ABSTRACTS

I.—OPERATIONS

(1) Jameson, P. Chalmers (Brooklyn).—Some essentials and securities which stabilize operations of ocular muscles. *Arch. of Ophthal.*, November, 1932.

(1) Jameson in this article advises against always performing the same operation in cases of squint. The surgeon who invariably does an advancement or resection is just as wrong as he who always performs a recession. The author instances two cases of convergent squint of 300. In the first the convergence near point is better than normal (i.e., less than 50 mm.), and the deviation in near vision is definitely greater than in distant vision, also there may be weakness of abduction in lateral deviation. In such a case, recession should be the primary procedure. In the second case, the angle of the squint is the same, the deviation for distant and near vision is the same but the convergence near point is less than normal, e.g., 75 mm. and abduction on lateral deviation is full. In this case some form of advancement or resection of the external recti should be the primary procedure, since by this means, not only might the deviation be corrected, but the convergence near point might also be improved owing to the increased tension imposed on the internal recti. These cases are quoted as extremes and in practice, one meets with many which are intermediate; but they serve to show the lines upon which operative procedure should be based. The author concludes this part of his article by quoting some "guides" which he has found helpful, among them are the following:

Recession is limited to 5 mm. on the internal side, and 3 mm. on the external.

High degrees of deviation are most safely operated upon by distributing the effect between both eyes.

If resection can be confined to the tendon, it makes for better muscular balance.

The final result is best conserved by not attempting to do too much at one sitting.

F. A. W-N.

(2) Carroll, Frank D. (Providence, R.I.) and Blake, Eugene M. (New Haven, Conn.).—Repair following operations on the extra-ocular muscles. *Arch. of Ophthal.*, November, 1932.

(2) This interesting work was carried out by Carroll and Blake on a series of rabbits after intra-peritoneal injection of an anaesthetic and local application of cocaine. They performed 17
tenotomies, 16 recessions, 8 tuckings, and 12 resections, the animals being killed at intervals of from 2 to 40 days after operation. Subsequent examination of the eyeballs and muscles disclosed the following facts:—After simple tenotomy, the muscle was sometimes firmly united to the sclera, but in other instances was only loosely connected to it even after 12-14 days. In one case the muscle had entirely failed to attach and was found behind the globe. On the other hand, when sutures were used (recession), union was firm, and after 10 days, strong fibrous tissue joined the muscle to the sclera. Chromic catgut was not used frequently enough to obtain results of value, but the authors quote Howes and Harvey as having shown that the tensile strength of 000 plain catgut is completely lost in sterile wounds on the third post-operative day at which time the newly-formed connective tissue has not yet any appreciable strength. If the wound be infected even chromic gut loses its strength in four to seven days. After tucking, the process of repair consists in conversion of the tuck into fibrous tissue between the proximal and distal portions of the muscle. After resection, a bridge of strong connective tissue is formed, uniting the cut ends of the muscle. In any of the operations, blood clot may form between the sclera and muscle distal to the point of attachment and may organize into fibrous tissue which binds the muscle down to the sclera at a point some distance from the desired insertion.

F. A. W-N.


(3) A horizontal incision 15 mm. long is made in the conjunctiva 10 mm. above the limbus. A thick flap which includes the conjunctiva and the subconjunctival tissue is dissected to the limbus with scissors. A small scalpel is used to separate the fibres of the conjunctiva from the limbus; the cornea is split for from 0.5 to 1 mm. A conjunctival pocket is thus formed so that the incision is made in a clean field. A Graefe knife, 1.5 mm. in width, is introduced from 1 to 1.5 mm. behind the scleral margin, so as just to enter the anterior chamber, and the counter-puncture is made at a corresponding point opposite. This incision is made as far back as possible. The edge of the knife is turned backward so as to make a thick tongue of sclera 3 mm. long. The length of the limbal incision is approximately 4 or 5 mm. The wedge of sclera is removed with curved scissors. The conjunctival flap is next held up so that the iris may be distinctly seen. This is
grasped at the root with iris forceps and is gently pushed towards the centre of the pupil and iridodialysis follows. The wound is then closed by sutures. Spratt has carried out this operation on 28 eyes with satisfactory results. Some of the eyes had a pre-operative tension of over 100 with McLean's tonometer. The author does not say what he does when the iris prolapses immediately the section is made.

A. F. MacCallan.

(4) Arruga (Barcelona).—Toti's operation in cases of lacrimal stricture. (Trattamento della lacrimazione per mezzo dell'operazione di Toti). Boll. d'Ocul., October, 1933.

(4) Arruga holds that if simple measures do not give a rapid relief in these cases, the surgeon cannot do better than follow a modification of Toti's operation which he describes here. He holds that excision of the sac, in itself a simple operation, seldom succeeds in giving the patient comfort, since it is followed in all cases by constant lacrimation. Toti's operation by restoring the possibility of the passage of tears to the nose frees the patient from this inconvenience. The author lays special stress on the importance of preventing any damage to the mucous membrane of the nose and of the lacrymal sac during the operation; this is most likely to happen during the trephining of the bone. After the trephine crown of bone is removed, the author advises smoothing and enlarging the opening by rasps; then the nasal mucous membrane is divided in the opening and sutured to the opened lacrymal sac.

The author claims that the operation is easy if the proper instruments are used and that it is almost invariably successful.

Harold Grimsdale.

(5) Orzalesi (Florence).—The best operation for the relief of cicatricial ectropion. (Come si possono ottenere ottimi risultati, estetici e funzionali nella correzione dell'ectropion cicatrizale mediante plastica ad innesto). Boll. d'Ocul., September, 1933.

(5) Orzalesi holds that the best results in the relief of this condition, are obtained by the use of large flaps taken from the inner surface of the ear. The skin in this situation, is specially suitable to replace the lost area of the lid; it is closely connected with the skin of the face both in situation and development; it is very thin with little subcutaneous tissue but many elastic fibres, it is richly supplied with vessels and has many fine hairs and sweat glands. These are valuable as forming centres from which
the epithelium extends to cover the graft when the original epithelium is exfoliated.

The author discusses the causes of failure of these operations. Such failure is in many cases due to inappropriate dressing. The best immediate dressing is a paraffin with a low melting point which can be painted over the graft and the surrounding skin. This allows some diffusion both of gas and liquid while it holds the graft in its bed immobile. The chief cause of failure is separation of the graft from the underlying tissue, and this is most often due to haemorrhage. For this reason, it is necessary to take great care in the preparation of the bed on which the graft will lie, and to fix the graft accurately in position.

Harold Grimdsale.


(6) Tattooing of the cornea has two objects: the one cosmetic to conceal a scar, the other to improve vision by blocking out an imperfect area of the cornea; the resulting deposit should be completely opaque and permanent. Many substances have been tried; Duc has experimented on rabbits and finds that the results are good when the cornea is damaged as little as possible; the epithelium alone being removed and no damage done to the substantia propria. He uses chloride of platinum, reducing it by hydrate of hydrazin.

Harold Grimdsale.

(7) Spinelli (Bologna).—Tattooing the cornea; how to obtain a brown coloration. (Metodo chimico di tattuaggio corneale per il color marron). Arch. di Oftal., June, 1933.

(7) Spinelli aims at reproducing the colour of the iris on a leucomatous cornea; to imitate the pupil he uses chloride of platinum, for the iris, chloride of gold; the actual technique is to remove the epithelium from the area to be coloured, and to press on this area a swab of cotton wool dipped in 4 per cent. solution of gold chloride. After 30 seconds this is renewed and repeated for two minutes and then replaced by a swab of chlorhydrate of hydrazin. This latter solution is repeated once after 30 seconds. He has used this procedure in the case of two patients with dense leucomata. The results were satisfactory and remained without change for nearly a year in one case.

Harold Grimdsale.
MISCELLANEOUS

II.—MISCELLANEOUS


(1) Giannini records the case of a girl, aged 13 years 6 months, whom he found to be suffering from an aberrant form of retinitis pigmentosa. The child had been examined by an ophthalmologist at the age of 6 years, and, from the mother’s report, it seemed that he did not find any evidence of retinitis pigmentosa then. He stated that there was in one eye only a defect, probably congenital. She was very fat, weighing nearly 15 stone; height, 5ft. 3 inches; hair, brown with many white hairs; fair intelligence. Ophthalmoscopic examination showed rather pale discs; round the disc a quadrangular area of normal colour, beyond this a pale band with branching pigment streaks.

A radiogram showed a narrowed sella turcica.

On these findings the author proposes to ally this case, on the one hand to the cases of familial amaurotic idiocy, and on the other to other hereditary degenerative conditions such as retinitis pigmentosa. He does not think that we have at present sufficient evidence to place these diseases definitely under the influence of any one endocrine gland or groups of glands, but publishes the case as a contribution to knowledge which may, later on, throw light on the dark subject.

HAROLD GRIMSDALE.


(2) Weekers and Hubin consider that such acute complications as orbital phlegmon have been satisfactorily proved to be due to dental trouble in a number of cases, but that other ocular affections which have been related to non-acute dental infections are hardly sufficiently proved. They desire to bring forward evidence which may add to the sum total in favour of such a relation. They relate in full three cases of haemorrhagic neuro-retinitis, vis., one of their own, one by Terson (Soc. fran. d’ophtal., 1927, p. 478), and one by Michaux (Soc. bel. d’ophtal., 1932, No. 64, p. 30). When reading these three cases one is astonished that the authors should be so modest in their views, for the histories seem convincing. In their own case, a man, aged 45 years, the right vision had gone down suddenly and without pain or irritative symptoms, to counting fingers at 50 cms. Marked neuritis
was present with small retinal haemorrhages and oedema or detachment of the retina in the macular region extending upwards to the neighbourhood of the ora. The left eye was normal. A complete examination revealed no cause until the teeth were examined. It was found that a right upper molar tooth was very carious, painless, and, in fact, dead. This tooth was extracted. The mesial root had a small granuloma upon it; the other roots were partly absorbed. The alveolus was curetted and touched with tincture of iodine. This was on February 25, 1932. By February 29 the fundus had cleared considerably, while the visual acuity was 5/12. A slight relapse to 5/18 had occurred by March 3, but on March 10 the visual acuity was 5/5. There remained a small absolute paracentral scotoma and a slightly more extensive relative scotoma in the infero-temporal part of the field. One year later nothing abnormal could be seen in the fundus except two small choroido-retinal lesions.

In Terson's case the patient was a woman, aged 22 years, who had been worried by a carious second upper premolar on the right side, which tooth the dental surgeon had been unwilling to extract. On September 21, 1926, she found on awakening that a veil obscured the sight of the right eye. When examined on the 24th, she could only count fingers at 30 cms., and there was intense papillitis with tortuous veins, and haemorrhages. Left eye normal. On September 27 the tooth was extracted, but the author was not present and did not see the tooth. In any case, at the end of three weeks the fundus was regaining normality but with a slightly pale disc while the visual acuity was almost 1. No further history given.

Michaux's case was on the whole similar. The left eye was affected and the teeth concerned were on the left side, the first and second left upper premolars. The second premolar had been crowned and the first was carious. Visual acuity when first seen on November 18, 1931, was 1/50. Fundus showed exudative retinitis, large haemorrhages and a star in the macular region; blood and urine negative. Various drugs tried without result as regards the eye. The crowned tooth was extracted on December 28. On December 31, visual acuity up to 1/10; retinitis less marked. On January 16, 1932, visual acuity 2/10. On January 30, a relapse to 1/10 with fresh exudates and haemorrhages. The second tooth was then extracted, and in eight days the acuity went up to 3/10 and the retinal exudates absorbed leaving cicatrices. The last note given is April 5, the visual acuity then being 5/10. It will be noted that there was more delay in the extraction of the teeth than in the other two cases.

The authors very modestly conclude that in spite of these facts
"the reality of haemorrhagic neuro-retinitis of dental origin does not yet seem to us to have been demonstrated, nor can it be until observations similar to ours have been multiplied."

ERNEST THOMSON.


(3) Benedict, after a careful survey of the views of others concerning the relationship of retrobulbar neuritis and sinusitis, quotes the following figures from the Mayo Clinic with regard to the aetiology of 225 cases of retrobulbar neuritis:—Multiple sclerosis 155; pernicious anaemia and nicotine 14; diabetes 14; alcohol and tobacco 28; syphilis 2; congenital amblyopia 4; familial causes 1; sinus disease 1; postpartum haemorrhage 1; plumbism 2; and undetermined 3. With regard to treatment the author has found that foreign protein therapy has yielded the best results. His practice is to administer triple typhoid vaccine intravenously three times a week for four to six weeks in doses of from 25 million to 450 million bacteria. Improvement begins usually with the second injection and progresses rapidly through the first week or ten days of treatment. He has not found that additional treatment is necessary, though iodides have frequently been ordered for 30 days after vaccines have been discontinued. The therapeutic effect is due to increased peripheral circulation aiding the restoration of function in the nerve. The same effect can be produced by other means, e.g., application of 2 per cent. iodine to the nasal mucosa, or administration of nitrates or pilocarpine. The beneficial effects following operation on the sinuses can be put down to (1) The congestion of the nasal mucosa following the ischaemia produced by cocaine and adrenalin. (2) The auto-vaccination effect of the absorption by the patient of his own blood. The author concludes that operation on the sinuses is not justifiable in retrobulbar neuritis unless suppurative disease is obviously present.

F. A. W-N.


(4) In this number, the Third Italian Congress examines the subject of retro-ocular neuritis and its relation to diseases of the nasal sinuses. The authors of the opening paper are convinced of the advantage of early operation on the sinuses in cases of
retro-ocular neuritis for which no cause can be found. They give the results of operation of 30 cases (of which 17 were cured), and the details of the conditions found at the operation. It is remarkable that in many cases no sign of sinusitis was found. Since spontaneous recovery is not infrequent in retro-ocular neuritis, it is not surprising that all ophthalmologists do not see eye to eye with the authors.

HAROLD GRIMSDALE.


(5) Corrado discusses the origin of retinitis pigmentosa and concludes that the primary cause in this and other degenerative conditions is ischaemia brought about by reduction in the size of the vessels; he believes that this is often due to arteriospasm. He has, therefore, used injections of acetylcholin to produce dilatation, and finds that it is followed by improvement. It would seem necessary, in any case, though the author does not suggest it, to continue the injections at frequent intervals for a long time, as the effect of acetylcholin is very transitory.

HAROLD GRIMSDALE.

(6) Bonnet, Paul (Lyons).—Angioid streaks of the retina. (Les stries angioides de la rétine). Arch. d’Ophthal., November, 1933.

(6) Bonnet presents us with a word picture and with two well-executed coloured drawings of the fundi in the case which he has seen and studied in great detail. This case, he states, bears out the observations of Ester Grönblad that "The ophthalmoscopic picture of angioid streaks is met with in patients suffering from a skin affection, elastic pseudo-xanthoma, the anatomical characteristic of which is a degeneration of the elastic material of the skin. The angioid streaks would thus be merely the ocular representation of a general alteration of the elastic material of the tissues." The author’s case was first examined ophthalmoscopically in August, 1933, but it was not until November that a sudden loss of the patient’s central vision led to the discovery of a bunch of haemorrhages penetrating the grey patch (previously observed) in the right macula. It was at this point, while seeking an explanation of the retinal conditions in general and the angioid streaks in particular, that the author came across Grönblad’s explanation of the relation
of angioid streaks and the associated retinal changes with pseudo-xanthoma elasticum of the skin. Apparently Grönblad’s hypothesis did not appeal to the author as a probable explanation. However, the patient was summoned for a fresh examination and, to the author’s great surprise, revealed the cutaneous manifestations characteristic of pseudo-xanthoma elasticum of which the patient had known for several years. This discovery would seem to have set the author off on a voyage of discovery, for the article goes on to describe all about his own case in minute detail and to investigate the literature of the subject for the views of the various authors on every aspect of it. Into this part of the article one cannot enter in an abstract, but the review of the available literature will repay study and the appended bibliography seems fairly complete and contains British and American names. The author’s final paragraph may be transcribed, bearing in mind, as he has stated early in the article, that there is no reliable histological evidence. “We can easily imagine in face of the ophthalmoscopic picture of the lesions as a whole, that a degenerative process occurs beneath the retina, in the inner layers of the choroid. This would lead to the stretching of an elastic membrane which, having become incapable of exact application to the curvature of the fundus, becomes slightly raised, thus pulling upon its attachments to the equatorial region and causing alterations in the pigment epithelium which would be represented by the annular zone of pigment disturbance, at the same time cracking like varnish in the raised portions and so bringing about the appearance of streaks of the peripapillary ring and of the long radial streaks. The production of sub-retinal exudates and of haemorrhages can easily be understood through this slight elevation and the cracks produced in the elastic laminae of the inner layers of the choroid.” For the full understanding of this it is really necessary to see the author’s own drawings of the fundus conditions in his own case, and perhaps to read the original French.

(Readers will find abstracts dealing with the subject in this Journal for 1933, pp. 308 and 371.)

**Ernest Thomson.**


(7) The good results obtained in cases of retinal detachment by means of Gonin’s and similar operations, depend on the adhesions made between the sclerotic and the inner membranes. Croci has made a series of investigations in rabbits’ eyes with the object of gaining information on the best method of attaining
this result. Since the eyes did not have detachment of the retina before operation, the conditions are not strictly parallel; the retina being in closer relation to the choroid than in the pathological cases calling for operation; at the same time the findings are of great interest, and will help in the choice of operation. He has selected two main groups of methods:—(1) Thermocautery, with and without previous incision of the sclerotic, and (2) Diathermy, after trephining the sclerotic, without trephining, and by means of needles perforating the sclera.

Comparing the results, the author finds that after the thermocautery the resulting scar is small; the retina and choroid are completely destroyed in the region; the adhesive inflammation is limited to the neighbourhood of the scar. He finds it a much less destructive affair, if the sclerotic is incised before the application of the cautery; perforation of the sclerotic by the cautery causes much destruction of tissue and healing is much slower; the choroid is very severely damaged by the extensive haemorrhages which follow.

On the other hand, diathermy after perforation of the sclerotic is followed by vast destruction of both retina and choroid. The ciliary body sometimes shares in the process and grave disturbance of the nutrition of the eye results.

This method is to be rejected absolutely.

In the author’s opinion, diathermy through the sclerotic is the preferable method; the use of needles perforating the sclera is only specially advantageous when the zone to be shut off is very large.

HAROLD GRIMSDALE.


(8) The modern treatment of retinal detachment aims at producing an adhesive chorioretinitis so as to glue together the two layers of the retina, separated by the fluid of the detachment.

We must try to reduce, as far as possible, the scarring and consequent destruction of the percipient elements. Strampelli hopes to secure adhesion by replacing the inter-retinal fluid, which does not clot, by a physiological fluid which, clotting, will cause adhesion of the two layers.

His method briefly is as follows:—He prepares the necessary quantity of plasma from the patient’s own blood and keeps it on ice; he then withdraws a measured quantity of subretinal fluid and replaces it with the same quantity of the plasma; finally
he withdraws almost all the plasma so that only a thin layer is left between the two parts of the retina. The idea is that this on clotting will form adhesions between the two layers. The eyes are bandaged and the patient kept in bed for some days. The method appears simple and at worst would not make further operation more difficult.

HAROLD GRIMSDALE.


(9) Sgroso has tried to discover how long the intra-ocular tension remains low after loss of vitreous, how much vitreous can be lost while recovery is possible, and what changes follow the loss of vitreous. With this object he has removed by means of a syringe, vitreous from blind eyes in patients who would allow this attempt to relieve their pain, and from rabbits whose eyes were normal.

The removal of vitreous was made after the reflexion of a flap of conjunctiva, by a cannula passed obliquely through the sclerotic. In all the cases the refractive index of the fluid removed was estimated. In the pathological, the index was higher than normal and generally fell in the later withdrawals. In the rabbits' eyes, the normal fluid was replaced by material having a higher index. In the glaucomatous blind eyes the pressure rose very soon after the extraction of fluid to the same height as before. The period of relief was a few days only and enucleation was needed for the relief of pain. In no case did the operation of removal of vitreous seem to have any ill effect, though as much as 1 c.c. was taken.

The author decides that the operation has little therapeutic value.

HAROLD GRIMSDALE.


(10) Berliner and Nonidez performed two sets of experiments on the eyes of rabbits. In the first, 1 minim of Indian ink was injected into the vitreous. This caused no disturbance, the ink being completely removed in five to six days. Larger amounts of ink (3-4 minim) caused the vitreous to become cloudy and resulted in the production of severe iritis and glaucoma with permanent injury and, in most cases, retinal detachment. Histological examination showed that the ink particles in the eyes receiving small injections were removed by migrating cells travelling along
the connective tissue which surrounded the central vessels in the optic nerve. After engulfing the particles in the vitreous, the phagocytes returned to the perivascular connective tissue and deposited their load in the pial and dural sheaths of the nerve. There are thus two cell streams, running side by side in opposite directions. The cells are young histiocytes arising probably from clasmocytes in the connective tissue of the pia, the pial septa and the adventitia of the arteries. When a large amount of ink was injected, the number of histiocytes was enormously increased and there were, in addition, numerous neutrophil leucocytes and in some instances eosinophil cells. The migration of phagocytes in these cases occurred from the connective tissue surrounding the smaller vessels as well as from that surrounding the central artery.

F. A. W-N.

(11) Tristaino.—Effects on the eye after applying heat and cold to the superior cervical ganglion. (Fenomeni oculari consecutivial riscaldamento ed al raffreddamento del ganglio cervicale superiore). Arch. di Ottal., February and March, 1933.

(11) Tristaino has exposed the ganglion to heat at temperatures from 39°C to 69°C.; for experiments with cold, he employed 0°C. He finds that in all cases there is narrowing of the palpebral fissure, paresis of the third eyelid, miosis, hyperaemia of the conjunctiva, increase of conjunctival secretion and diminution of corneal sensitivity.

With exception of the conjunctival secretion, all these signs appear during the experiment; their duration is different. The hyperaemia of the conjunctiva and the corneal insensibility disappear first; the miosis persists after all the other signs.

The duration varies with the temperature, being longer for the higher temperature. After exposure to 65°C, the miosis lasted for some three weeks.

The application of cold to the ganglion had a similar effect, but one less marked and of shorter duration than that caused by heat.

HAROLD GRIMSDALE.


(12) Caramazza gives notes of four cases of eclipse blindness which came under his observation in 1927. Three were seen very soon after the eclipse, the last after an interval of five weeks.
In all there was a small positive central scotoma. The ophthalmoscopic appearances were similar in all; there was a deep red area at the macula with one or two brilliant white patches. The surrounding retina was slightly grey.

The three cases which were seen early recovered within 10 days. The latter case showed still a central scotoma and defective vision; but the after-results are not known as the patient did not return.

Several cases of electric ophthalmia are recorded and the fundus conditions of one are shown. In this case the picture suggests a "hole" at the macula.

Two others had recurrent attacks of iridocyclitis, but in one a positive Wassermann reaction makes the cause doubtful.

Lastly the author notes a case in which a large current passed through the body; there were severe burns and a cataract developed in both eyes about a year after the injury.

Harold Grimsdale.


(13) Michail here publishes the notes of two cases of concussion cataract.

In both the lens opacities developed with great rapidity, in one of the cases in three days after the injury, with consequent impairment of vision; the opacities were, on the whole, translucent, and situated in the anterior and posterior cortex, while the adult nucleus was unaffected. In the posterior cortex they showed a distinct tendency to assume a stellate shape.

Besides these cortical opacities, others in the form of a sector were found, more extensive and more circumscribed, and situated for the most part in the equatorial region of the cortex. These opacities occurred in the part of the lens that was in the line of the forces directed from the head-injury, and must be regarded as caused by contre coup. According as this equatorial opacity is more in the anterior or the posterior cortex the inference can be drawn that the line of force was directed from behind forwards or vice versa.

The translucent opacities, first mentioned, are held to be the result of bruising of the soft cortex by the oscillations of the relatively hard nucleus at the moment of concussion. They may disappear at an early stage of the disease but reappear later, but the progress of this form of cataract is extremely slow.

Thomas Snowball.
(14) Cordero (Parma).—Glutathione in the normal and cataractous lens. (Il glutatìone nel cristallino normale e catarattoso). 

(14) The importance of sulphur as an element of proteids has been gradually noted. It is now known to play a very important rôle in metabolism. Hopkins, in 1921, isolated a substance which he called glutathione; this seems to consist of a molecule of glutaminic acid combined with a molecule of cisteine. Later Tunnicliffe and Stewart succeeded in producing this substance synthetically. It is a body which can act either as a reducing or oxidising agent according to the nature of the medium in which it is situated. It is found in specially large quantity in those organs where metabolism is greatest. In the blood it is found almost entirely in the red corpuscles, and seems to play an important part in the conversion of haemoglobin.

Cordero has estimated the amount of glutathione present in the lenses of various animals and finds that it varies with the species, the human lens containing little; it decreases in amount with the interval between death and the examination. In cataractous lenses it is practically absent.

HAROLD GRIMSDALE.


(15) Those who have read Martin Arrowsmith will be familiar with the possibilities of bacteriophage. Could a universal phage be discovered, bacterial disease would probably cease to exist, but such is as yet far from being the case. Town and Frisbee begin this paper with a short historical account of bacteriophage. It would seem that Twort in 1915 (Lancet, Dec. 4, 1915) was the first to publish an account of this agent. He was followed by d'Herelle in 1916 who found a phage for Shiga's bacillus in the stools of a patient recovering from dysentery. Various theories have been advanced as to the nature of phage. The most obvious is that it consists in a filter passing virus which feeds on bacteria and causes their destruction by lysis; others, however, regard phage as a stage in the cycle of a bacterium which has the property of inducing other normal bacteria to pass into the same phase. Apart from theory, it has been established that phage is a filtrable lytic agent which acts on living bacteria, developing at their expense, is reproducible in series and is, unfortunately, highly specific. Up to date, phages have been discovered for the organisms of plague, typhoid and paratyphoid fever, diphtheria, cholera
and gonorrhoea, also for bacillus coli and bacillus proteus, the pneumobacillus, staphylococcus and streptococcus. City sewage is the richest source of phage, and the latter is obtained from it by filtration. For clinical use, the infecting organism must be isolated and tested on a culture medium against the phage to be employed, on account of its high specificity. Adopting this precaution, the authors have, up to date, treated successfully 20 cases of eye disease, including dacryocystitis (two cases where the infection was staphylococcal) styes, meibomian cysts, an orbital abscess and a corneal ulcer. They state that the series is too small to justify the drawing of any sweeping conclusions though it seems to show that the action of phage may play an important rôle in the phenomenon of recovery.

F. A. W-N.

BOOK NOTICES


The author introduces his subject by giving a summary of the physical properties of the electro-magnetic waves concerned in "radiant energy."

In the section dealing with ultra-violet rays he gives a brief account of their effects on the tissues of the eye and of their action in general and local phototherapy. In this field of work he has enjoyed special experience as medical officer in charge of the physico-therapeutic department at the Royal London Ophthalmic Hospital. Therapeutic technique is described and case records are given followed by a survey of the results and the conclusions to be drawn from these.

The author has addressed himself critically to the difficult task of assessing the value of ultra-violet light therapy in a number of pathological conditions of the eye, many of which were receiving other forms of local and general treatment at the same time. His search for the truth has been complicated by the natural tendency of some diseases to improve in spite of any treatment; by the limited material available in certain disorders; by failure of patients to attend regularly; and other factors. With these difficulties before him his conclusions as to the value of phototherapy in ocular diseases are broad and of necessity somewhat indefinite.