixation of the centre by an effort of the attention leads to a peculiar phenomenon. The more perfect the attention, the more regularly does the phenomenon occur. At one moment a confused picture of mixed lines and circles is seen, but with good attention complete circles or complete parallel lines are perceived alternately at intervals of a few seconds. After a few minutes close observation of the figures in a good light, closure and covering of the eyes produce after images of the same kind, but with much more regular alternation. A consideration of possible explanations follows.

(Similar alternation of the images of the temporal fields with those of the nasal fields is produced when monochrome figures of the same pattern are used. For this purpose a photographic reproduction was obtained. The coloured figures, however, make the effect more dramatic.—H.N.)

HUMPHREY NEAME.

Duverger, C. (Limoges).—Senile ectropion and entropion. (Ectropion et Entropion Séniles.) Arch. d’Ophtal., June, 1929.

The treatment of the senile form of ectropion and entropion is such a well-worn subject that little that is novel can be expected from any writer, and this paper contains little more than a description of the methods which the author has found most satisfactory and lasting. In dealing with ectropion two essentials are: (1) a sufficient shortening of the free border of the lid, which at the end of the operation should appear excessive; and (2) a solid re-formation of the external angle, i.e., an exact adhesion of the free edge of the lower lid to that of the upper. Local anaesthesia by a 4 per cent. solution of novocaine is employed. Duverger treats ectropion by removal of a fairly large triangle of the whole thickness of the lower lid at the outer canthus, the upper margin of which is continuous with the line of the upper lid. The two incisions are made with straight scissors, and after making the more external cut, the freed lid is seized by forceps and drawn outwards gently to measure the width of the segment for removal:
usually 1 to 1.5 cm. The important suture is that which unites the two cut surfaces to form the new canthus; this should be inserted with mathematical accuracy, and followed by two or three others in the length of the incision. In severe and long-standing cases an additional measure is cauterisation of the thickened fleshy conjunctiva of the everted lid.

In entropion Duverger adopts a similar method of removal of a triangular piece of the lower lid at the outer canthus combined with excision of the fibres of the orbicularis muscle in the lower lid close up to the ciliary margin. This is done after the triangle has been removed but before it is sutured, and while the freed lid is held by forceps and drawn outwards by an assistant.

The steps of these operations are easily followed in the six illustrations which accompany the letterpress. During the last four years the author has treated 12 cases of entropion and 20 to 25 of ectropion, on these lines.

J. B. Lawford.

(7) Sommer, Ignatz (Vienna, Austria) and Yaskin, Joseph C. (Philadelphia).—Spontaneous nystagmus. Arch. of Ophthal., July, 1929.

(7) Sommer and Yaskin's paper presents some clinical points in the determination of the nature of "spontaneous" nystagmus. For practical purposes, this symptom is divisible into three groups, neurological, otological and ocular. The method of diagnosis is to observe the nystagmus for the following characteristics: (1) Type; is it horizontal, rotatory, vertical or a combination of these? A pure nystagmus horizontal, rotatory or vertical usually indicates a lesion in the brain stem (arcuate vestibular fibres or posterior longitudinal bundle) whereas a horizontal rotatory nystagmus is usually of peripheral labyrinthine origin. (2) The direction of the quick component; if not directed, i.e., undulating, it is usually of ocular origin. If directed, it is divisible into the following groups: in the first a spontaneous nystagmus develops when the eye is turned in the direction of the quick component, in the second it is present when the eye is looking straight ahead and in the third, the quick component is in the opposite direction to that in which the patient looks. The first and second degrees may be of any origin while the third is due to a lesion of the brain stem or ocular apparatus. (3) Frequency; slow, medium, or high. The extremes are usually of ocular origin, while medium frequency occurs in peripheral labyrinthine and central nystagmus. The same is true with regard to (4) amplitude, which may be small, medium or large. (5) Associated or disassociated nystagmus, i.e., whether the eyes move simultaneously in the same direction at the same speed. The disassociated variety is always of ocular origin. (6) Perman-
ency. The duration may be from a few seconds to a lifetime; if brief it indicates a labyrinthine cause, if throughout life an ocular cause, whereas changeability indicates central nystagmus. If conclusive evidence is not obtained from an examination such as this, the authors recommend using the more complicated tests, such as the galvanic, caloric, and rotatory ones. The authors then turn to the consideration of diplopia associated with nystagmus, a symptom which was present in almost half their cases without coexisting involvement of the extraocular muscles. Its importance lies in the facts (1) that it may be the only symptom complained of by the patient, who is often totally unaware of his nystagmus and (2) that it usually indicates a lesion of the central nervous system. Diplopia does not occur in ocular nystagmus because this condition commences in early childhood before fixation as such has been acquired and often in association with amblyopia. It also does not occur in acute cases, which are usually of labyrinthine origin, because of the associated dizziness and spatial disorientations which prevent the recognition of diplopia. The paper concludes with an account of ten cases of various types of nystagmus.

F. A. W.-N.


(8) Freeman's paper demonstrates "the enormous complication of a function on which a fictitious, though perhaps practically useful simplicity, has been conferred." The function is, of course, visual acuity and the fictitious simplicity is the assumption that geometric relationships alone determine and explain visual acuity; in other words that 60/60 represents the same vision as 6/6. The question was tackled by Aubert, for peripheral vision, as long ago as 1865. He found that small and near complexes could be resolved by a more peripheral part of the retina than could large complexes placed sufficiently far away to subtend the same visual angle, the difference in favour of the near and small objects being as much as 50 per cent. On the other hand the author has recently obtained directly contradictory results by using the following method. The contrast consisted of two black squares with a mechanical device whereby the white interval between them could be gradually increased from zero up to the point at which the two squares could be distinguished as separate surfaces. The acuity was thus inversely proportioned to the width needed for resolution. The complex was placed at a chosen distance from the fixation point and with this method, visual acuity for the large object was in some cases as much as 80 per cent. better than for the small one. Jacobson, working on the fovea and employing letters of various sizes, found that the size of the letter was not proportional to the distance at
which it could be resolved; in this case large distant letters required a greater visual angle for resolution than did small near ones. The same was found to be true with grey and white stripes in place of letters; and in the recognition of the colours of various sized surfaces. The author does not attempt any solution of these difficulties and concludes with the sentence "To recognize them as problems is to become liberated from the trammels of the one attitude which has prevailed in optics, namely, that of geometry, and perhaps to prepare the way to a juster description of the facts which have been observed by that attitude."

F. A. W.-N.


(9) Ferree and Rand have been at work for some years on problems connected with lighting and this paper gives an account of some of their findings. The main factors the effects of which have to be tested are:—wave length and composition of light, purity and intensity, hue, saturation and brightness, also evenness of illumination and of surface brightness, difference of light and the angle at which light falls on the work. It is no use testing these merely by their effect on visual acuity since other properties of the eye are of equal if not greater importance, especially from the economic standpoint. Such properties are, speed of discrimination, power to sustain clear vision for a period of time, the occurrence of ocular fatigue and discomfort, the power of separating the functions of accommodation and convergence. With regard to wave length, the best results are obtained from the mid region of the spectrum, and the purer the colour the less the blurring from chromatic aberration. There are other factors to be taken into consideration, however, and one of the most important is that colour forms an unfavourable background against which to discriminate details in black. It is, therefore, found practically that white light is the best for reading. Owing to irradiation phenomena it is found that black print on white paper is easier to read than white print on black paper.* With large objects, however, and high intensities of illumination, the speed of discrimination is higher for the white object on black. As saturation is increased for any hue, its inferiority to white as a background for black is increased. Increase in intensity acts as follows: The benefit is greater (1) when the details to be discriminated are small and when the difference in co-efficients of reflection from the background is small. Under all conditions investigated, however, the benefit of increase of intensity was still present to a considerable degree at 100 foot candles. (2) For light objects on dark backgrounds than for the reverse. (3) For ametropic than emmetropic eyes and (4) for
the old than for the young eye. Evenness of illumination is obviously desirable since in its absence the eye has to be continually adjusting itself and this leads to fatigue. The same is true of specular reflection, for this reason paper should not be glazed unless the illumination is received from totally indirect reflectors or from direct reflectors, provided with a means of diffusing the light. High brilliancies, e.g., naked lights, in the field of vision should also be avoided because of their effect on the size of the pupil. In some of the lighting systems tested by the authors, the highest brightness in the field of view was 800,000 times that of the working surface. The presence of this in the visual field (1) diminishes the size of the pupil and renders the work less visible because less light comes into the eye from it, (2) produces a blinding effect through irradiation and (3) produces disturbances and fatigue in the mechanism for adjustment of the eye. With regard to the discomfort such a light produces, it is found that in the horizontal meridian the maximum sensitivity is around the 45° point and in the vertical meridian around 15° below the horizontal. Footlights are therefore “the worst lights that have been devised by the misdirected ingenuity of man to confound and torture the eye.” Some of the authors’ points have been brought out in an ophthalmic survey on post office employees. It was found (1) that in mail sorting an increase from 3.6 to 8 foot candles of light on the working plane caused an average increase of 4.4 per cent. in speed of work, and a net saving of 109,000 dollars a year to the post office. (2) The diminution of fatigue was more marked in those who suffered from defects of the eye. (3) Ocular defects were less frequent among the group of employees who worked under the higher degree of illumination. (4) Coloured envelopes were sorted with less ease than white ones, and the same was respectively true with regard to glazed and matt surfaces.

F. A. W.-N.


(10) Under the name of ophthalmomyiasis, Behr described a condition in which larvae of flies were found in the interior of the globe. At the time of the original article, in the year 1920, four cases were known and to this number Behr added one more. The division into anterior and posterior varieties of ophthalmomyiasis is based upon the distinction as to whether the larvae are to be found in the anterior chamber or not. The case recorded by Barczinski is the seventh, a sixth having been reported in the interval.
The present case concerns a boy aged six years, whose left eye had been inflamed and blind for ten days. In the highly inflamed eye a foreign body about 1 cm. long and 2 mm. wide could be seen, and as this appeared to be the source of irritation, the anterior chamber was opened under general anaesthesia and the object removed. The eye then made a rapid and uneventful recovery. Examination of the foreign body removed showed it to be the larva of a gadfly (Hypoderma bovis).

The case reported agrees in the main with those described by Behr, and the youth of the patient is in support of Behr's view that the thinness of the tunics of the young eye allows the larvae to bore their way into the eye. The favourable result obtained in the present case is also in agreement with the previously recorded cases, for the cases of the anterior variety of the condition did well, but the two recorded cases of ophthalmomyiasis interna posterior led to severe reactions, ultimately necessitating enucleation. One feature of interest in the present case is the fact that on recovery the lens of the affected eye was seen to be subluxated. The author believes that this is to be explained by the larva having bored its way through the suspensory ligament and thus having damaged it. A localised opacity in the lens is likewise ascribed to the action of the larva.

A. SOURASKY.

CORRESPONDENCE
CIRCULATION

To the Editor of The British Journal of Ophthalmology.

Sir,—The interesting experiment of perfusing an isolated head with watered blood, so skilfully carried out by Mr. and Mrs. Duke-Elder and published in August, 1929, in this journal, affords a striking instance of the inadequacy of the canal of Schlemm to maintain normal equilibrium and to prevent hypertension, under the conditions of the experiment. It also seems to lend support to the view that the aqueous humour passes from the eye mainly by the venae vorticosae and that the rôle of the canal of Schlemm is subsidiary. If one assumes, and the steadiness of capillary function during the experiment seems to justify this, that the water in the blood has not caused oedema of the cells, the increase of intra-ocular pressure will tend to promote the flow of fluid through the canal of Schlemm, while the decrease of both colloid and