be most valuable, for by their means gaps may be filled in sets of periodicals, and more recent editions of standard works may replace earlier editions on the shelves in current use, while monographs and reprints can usually be sorted out, and those worth preserving, bound.

In this instance we are not concerned with the rarities of medical literature. If a medical man be so fortunate as to possess copies of the first editions of William Harvey's *De Motu Cordis*, or Edward Jenner's "Inquiry," he will be wise to dispose of such at a proper price during his lifetime.

We imagine that most medical libraries would welcome the gift of part or all of a doctor's library. In this country the medical libraries are constantly receiving gifts of this sort.

The International Organization for the Campaign against Trachoma is forming a library at Amsterdam to deal with the problems of trachoma, and will be pleased to receive books or papers on trachoma and ancillary subjects.

In the past, the Bowman Library has been enriched from time to time by valuable presents from, among others, Sir William Bowman, Mr. Nettleship, and the executors of Mr. Jessop.

The management of this Journal will be prepared to consider the occasional publication of lists of *desiderata* of ophthalmological libraries, if librarians care to submit such lists, which should not exceed half-a-page.

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**ABSTRACTS**

**I.—MUSCLES**


(1) It might be difficult to find a clearer description of the relations of the eyeball to its adnexa, or a more useful recent contribution to the subject of concomitant strabismus than that given by Fisher, a description which is not only clear but possesses that "racy" character which is such a help to the understanding.

After describing the relative lengths and strengths of the external ocular muscles and their tendons, their insertions and their directions of pull, Fisher discusses the capsule of Tenon, and shows how really impossible it is to support the old view that the eyeball rotates in
the capsule. "Were it to do so," he says, "the whole intra-ocular circulation would be disturbed, or the centripetal and centrifugal blood vessels would be lacerated, while the fibres of the optic nerve would be required to play freely up and down its dural sheath like a piston-rod in its cylinder." (The author perhaps means piston rather than piston-rod). In reality, "globe and capsule move together upon the bed of fat... The muscles of the eyeball are the only muscles of the body which enjoy the advantage of playing in an oleaginous lubricating medium; the precise results which they achieve show the orbit to be an ideal gearbox." The precise action of the muscles in moving the globe, and their mutual balancing is described exceedingly well, and is assisted by a very explanatory diagram. The author refers to what he calls the "paradox" in operating on the internal and external recti. Why is the effect so small if we tenotomize the relatively weak external rectus, in spite of the pull of the stronger internal rectus; and why is the effect so much greater in tenotomy of the internal rectus, in spite of the weak pull of the external rectus? Somewhat condensed, the answer given is as follows. The total power of abducting the eye must be equal to the total power of adducting it; similarly with elevation and depression, and with rotation (wheel movement). The power of the external rectus in abduction plus that of the two oblique muscles must equal that of the internal rectus plus that of the superior and inferior recti, in adduction. In tenotomy of the external rectus we do away with the pull of a weak member of the abductor group, whereas in tenotomy of the internal rectus we do away with the pull of a strong member of the adductor group. The effect is thus greater in the latter case than in the former. Further illustration of the mutual relative strengths of the various muscles is given by reference to the angles made by the various muscles with the sagittal plane of the orbit. Coming to the important question of concomitant strabismus, Fisher adopts Donders' theory in the main and rejects that of a hypothetical fusion centre. This is what he says of the "fusion centre": "The conception of a higher fusion centre in the brain may be a convenient assumption for the purpose of discussing unsolved problems, but in my judgment can be no more than this. Among all the injuries and diseases of the brain on record, I am unaware of any case in which a patient as a result of a local cerebral lesion has lost the power of stereoscopic vision without other disturbances of visual function; a series of such cases would be necessary to demonstrate the presence and situation of the "fusion centre" if it exists anywhere but in the brains of those who postulate it." This abstract would exceed space limits were the reviewer to mention more on this subject than that the author further illustrates his views by reference to the angles previously mentioned, and that he expressly states that the Donders theory does not fully
satisfy every case of convergent concomitant, to say nothing of its insufficiency in divergent concomitant strabismus of myopes. Nor would it be feasible, or indeed advisable, to compress the author's philosophic paragraphs upon ocular contribution to equilibrium, while to do the same thing to his "Visual Judgments in Sport" would cause the reader to miss the enjoyment of that racy style to which reference was made at the commencement of this abstract. This last part of Fisher's lecture deals in the main with experiences of his own in connection with aviation, billiards, shooting, golf and football, and emphasizes the association of vision with the tactile and muscular senses in many sports and occupations.

**Ernest Thomson.**


(2) Gorst describes a tenotomy operation with controlling sutures designed to postpone the determination of the exact amount of setting back for from 5 to 7 days. A useful abstract of the description would be very difficult, and readers are advised to study the details in the original.

**Ernest Thomson.**

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**II.—CORNEA**


Wright has found that keratomalacia is, as far as he is able to estimate, the greatest cause of preventable blindness in the Madras Presidency in the first five years of life. It is a much greater cause in these years, in India, than is ophthalmia neonatorum in England and Wales. The disease also occurs in adults "to an appreciable degree." But while this is true of India as a whole it is not true as regards the whole of India. Thus this deficiency disease is practically unknown in the Punjab, where the inhabitants are largely wheat and not rice eaters and also consume larger quantities of milk and milk products and other vitamin A-bearing foods. The disease is probably due not only to deficiency in vitamin A but also to deficiency in other vitamins. Crude cod liver oil in suitable doses is the most effective agent in eliminating the major signs and symptoms, and cod liver oil contains vitamins B, C, and D in addition to A. The foregoing abstract represents the principal facts
of interest to ophthalmologists for, as the author himself says, "In the present state of our knowledge the many interesting problems connected with this deficiency-complex are really more of academic interest than of practical importance to the ophthalmologist and public health worker. The discovery of the particular deficiency which is responsible for certain signs and symptoms is a problem which may well be left to the research worker. . . . The general practitioner or ophthalmologist cannot do more than control those cases which come within his sphere of activities by the simple method of administering cod liver oil. The issue of cod liver oil on a large scale as a prophylactic measure in India would hardly be taken seriously by those who are responsible for the framing of our budgets." Meanwhile, the author indicates, the prevention of the disease is a Governmental question of improving conditions of living and is bound up with the adjustment of the population to its food supply.

Ernest Thomson.

III.—MISCELLANEOUS

(1) Shaw, M. (London).—Eye paralysis in diphtheria. Guy's Hospital Reports, p. 247, April, 1931.

(1) Shaw holds that the presence of ocular palsies in diphtheria is of prognostic significance for it indicates a susceptibility on the part of the patient to diphtheria toxin, and must be taken as a warning of the possible advent of more serious complications, such as cardiac, diaphragmatic and pharyngeal palsies. Susceptibility on the part of the patient, rather than severity of the disease, is the determining factor in ocular palsies, for these have been seen in mild cases and in cases in which very large doses of antitoxin (72,000 units) were administered early. It would appear that the use of antitoxin has not diminished the frequency of ocular complications.

The most frequent ocular lesion is paralysis of accommodation, generally bilateral, but not necessarily equal. Its frequency is variously estimated as from 5 to 27 per cent. of all cases of diphtheria. The toxin probably spreads to the eye via the lymph channels when faucial infection is present, though a haematogenous route must exist when the primary focus is more peripheral. As ocular palsies usually occur during the third and fourth weeks of the disease, the primary focus has generally healed and in mild cases may have been overlooked.

Other ocular lesions are paralysis of the extra-ocular muscles, seen in 3 per cent. of the author's cases; total oculo-motor palsy
and more rarely lesions of sensation, concentric contraction of the fields of vision and bilateral chorido-retinitis. In the treatment of paralysis of accommodation, antitoxin and eserine were found of no value. The prognosis is good, there being a tendency to spontaneous recovery.

**Arnold Sorsby.**


(2) Guillery had shown by experiments on rabbits that on implanting reed sacs (Schilfsäckchen) containing active tubercle bacilli into the vitreous a uveitis was set up in that eye and in the second eye, and this inflammation he regarded as closely analogous to the sympathetic ophthalmitis in man. This led to the hypothesis that toxins arising from an injury to an eye, with destruction of uveal tissue, can cause a uveitis in that eye and may similarly affect the second eye, but it is the toxins from some distant tuberculous focus circulating in the blood that determine the onset of sympathetic ophthalmitis in both eyes: the choroid of the second eye was sensitized to the tuberculotoxins by a primary non-tuberculotoxic inflammation set up in it by the products of tissue destruction in the first eye, the injury of the latter thus playing an important rôle. It was argued that in every case of sympathetic ophthalmitis in man arising in this way there is an active tuberculous focus in some part of the body, even if no clinical evidence of it can be found.

In this research by Poos and Sartorius the experiments of Guillery were repeated and extended, and while they confirm his findings as to the production of an inflammation in the second eye after introduction of similar sacs into the other eye, they maintain that there was only a slight reaction in the form of lymphocytic infiltration, discovered only on histological examination.

They find no proof for the theory of a tuberculotoxic origin of sympathetic ophthalmitis as enunciated by Guillery, because (a) the inflammation in the eye in which the sacs were implanted showed the appearances, not of sympathetic ophthalmitis, but of a septic endophthalmitis. (b) A similar result was obtained in the second eye when the sacs were inserted behind the first (so that the injury to the latter was not a necessary factor), and (c) when they were placed in an empty socket (in which case any sensitization of the second eye to the tuberculotoxins by an inflammation arising from destruction of uveal tissue in the injured eye was out of the
question). (d) In cases of severe chronic experimental tuberculosis in rabbits an injury to the ciliary body did not produce a progressive uveitis in spite of the presence of tuberculo-toxaemia.

The changes in the uvea of the second eye produced in this manner are regarded by the authors as a symptom of a general reaction of the whole reticulo-endothelial system to small doses of toxins, and have no relation to the sympathetic ophthalmitis in man.

THOS. SNOWBALL.


(3) Ahlbom presents a brief summary of the more important methods described in the literature for radiographic localization of foreign bodies in the eye. He then gives an account of a new method which is based upon the taking of two images in two planes at right angles to each other, one of them being a profile picture with the cornea visible. Both the pictures are taken with a focus-plate distance of 2.75 metres. The cornea is rendered visible in the lateral view through an aluminium wedge being placed between the patient’s eye and the cassette. The patient is seated during the examination, and special measures are adopted to enable the investigator to control the direction of the line of vision during exposure. As an extra safety measure the principle of the so-called physiological method, i.e., change of the direction of vision, is applied. The localization is carried out directly on wet films with the aid of patterns, which are drawn on transparent films employing direct measurement with a pair of compasses. No contact markers need to be attached to the eyeball.

ARNOLD SORSBY.


(4) Poos continued the study of the subject discussed in the preceding article by observing the action of injections of tuberculin on normal eyes.

By repeated injections into the vitreous he produced in the second eye uveal changes, visible only histologically, that were similar to those obtained by the implantation of sacs, as mentioned above. It is not necessary to postulate for the production of an inflammation in the second eye any specific changes in the eye
receiving the injections that might lead to sensitization of the former to the toxin, because the same appearances were found in the uvea of the second eye on injection of the tuberculin into an empty socket, the gluteal muscles, or the circulation.

It is impossible to speak of a specific affinity of this toxin to the uvea, because in all cases showing a marked uveal reaction severe meningitis was also present. The action of tuberculin toxin on normal eye tissues is not specific, but is comparable to that of protein bodies generally.

Poos concludes that it is possible by appropriate dosage to produce in every case a lymphocytic reaction in the eye (uveitis as part of the symptoms of a general intoxication, irrespective of the site in the body from which the toxin spreads.

The results of his experiments and his conclusions are thus similar to those arrived at in the work carried out previously with Sartorius.

THOS. SNOWBALL.


(5) In this interesting article Widersheim sets out to discuss to what extent an abnormal physical visual impression influences the mental impression of the actual live object and affects the art of the painter. As sketching, toning, and colouring are the factors concerned here, only the works of such painters whose foremost aim is to remain true to nature in their representations are considered. Yet, in contrast to photography it must be borne in mind, that even the true-to-nature painter expresses his art and individuality by bringing out in the picture what appeals most to his emotions in what he sees. As we have to bring under our purview the onlooker as well, it should not be forgotten that practice, habituation and memory play a great part in visual appreciation. For example, shading represented in complementary colours escapes the inexperienced lay mind. Further, the object itself undergoes apparent changes in colour according to the time of day and of the year, the weather and intensity of light and locality; in size, *e.g.*, in mist, twilight, and on the horizon. Of a host of other sources of optical illusion, one may recall irradiation, colour-contrast, colour-perspective, and the aspect of colour in twilight.

By means of blinking, which is considered by Louis Corinth one of the four cardinal factors in the painter's art, the amount of light entering the eye is diminished and the light diffracted and diffused by the palisade of lashes, thus suppressing fine details of colour, shape, depth, light and shade and bringing out the salient features of the object.
Errors of refraction have an effect similar to blinking, especially in the case of myopes. Myopic painters are often glad to be under-corrected, as hypermetropic ones are, to be over-corrected. Goethe was against wearing spectacles, as he preferred a general view of the essentials by suppression of details. Rosica opines that pictures by myopes lose and those by hypermetropes gain in sharpness with the distance, and those by presbyopes are best viewed from a distance.

Pollack's statistics at the Paris School of Arts showed that myopes preponderate in the number of pupils. The uncorrected hypermetrope sees best the most highly refracted blue rays, and the uncorrected myope, the red rays of the spectrum. According to Patry, one should find the finest colourists among low myopes. Astigmatism accounts to some extent for the disproportion in length and breadth seen in the pictures of some artists.

Uniocular vision has the same effect of diminishing relief and flattening views as binocular vision with half-shut eyes. Contracting the visual field, as by looking through the tube formed by the curled hand, throws into relief individual parts of the whole view.

There are some well-known painters among the relatively colour-blind. The pictures of elderly artists show a predilection to violet tones. This is attributed by some to the lens in the eye turning yellow with age, and by others to cerebral changes. That some people see everything brighter with the one eye than with the other is perhaps due to different degrees of pigmentation of the macula lutea in the two eyes.

The author invites ophthalmologists to examine the eyes of painters whenever opportunity occurs and publish their findings. With the increase of data on the points touched upon one would acquire a surer basis than at present for the correlation of certain peculiarities of vision with certain peculiarities of painting and thus be enabled to infer from the picture any peculiarity of vision the painter may have had and appraise his work the better for it.

D. V. GIRI.


(6) Fischer reports a case of a right-sided cerebello-pontine tumour in a man aged 61 years, in whom papilloedema had developed in the left eye, the right eye showing an old optic atrophy, probably primary in type. A detailed description of the post-mortem findings is given, and other cases in the literature in which papilloedema did not supervene on an atrophic nerve, are
recalled. The author finds support for Behr's view that the parenchyma of the optic nerve must be alive to be capable of swelling; in proliferated glial tissue no oedema can develop. Apparent swelling in an atrophied disc is due to proliferation and swelling of the lamina cribrosa, as is suggested by the case reported by Yamaguchi. Mild oedema may also supervene in the perivascular lymph-sheaths of the atrophic nerve. No support is found for Behr's view that reduplication of the dura at the optic foramen is concerned in the production of papilloedema. In the author's case the oedema in the living nerve could be traced back to the chiasma.

ARNOLD SORSBY.


(7) The fact that the central canal of the optic nerve is one of the channels of drainage of intra-ocular fluid, led Rumjanzewa to investigate the ocular tension in cases of papilloedema. Such measurements were carried out in 24 out of 63 cases the author observed. In these 24 cases the tension was measured before and after cranial decompressive operations. In all, pre-operative ocular tension was low (10-18 mm. Schiötz, in the morning); after operation tension rose to 30-35 mm., going down to normal after some time. In one case, in which the papilloedema was due to orbital sarcoma, the tension in the eye was 35 mm., being 10 mm. higher than in the fellow eye. The inversion of ocular tension and intracranial tension, is held to be due to disturbances in cerebral circulation, the low ocular tension during increased intracranial pressure being secondary to cerebral and ocular anaemia, and the increased ocular tension after decompression being secondary to reactive hyperaemia. These factors in the production of intra-ocular fluids are more important than the disturbances in drainage via the optic nerve.

ARNOLD SORSBY.

(8) Mets, Dr. A. de.—Un Siècle d'Ophtalmologie en Belgique. 1830-1930. J. Vromans, Brussels, 1931.

(8) This is an extract from the jubilee edition of "Scalpel"—cent ans de Médecine en Belgique—and contains an historical review of ophthalmology in Belgium during a hundred years from 1830-1930.

A brief account of the lives and work of ophthalmic surgeons during this period is given, and two pages are devoted to photographs of twelve of the more distinguished of these.
There is also a description of the ophthalmic clinics and university professorial chairs in the capital and main provincial towns of Belgium, their founders, history, and the work they have done in the past and are doing to-day.

Warlomont, the founder of the International Congress of Ophthalmology, gave a great impetus to the investigation of diseases of the eye in Belgium during the last century. The injuries produced in war and by industrial accidents and also trachoma were the subjects of particular study.

At the end there is a programme of the papers read before the centenary congress.

H. B. Stallard.


(9) Under the above title an article by Theodore H. Whittington, reprinted from the King's College Hospital Gazette, 1931, has been sent to us. As a general rule Hospital Gazettes are not noted for such a philosophical paper as the present one. Many branches of science touch each other in ophthalmology; we associate with the radiologist, the astronomer, the physicist and the wireless expert, as well as with general medicine, surgery, neurology and psychology.

Whittington emphasises the fact that, in these days of rapid transport, a contracted visual field may be a greater danger, both to drivers and pedestrians, than poor form vision; further a good muscle balance is essential in judging distance and depth.

With regard to headaches in ophthalmology, he records some instructive cases. In one, neurasthenia, despondency and failing sight, which was not improved by fresh glasses, were found to be due to tobacco poisoning. As Whittington says: "a thoroughly vicious circle." Proper treatment not only restored the sight but banished all the other symptoms. Another case of a man, who had been advised by his doctor to see an oculist for glasses as a cure for headache, was found to be on the brink of uraemia, with marked papilloedema, immeasurably high blood pressure and urine loaded with albumin.

It does not need much perspicacity to realise that most of these signs should have been discovered by the medical man when he examined the patient before forming his diagnosis that glasses were needed. Team work is magnificent in theory, but we deprecate the refraction of the eye being made the peg on which to hang all the ills that flesh is heir to. It is true that this must be an exceptional case, but most of us must have seen at one time or another cases of renal disease which have been unsuspected until the eyes have been examined.
Whittington has analysed 1,000 consecutive private cases. These are divided into two categories. In the first, refraction cases numbered 657 of whom 316, complained of headache or pain; 319, of inability to see; 37, of "spots," watery eyes, blinking, etc.; 67 showed defects of muscle balance and 19 were "nervy." The second series comprised 343 non-refraction cases, of which 94 showed signs of inflammation of the eyeball; 53 were cases of injury; 48 had lenticular trouble (18 cataracts); 8 were cases of glaucoma; 33 were cases of squint; 29 had lid conditions and 7 were lacrymal cases.

"The complete ophthalmologist must be a practitioner of medicine, a surgeon, a neurologist, a physiologist, a mathematician, a physicist, and above all, a psychologist."

This all points to the necessity of a wider view of ophthalmology and a less narrow training for the future ophthalmic surgeon than that which has been considered sufficient in the past.

R. R. J.

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BOOK NOTICES


This monograph, which forms a valuable contribution to comparative anatomy, can hardly pass unnoticed by ophthalmologists since, although its interest is mainly zoological, it cannot fail to be of service as a work of reference in a branch of comparative ophthalmology up to the present practically untouched. The subject is that of the intra vitam appearance of the iris in vertebrates, and the list of species examined (139) includes animals chosen both from the point of view of systematic, and of adaptive characteristics. Several rare species, not hitherto investigated in this country, were also included as opportunity arose. The paper, which is extremely well produced, contains, besides exhaustive tables of classification and text figures, over fifty of the author's coloured drawings of slit-lamp appearances of the iris in a great variety of fish, reptiles, birds and mammals. From this point of view the paper is an interesting example of the interaction of allied sciences, since the introduction of an instrument of clinical precision has rendered possible a fresh approach to certain biological problems. The main thesis of the paper is an attempt to separate fundamental morphological characters depending on deep-seated embryological processes, from secondary adaptive or individual variations. In the first place it