highest degree of illumination obtainable, and this is now provided
for by an alternative lighting system which, however, necessitates
the use of a rheostat. The lamp and microscope are alike mounted
on bases to slide on the glass-topped table. This method is less
speedy than a mechanical device for lateral transit of the lamp,
but it affords greater steadiness, and when the beam is adjusted it
does not tend to pivot off its mark, so that there is no need to hold
it constantly in position.

The beam can be applied all round the stand and I am obliged
for a suggestion to this end made by Mr. Harrison Butler.

The microscope affords a flat field and the magnification of \( \times 20 \)
has been chosen as that of greatest usefulness for standard supply.
Other magnifications are available (preferably by additional
objectives), but are not required in routine work. If it is desired
to study the endothelial cells the addition of objective 32 mm.
provides a magnification of \( \times 28 \) which is suitable for this purpose.

The instrument was made for me by Messrs. C. W. Dixey & Son
Ltd., of 15, Old Bond Street, who were responsible for many
devices for simplifying mechanical design and for the successful
means of cooling the 100 Watt lamp. I am indebted to them for
much painstaking work, experiment and ingenuity. As the com-
plete instrument costs half the usual price it may permit of more
extended use of this valuable means of ocular examination.

---

ABSTRACTS

I.—PATHOLOGY

(1) McKee, Joseph W. (Kansas City, Missouri).—Melano-

(1) McKee's case was that of a woman, aged 31 years, who,
when first seen, had a small deposit of pigment at the temporal
side of the limbus in the right eye. There was a history of a
similar deposit having been removed from the same area six years
previously. Within six months, the pigmented area had become
a soft, lobulated, almost black growth involving a quarter the
circumference of the cornea. With the slit-lamp, it could be seen
to be infiltrating the cornea. An application was made with the
thermophore at 146° F. for two minutes, and a month later a second
application was made to the area not covered by the first one.
Within three months all traces of the tumour had disappeared,
and there has been no recurrence over a period of three years,
vision remaining 20/20.

F. A. W-N.

In Lugli's case the tumour was situated in the outer third of the right lower lid. Histological examination showed that the starting point was in the epithelium of one of the sebaceous glands. There are few similar cases reported.


Levine reports an interesting case of this type occurring in a girl, aged 14 years, who had pigmentary degeneration of the retina. A grey cystic tubular mass was seen protruding from the nasal margin of the disc. The cyst in the course of time became longer and thinner and developed a daughter cyst. There was no other disease present and the author considered that it was an early manifestation of tuberous sclerosis or was coincident with the retinal disease. The former was the more likely diagnosis but time would have to elapse before this could be established because up to date no other signs were present. Tuberous sclerosis consists in the development of glial nodules on the surface of the brain and similar proliferative masses in other parts of the body, e.g., the skin (adenoma sebaceum), the cutaneous nerve fibres (neurofibromatosis), the heart, the thyroid gland and the breasts. In the eye, two forms are recognized, raised tumour masses of the disc, and flat tumours of the retina. They are thought to arise from retinal cells which have failed to differentiate during the process of development. The fact that the cyst arose from the optic disc is evidence against its being due to pigmentary degeneration of the retina though small accumulations of neuroglia cells have been found by Verhoeff in the disease, also small cysts.

F. A. W-N.

II.—OPTICS AND REFRACTION


Granström analyses fifty-cases of monocular myopia of not less than 5 D. He reports:

1. The corneal refraction in the myopic and the non-myopic fellow eye was generally equal, though the myopic eye frequently showed rather more physiological astigmatism.
2. The tension was likewise about equal in the two eyes. In some cases it was rather lower in the myopic eye; only exceptionally was it higher.

3. Corneal scars were more frequent in the myopic eye—whether the cause of myopia or an expression of the greater proneness of myopic eyes to disease, could not be determined.

4. The myopic eyes showed the usual fundus changes; not so the non-myopic eyes.

5. Divergent squint in the myopic eye was fairly common.

6. Obvious facial asymmetry was not observed.

7. There was no noticeable inequality of the pupils.

8. No conclusive evidence on heredity could be collected.

ARNOLD SORSBY.

(2) Gualdi (Florence).—The technique and practical results of the application of contact lenses, with special regard to the correction of ametropia. (Tecnica e risulta i della applicazione practica dei vitri aderenti arrotonati con speciale riguardo alla correzione delle ametropie). Boll. d'Ocul., November, 1932.

(2) In this long and interesting paper Gualdi discusses the use of contact lenses, of which he is a strong advocate. He describes, with illustrations, the method which he employs to introduce the glass so as to avoid the presence of air-bubbles, and their removal. He gives the history of a number of patients for whom the use of such lenses was of assistance. Finally, he examines how the use of contact lenses may be best generalized. He decides that there are two requisites, to reduce the cost of the lenses, and to make available to all ophthalmologists a small but sufficient series of test lenses. Practically, he says we have to consider only the scleral curvature; this varies from a radius of 10·5 mm. to 13 mm. Six trial lenses should be obtained with curvatures at each 0·5 mm. between these limits; the edges must be well rounded and smoothed. When the surgeon has decided which of these best adjusts itself to the patient's eye, he finds the additional correction which is necessary and writes the prescription accordingly, giving the internal curvature of the trial lens and the additional correction.

HAROLD GRIMSDALE.

(3) Prister, Bruno (Trieste).—Contact lenses and a model of the anterior segment of the eye. (I vitri adesivi ed el calco del segmento anteriore del bulbo). Boll. d'Ocul., February, 1933.

(3) Though the subject of contact lenses has been fully discussed of recent years, and their form and refracting power worked
out in detail, they remain outside the orbit of most ophthalmic surgeons on account of the cost; at least 100 are required as test glasses. It would simplify matters if the curvature of the anterior segment of the eye were readily and accurately obtainable. The curvature of the cornea can be measured by the ophthalmometer, but the curvature of the sclerotic is at least as important; Prister suggests that it may be possible to take a mould of the anterior segment in dental wax. To this end he has devised an instrument to carry a thin, oval plate of wax. After preliminary cocainization, the lids are held apart and the oval plate slipped under the upper lid and pressed gently on the globe. By means of pads of cotton wool dipped in hot water, the wax is kept soft and moulded to the surface; when the surgeon is satisfied that he has a useful mould, the wax is hardened by cold swabs and the carrier removed from the eye. It is not always easy to remove the carrier without altering the mould, but with practice it can be done. From this negative a model of the segment is cast in plaster. Prister recommends that two casts be taken and that one should be varnished to give a reflecting surface. From this it can be judged how closely the cast approaches the ocular curvature. The contact glass can be made from the cast.

HAROLD GRIMSDALE.


(4) In this long and interesting paper Vita discusses the alterations of the size of the retinal images produced by optical corrections and the accompanying changes in shape and position of external objects. He shows that the view often taken, that with glasses placed so that the distance between the anterior principal point of the eye and the correcting lens is equal to the anterior focal distance of the eye, the image formed is equal in size to the image formed by an emmetropic eye, and that, therefore, there is no alteration of apparent size by correction, is not true; the images formed by a myopic eye, though not distinct, are necessarily larger than those of an emmetropic eye. When the myope is corrected he finds objects appearing smaller than before. Vita points out that it is possible by the use of telescopic spectacles to adjust matters so that the image formed on the myope's retina is of the same size as before correction, but is distinct instead of being blurred.

HAROLD GRIMSDALE.
III.—THERAPEUTICS


(1) Gay's paper gives the results of tuberculin treatment at the Wilmer Institute in a group of 30 patients, who had been unsuccessfully treated by other methods: 15 had uveitis, 8 keratitis, 1 nodular scleritis, 1 iritis, and 5 recurrent intra-ocular haemorrhages. The results were "most gratifying," and are given in a series of tables. In the early part of his paper the author quotes Wilmer's description of the three types of ocular tuberculosis: (1) Uveitis with mutton-fat K.P., vitreous opacities, macular lesions and sometimes exudate on the lens. (2) Where the lesion is confined mostly to the posterior portion of the uvea, and appears as large yellowish white spots of exudate surrounded by retinal haemorrhages and ultimately becoming fibrous. (3) Recurrent vitreous haemorrhages in young patients often with subsequent retinitis proliferans. Diagnosis was made by intradermic injections of old tuberculin, a control injection also being made of the culture medium. The site of the injection was on the forearm near the wrist, and 0·1 c.c. of a 1:100,000 dilution (i.e., 0·001 mg.) was used. If no reaction occurred within 48 hours 0·1 c.c. of a 1:10,000 dilution (0·01 mg.) was given, and if this was ineffective increasing amounts were given, up to a total of 1 mg. The degree of sensitivity does not necessarily indicate the severity of the disease, but in the average patient more significance is attached to a reaction from the weaker solutions, 0·001 mg. and 0·01 mg., than to a reaction from the strong solutions. Treatment is carried out with bouillon filtrate, prepared by the method of Denys (Le bouillon filtré, Paris, 1925), since bacillary emulsion is not susceptible of accurate dosage in the weaker dilutions. The initial dose is 0·000001 mg. injected into the deltoid muscle. The injections are given twice weekly until a concentration of 1 mg. per c.c. is reached, when they are given once a week, the dosage being gradually increased up to a maximum of 100 mg. over a period of six to ten months. If a focal reaction appeared after any injection, it was taken as an indication for reducing the dose, and as a result of this, no patient was made any worse by the treatment. In the majority of cases, the result has been the restoration of an eye or eyes supposedly beyond repair. An interesting observation made on 25 of the patients was that in only nine of them was there any appreciable change in the sensitivity of the skin to tuberculin.

F. A. W-N.

(2) Benedict and Goeckerman in this article give an account of the treatment of uveitis at the Mayo Clinic and state that the majority of cases are recurrent and chronic, often of indeterminate origin and hence must be dealt with by systemic treatment. The most satisfactory method of treating acute cases is to inject 6 to 10 c.c. of boiled milk into the gluteal region, a second injection not being given until 24 hours after the subsidence of any pyrexia induced by the first one. In cases where a low grade uveitis has continued for over a month and not more than three months, milk injections have not been of value. Typhoid vaccine, subcutaneously or intravenously has been used in these cases, dosage being kept at a constant level of 25-50 million or stepped up rapidly to 500 million, since this sometimes promotes quicker healing. In uveitis of longer duration than three months, prolonged treatment is required and patients will not stand repeated bouts of artificially induced pyrexia. In such cases, the authors have been trying the effect of sodium gold thiosulphate, given intravenously in doses of 10-100 mg. two or three times a week, the average dose being 25-50 mg. Fifty or sixty injections are usually given, the drug is then discontinued for one or two months and a second course of fifty or sixty injections is administered. The mode of action of gold is not understood, but one hypothesis is that it produces peripheral capillary hyperaemia by paralysing the contractile cells of the capillaries. Care must be exercised in its employment and one case was reported in the discussion of this paper, in which after the administration of an injection of sodium gold thiosulphate, a violent reaction resulted, with the formation of numerous papules. Some of these were on the corneae and became infected with resulting panophthalmitis and loss of both eyes. The authors do not regard this agent as a cure all, but it certainly has a beneficial effect in some cases which are untouched by other methods of treatment.

F. A. W-N.


(3) The treatment of optic atrophy in tabetics is so unsatisfactory that any means is justifiable which holds out any real prospect of success. The treatment of general paralysis by causing an attack of malaria has proved useful in a number of
cases, but has not succeeded in tabetics. There seems, however, no reason to doubt the good effects of high temperature in killing the spirochete. Hence trials have been made of various methods of inducing fever in tabetics in the hope of improving their condition. Since Schröder in 1927 published a paper on the results which he had obtained by the injection of a suspension of sulphur in olive oil, others have experimented with this or some similar remedy. Tirrelli reports five cases in whom the usual specific treatment was accompanied by these injections. In three there was enlargement of the visual field and increased visual acuity. In one only, in whom the condition was far advanced, was there no success.

HAROLD GRIMSDALE.


(4) Pergola has used tripaflavin in a number of cases of hypopyon ulcer and in some other infections. He advises its use by intravenous injection with a dose of 5 c.c. of 0·5 per cent. solution. These injections are given every other day. He finds that the hypopyon is absorbed with great rapidity.

HAROLD GRIMSDALE.


(5) In a case of repeated vitreous haemorrhage which recurred after other treatment Montanelli determined to make use of counter-irritation, and with this aim injected subconjunctivally 0·5 c.c. of 1 per cent. solution of phenol. The result was satisfactory in that there was no further return of haemorrhage, but the injection gave rise to intense pain which lasted for some days. The author attempted to explain the unexpectedly brilliant result by experiments on rabbits. The animals did not appear to suffer in any degree comparable to the subject of the paper. Examination of their eyes after enucleation showed very little change in most of the parts of the eye. There was a temporary marked dilatation of the vessels of the iris and a great movement of chromatophores into the tissue of the iris and ciliary body. The deeper structures were entirely unaffected.

HAROLD GRIMSDALE.

Pergola finds pantocain an almost ideal local anaesthetic. It is not toxic to any extent; it produces good anaesthesia of the cornea when dropped into the eye and has no effect on the pupil or tension. It is inferior to cocaine in producing anaesthesia of the ocular conjunctiva and of the lacrimal passages.

**Harold Grimsdale.**

---

**IV.—MISCELLANEOUS**


(1) Alpers' and Wolman's paper opens with a short résumé of the literature on this subject from which it appears that the first case was described as long ago as 1877. Arterio-sclerosis may affect the nerve by direct compression exercised by arteries in its proximity, or by sclerosis affecting the vessels in the nerve itself. In some cases there is a combination of these two factors and the one reported falls into this class. The patient was a woman, aged 44 years, who had had hyperpiesis for some years. Three years previously the right eye had shown swelling of the disc and a star-shaped exudate in the macular region. Shortly before death, however, the fundi were reported as normal, except for narrowing of the arteries which showed no sign of sclerosis. Post-mortem: there was intense sclerosis of the circle of Willis; the optic nerves were compressed by the internal carotid arteries, the nerve in one portion being flattened out almost to a ribbon, while the brain was markedly oedematous.

A review of the cases previously reported shows that compression of the nerves may occur in three different places: (1) in the fibrous prolongation of the optic foramen, through pressure by the ophthalmic artery; (2) at the upper edge of the fibrous canal through pressure of the internal carotids; and (3) between the canal and the chiasma where the internal carotid and anterior cerebral arteries cross the nerves. In many cases, there is aneurysmal dilatation of the affected vessel and retinal arterio-sclerosis is usually absent. Clinically, there may be optic atrophy with marked loss of vision, or no atrophy and only a scotoma or some decrease in visual acuity.

**F. A. W-N.**

A long period elapsed between the physiological and pharmacological investigation of the esters of choline and their employment as therapeutic agents. In 1926, for the first time, Villaret, Justin-Besancon, Schiff-Wertheimer, and Gallois made use of acetyl-choline in the treatment of Raynaud's syndrome. The paper now published embodies their account of a prolonged research, the results of which, in experiments on animals and in the administration of the drug in man, are reported in considerable detail. References are made to recent clinical observations on the use of the esters of choline in ophthalmological practice, published in France, Italy, the Argentine and Turkey. The authors' conclusions read as follows:

The physiological and pharmaco-dynamic researches which have served as the foundation for the therapeutic employment of the esters of choline, and especially of acetyl-choline, enable us, in some degree, to foresee and direct their clinical utilization. The selective action of this drug on the peripheral arteries, would lead us, a priori, to consider it a medicament of choice in affections in which vascular spasm is an important factor. Our experiences in the human subject, by examination of the retinal artery, have established the dilating action on arterioles of acetyl-choline administered subcutaneously. This artery has proved extremely sensitive to the drug. This is also apparent in the clinical reports of other observers. Acetyl-choline, obviously, cannot exert a favourable action in arterial obstruction if the obliteration of the vessels is complete. For this reason the most satisfactory results are obtained in ophthalmology: (1) in cases of hypertonus, or of vascular lesions, often visible, in which arterial spasm suddenly obstructs a vessel already diseased; and (2) in young subjects, free from any cardiac lesion, in whom tonicity of the arterial walls seems to be an essential factor in the mechanism of obstruction. We have found also that the dilating action of acetyl-choline on arterioles proves useful in glaucoma, and that tolerance of the drug is such as to allow its prolonged employment in chronic cases.

We are unable at the moment to report observations concerning the therapeutic value of other derivatives of choline, such as α-methylacetylcholine, which are still in the experimental stage.

J. B. Lawford.

Colrat publishes clinical notes of a case of great rarity. He is aware of only three other records by Jacqueau, Fryer and Sauvineau respectively. The author’s patient was a female child, aged 2½ years, who exhibited complete loss of the power of rotation of the eyes to the right or the left. Vertical movements and convergence were practically, but perhaps not absolutely, normal, and no other abnormality was discovered. The child was healthy—the offspring (and fifth child) of first cousins. The history seemed to indicate that in the first months of life there had been loss, or gross defect, of vertical movements.

Various hypotheses have been offered to explain this congenital defect; Colrat favours bilateral lesions of the sixth pair of nerves, or of their connection with the posterior longitudinal bundle. Congenital absence of lateral movement of one eyeball, a less uncommon defect, is probably due to peripheral muscular and aponeurotic anomalies.

J. B. Lawford.

(4) de Martel, T., Monbrun, Guillaume, J.—The prognosis concerning vision in those operated on for tumour in the hypophyseal region. (L'avenir ophtalmologique des opérés de tumeurs de la région hypophysaire). Arch. d’Ophtal., August, 1931.

In this interesting and valuable communication de Martel Monbrun and Guillaume present the evidence obtained from patients who had undergone operations for new growths in the hypophyseal area. The patients were kept under observation, and the results of late examination furnish a basis for fairly definite conclusions regarding the prospect, in such cases, of retention or recovery of useful sight. Five cases are reported in detail: they are worthy of study. The clinical notes are amplified by charts of the fields of vision, mapped before and after operation.

In four of the cases “the visual functions, of at least one eye, have again become normal or approximately normal, after intervention, and have been maintained. This result is attributable to operation at an early stage.”

While observation shows that the vascular supply of the optic nerves appears to be re-established equally in both, recovery of vision has occurred only in the nerve in which the pallor noticeable before operation, was unaccompanied by actual atrophy.

The fifth case was one in which atrophy of the two optic nerves
had reached a fairly advanced stage before treatment was undertaken. Recovery could be but partial, but it was relatively considerable: the right eye, which had only hand-movement, regained 2/10 vision; the left, which apparently had no perception of light, regained 1/10 vision. The authors express the opinion that the outlook concerning sight in tumours of the hypophyseal region treated surgically, is hopeful. Medical measures are of no avail in preventing progress to blindness. Radio-therapy has proved beneficial in certain cases, but its action is essentially transitory. Three of their cases support this contention. Operative intervention in an early stage is essential, if irreparable damage to sight is to be avoided.

J. B. Lawford.


(5) This paper contains the record of a prolonged and comprehensive investigation into the anatomical features of the zonule of Zinn. Beginning with fish, the researches were pursued through the different groups of vertebrates up to the quadrumanas, of which latter class the orang-outang and the chimpanzee were selected for examination. A number of illustrations, some coloured, aid in the description of the specimens. This, the first part of the article, does not lend itself to condensation.

In the second part, Teulières and Beauvieux provide a lengthy discussion of their findings, under two headings.

(a) The suspensory or retaining rôle of the Zonule.—No doubt arises as to this function; the lens is maintained in the fossa of the vitreous by the constituent strands of the zonule, but their arrangement varies considerably in different classes of vertebrates. In fish, the zonule, triangular or quadrangular in form, is placed at the upper part of the lens. It is clear that this support alone would be insufficient to maintain the lens in situ, were it not supplemented by firm adhesions between the hyaloid and the posterior surface of the lens. In all classes except fish, the zonule is perilenticular, and although exhibiting variations in form, is composed of fibrils, arranged in bundles, in several planes, running parallel (birds, mammiferae) or crossing each other (apes, man).

The zonule is invariably independent of the vitreous body. The authors designate the triangular space it occupies as the "zonular chamber."

The resistance of the strands of the zonule varies directly as the volume of the lens which they support. In some species, e.g., birds of prey, certain rodents, ruminants, etc., the lens is very large in proportion to the size of the eyeball. Here the zonular fibres are
thick, grouped in solid bundles, and are inserted at or in the immediate vicinity of the equator of the lens.

In the apes the anterior and posterior fibrils of the zonule which extend well on to the surfaces of the lens doubtless aid in suspension, but this function devolves mainly upon the middle fibres which are attached to the equatorial region of the lens.

(b) Rôle of the Zonule in Accommodation.—The authors consider this question solely from the anatomical standpoint, and ask:—Is the zonule, by reason of its morphology, its relations, its form and its insertions capable of modifying the shape of the lens, in vision for near objects? In fish the answer is in the negative; the action of the zonule being suspensory only. In reptiles, batrachians and birds, the close approximation of the base of the processes to the anterior equatorial edge of the lens is an important anatomical feature. The contact is close and renders it probable, as maintained by Hess, Huxley and Ovio, that accommodation in these animals is effected by alteration in the shape of the lens by pressure of the processes apart from contraction of the ciliary muscle, and that the action of the zonule is of little importance.

The mammiferæ, according to the researches of Hess and Ovio, possess little power of accommodation. These writers state that in the cat it is not more than 2 dioptres, in the dog and wolf 1·5 dioptres, in the rodents still less, and in the horse, cow, and sheep almost nil. The authors believe that their anatomical study furnishes an explanation of the deficient accommodation in these groups. The suspensory ligament is circular, composed of bundles of fibrils whose thickness and solidity are in proportion to the mass of the lens which they maintain in position. Its insertion is at the equator of the lens and its immediate vicinity. This is the important anatomical fact, and the result is that the effect of traction by these fibrils upon the shape of the lens is almost nil. In this group the zonule is much more a maintaining structure than one assisting in accommodation. In monkeys, in contrast to the above, the zonule plays an active part in accommodation. Here the suspensory ligament is identical with that in man. Its wide attachment to the lens, not limited to the edge, but extending far on to both surfaces renders it easy to comprehend the effect of its relaxation or tension upon the capsule, and secondarily upon the lens. The anatomical arrangement shows that in the monkey, as in man, the zonule is an indispensable structure in the function of accommodation. A power of accommodation of 8 to 10 dioptres has been found in the quadrumana (Hess and Heine). The ciliary muscle and zonule are, as in man, closely associated anatomically and physiologically, while in other classes of vertebrates near vision is accomplished by the combined action of intra-ocular muscles and ciliary processes, or it is almost non-existent.

This is a paper worthy of perusal.

J. B. Lawford.

Heinonen reports detailed investigations of a family of five brothers and one sister in which all the brothers were affected by Leber's disease. Four of the five were already affected when seen in 1917; the fifth developed the condition in 1925. Apart from typical features the author points out that more or less marked characteristics of disturbances in the neuro-endocrine apparatus were present in the men. Thus they showed: small stature, akromicry, corpulence, heavily pigmented skin, under-development of hair on the chest and upper extremities, abnormal finger-nails, small penis; as also neurological symptoms such as headache, vertigo, insomnia, profuse sweating, tremor, dermographia and in one case abnormal sella turcica and lowered sugar tolerance.

ARNOLD SORSBY.


Kestenbaum reviews the various means employed for localizing the site of hemianopic defects, the hemianopic pupil reaction, Behr's syndrome, and disturbances in adaptation amongst others. He draws attention to the value of optokinetic nystagmus in this connection and gives the results obtained in 22 cases in which the diagnosis was confirmed anatomically, by operation or by undoubted neurological evidence. The visual path is regarded as consisting of five parts: (1) optic tract to pupillary fibres; (2) external geniculate body; (3) beginning of optic radiations; (4) radiations in parieto-temporal area; (5) calcarine fissure. It is mainly in (4) that changes in the character of optokinetic nystagmus occur. Changes of less marked nature occur in hemianopia caused by lesions in the parts of the tract.

ARNOLD SORSBY.


Tularaemia is an animal disease, the transmissibility of which to man has been recognized since 1914 (Vail). Four forms are described: (1) the most common, ulceroglandular variety with papillary masses at the site of infection—generally the hands—
and swelling of the local lymph glands associated with marked malaise, fever and slow convalescence; (2) the glandular form—
not showing any primary wound; (3) the typhoid type in which the general symptoms only are present; (4) the oculo-glandular variety of which Parinaud's conjunctivitis would be a good description. A mortality of 3 per cent. is given.

Grandström describes a case of the oculo-glandular variety. The agglutination reaction for tularaemia was positive; the patient seems to have been infected by a hare prepared for food. The patient's wife and the shopkeeper developed generalized tularaemia and papillary growths on the hand. The author agrees with Pascheff in speaking of Parinaud's syndrome rather than disease as many cases are probably oculo-glandular tularaemia.

Junius gives a comprehensive survey of the literature of the relationship of the two affections.

Arnold Sorsby.

Barletta (Catania).—The changes in the chiasma and optic nerves in beri-beri in pigeons. (Chiasma e nervi ottici nel beri-beri.) *Rass. Ital. d'Ottal.*, March-April, 1932.

It is easy to produce beri-beri in pigeons by feeding with cleaned rice; when the disease has appeared, it can be easily repelled by suitable feeding; the alternation of health and disease may be repeated many times without any serious permanent injury. It is only to be expected, therefore, that the histological changes are slight and temporary.

The axis cylinders of the chiasma and optic nerves show tortuositites, varicosities, and swellings, but these are found also in the normal birds; in the diseased birds the myelin sheaths show many more interruptions than do the sheaths of the controls. Barletta concludes that these changes are not permanent, but disappear when the disease regresses.

HAROLD GRIMSDALE.


Baquis reports the case of a patient whose eyes were both removed; he was much troubled by visual spectra and complained that since he was blind he had never known darkness. He holds that there is evidence to show that stimulation of the optic nerve after removal of the eye cannot give rise to sensations of vision; these spectra, therefore, must be of cerebral origin.

HAROLD GRIMSDALE.