

DISEASES OF THE EYE.

BY HENRY POWER, M.B., F.R.C.S.,

Consulting Ophthalmic Surgeon, St. Bartholomew's Hospital.

The use of the Röntgen rays in ophthalmology.

At the sixty-sixth annual meeting of the British Medical Association (*Brit. Med. Journ.*, Aug. 20, 1898, p. 481) Dr. Mackenzie Davidson gave a demonstration of the employment of the cathodic rays in ophthalmology. He stated that he had used these rays in forty-one cases of foreign bodies with satisfactory results. His method was based on getting the three co-ordinates of any point; if these were found, the position of the point could be ascertained. In the apparatus two knitting needles, one horizontal, the other vertical, were used as two of the planes; the photographic plate made the third plane. The patient's head was fixed in the apparatus, and he was directed so to look that his visual axis was parallel to the horizontal needle. A loop of lead wire was previously fixed to the patient's lower eyelid by sticking-plaster; the point of the wire projected upwards and formed the landmark from which the position of the foreign body in the eye was calculated. The Crookes tube was placed on a sliding scale, and two plates were taken, the tube being moved forward 6 cent. for the second exposure. The two photographs thus obtained could be placed in stereoscopic relief. The tube used must emit the light from a very fine point, and the exposure must be short. He had been very successful in determining the location of the foreign body by this means. Mr. Cargill, Mr. Treacher Collins, and others, had employed the same apparatus, and bore witness to the accuracy of the results obtained. In the discussion that followed, Dr. Reeve, of Toronto, spoke of Dr. Sweet's success with an instrument he had devised, consisting of an aluminium frame to hold the sensitive plate, which was fastened by bands to the side of the head corresponding to the injured eye. It also carried two metallic indicators—wires ending in tiny knobs, set so that one was opposite the centre of the cornea, the other being towards the outer canthus on the same horizontal plane. Two negatives were taken, one with the tube and the two indicators on the same level, and the second with the tube 30°

below. The tube was somewhat in front of the plane of the eyes, about 13 inches from the plate, and on the opposite side of the head to the latter. Two diagrams (circles) were drawn on paper of the size of the globe, one a horizontal section and the other vertical, and the three necessary measurements were made out from the relative position of the knobs and foreign body in the two skiagraphs. Dr. Reeve stated that Dr. Leonard, of Philadelphia, had succeeded by a different method—namely, by utilising a fixed point on the temple, taking several skiagraphs, and then making calculations based on a series of triangles.

NEW REMEDIES.

1. Euphthalmin.

This drug, obtained from a chemical firm (formerly Schering's, in Berlin), is recommended on various grounds by Dr. Winselmann. He has used it in solution containing 5 and 10 per cent., and finds that in the course of six minutes the 10 per cent. solution, in experiments made on himself, begins to produce mydriasis, and in nine minutes the mydriasis is complete. The accommodation was scarcely affected, and there was hardly any disturbance of vision: so little, indeed, that he was able to read for four hours continuously without inconvenience, after complete mydriasis had been established. Euphthalmin mydriasis is not accompanied by any change in intra-ocular pressure. The drug does not produce any poisonous symptoms, nor has it been observed to excite any irritation in the conjunctiva or cornea. The dilatation of the pupil produced by it quickly passes away.

2. Protargol, or proteinate of silver.

Dr. Ed. Pergens (*Zehender's klin. Monatsblätter*, Bd. xxxvi., April, 1898, p. 129), of Brussels, describes protargol as a yellowish-white powder, soluble in two parts of water, producing a brownish solution, and containing 8.3 per cent. of silver. It is chiefly composed of proteids. It is not decomposed by either acids or alkalies, nor by the alkaline sulphides. It is not precipitated by sodium chloride, bromide, or iodide, but it is precipitated by chromic acid. It can be obtained from F. Bayer & Co., Elberfeld. It is said to be serviceable in cases of catarrhal conjunctivitis, in 2 per cent. solutions applied five or six times daily, also in cases of blennorrhœa neonatorum, and of dacryocystitis. The time required to effect cures in these cases, however, seems to be considerable, and to show that the remedy is not a very potent one. Dr. Darier (*La Clinique Ophthalmologique*, 4^e Année, No. 6, 1898, p. 61) nevertheless strongly recommends it in cases of conjunctivitis with purulent secretion, and especially as a means of effecting a rapid cure in

cases of purulent ophthalmia caused by the gonococcus—the more rapid, in fact, in proportion to the concentration of the solution and the frequency of its use. It is superior to silver nitrate in having no corrosive or caustic action on the conjunctiva, even when the strength of the solution is 50 per cent. It does not precipitate the albumin, nor is it precipitated by the sodium chloride of organic liquids, but diffuses itself into the epithelial cells, where it enables the silver to exert its fatal action on the bacteria. Dr. Darier finds it to be not only almost a specific for gonorrhœal ophthalmia, when its use is commenced at an early period, but he has also found it very serviceable in conjunctivitis of all degrees of severity, from simple conjunctivitis to trachoma, and even in inflammations of the lacrymal sac. He usually commences the treatment with 5 per cent. solutions, the strength of which is gradually increased.

3. Hydrobromate of arceolin.

At the meeting of ophthalmologists at Moscow (reported in the *Archives of Ophthalmology*, vol. xxvii., p. 104, 1898) Signor Lavogna, of Monaco, recommended the use of this drug as a myotic, which he states he has found to possess all the good qualities of eserin, whilst it acts more quickly. It produces extreme contraction of the pupil in ten minutes, and this remains for twenty-five minutes. It is somewhat irritating to the conjunctiva.

4. Holocaine.

In a paper read in Edinburgh before the Ophthalmological Section of the British Medical Association, of which an abstract is given in the *British Med. Journal*, Sept. 3, 1898, p. 619, Dr. James Hinshelwood gives the results of his observations. Holocaine is a derivative of parphenetidin, and is a strong base insoluble in cold water, but readily soluble in alcohol and ether. The chlorohydrate is recommended by Täuber, by whom it has been introduced into practice as an excellent anæsthetic for the eye. The advantages claimed for it by Dr. Hinshelwood are that in 1 per cent. solution it produces complete anæsthesia of the cornea and conjunctiva in from fifteen to thirty seconds after instillation; that the anæsthesia produced lasts about ten minutes; that it only produces a slight feeling of burning and hyperæmia on instillation, which rapidly passes off; that it does not produce any alteration in the size of the pupil; that there is no disturbance of the accommodation; that there is no alteration in the tension of the eye; and lastly, that it does not in the slightest degree cause any change in the corneal epithelium. Dr. Hinshelwood has found it very serviceable in operations on the eye, and also as a means of relieving pain and blepharospasm, and thus facilitating

the examination of the eye in cases of conjunctivitis, phlyctenular affections, and keratitis. The chief objection to the remedy is that it requires to be freshly made up, as it spoils in the course of a week. The merits of holocaine in 1 per cent. solution as a substitute for cocaine were also advocated by Dr. Natanson, of Moscow (see "Report of Moscow International Congress" in Knapp's *Archives of Ophthalmology*, vol. xxvii., p. 108, 1898), who finds that its action is rapid and permanent without pupillary dilatation, paralysis of accommodation, desiccation of the cornea, increase of tension, or dilatation of the palpebral fissure. It is also cheaper than cocaine.

5. Atroscin (*Zehender's klin. Monatsblätter*, January, 1898, p. 22) is a remedy proposed by E. Schmidt of Marburg, and is allied to scopolamin, differing only in the different proportions it contains of water of crystallisation and its optical properties, the optically inactive atroscin bearing the same relation to the active scopolamin that the optically inactive atropin bears to the optically active hyoscyamin. Atroscin acts more readily than scopolamin in producing both dilatation of the pupil and in paralysing the accommodation, and much more vigorously than atropin. Thus in iritis a 0.1 per cent. solution of atroscin acts more energetically than a 1 per cent. solution of atropin, and a single instillation will sometimes break down synechiæ that have resisted scopolamin for days. The use of atroscin requires care, as toxic symptoms, faintness, and slight vertigo are some times felt.

6. Long known and recent mydriatics.

Dr. C. H. de Bourgon (a report of whose paper, contributed to the Congrès des Sociétés Savantes, 1898, is contained in the *Recueil d'Ophthalmologie*, 3 Ser., 20^e Année, No. 7, July, 1898, p. 398) observes that the use of mydriatics is mentioned by Hippocrates, Aristotle, Celsus, Scribonius Largus, Pliny, Aretæus, Galen, and others amongst the ancients, hyoscyamus being specially referred to by the last-named author. Seventeen centuries later, MM. Wecker and Landolt, in their "Traité Complet," mention five mydriatics—atropin, homatropin, duboisin, hyoscyamin, and gelsemin. M. Bourgon has ascertained the mydriatic power of the following:—Aconitin, obtained from *Aconitum napellus*; echujine, a glycoside from the *Adenium Boëhmianum*, one of the family of Apocynaceæ; the active principle of *anemone pulsatilla*, a neutral substance; the active principle of *anemone pratensis* (*Pulsatilla nigricans*); apomorphine; atropin; berberin, which can be extracted from many plants besides the common barberry, as from the ranunculaceous plants

xanthorhiza apiifolia, helleborus teeta, hydrastis canadensis, and thalictrum flavum, and from several menispermaceous plants : caffen ; cicutine, from conium maculatum, one of the Umbelliferae ; cocain, from erythroxyton coca, one of the Linaceae erythroxyloceae ; daturin, from datura stramonium, a solanaceous plant ; delphin, from delphinium staphisagria, one of the Ranunculaceae ; digitalis, from digitalis purpurea, one of the Scrophulariaceae ; duboisin, from duboisia myoporoides, a solanaceous plant ; ephedrin, from ephedra vulgaris, one of the Gnetaceae ; ethylatropin ; gelsemin, from gelsemium sempervirens, one of the Loganiaceae ; helleborein, from helleborus niger, one of the Ranunculaceae ; helleborin, a glycoside extracted from helleborus viridis, one of the Ranunculaceae ; homatropin hygrin, from erythroxyton coca ; hyoseyamin, from hyoscyamus niger and H. albus, belonging to the Solanaceae ; hyoscin, from the same plant ; isotropylcocain, an alkaloid obtained from coca ; japaconitin, obtained from aconitum japonicum ; jervin, an alkaloid extracted from veratrum album, one of the Liliaceae ; narceine, one of the opium alkaloids ; nitro-atropin and nitro-daturin, obtained by the action of fuming nitric acid on atropin and daturin ; narcissin ; napellin or nepalin, the alkaloid of aconitum ferox, one of the Ranunculaceae ; pseudo-ephedrin, existing together with ephedrin in ephedra vulgaris ; piturin, obtained from the bulbs of duboisia Hopwoodii, one of the Solanaceae ; rotoin, or scopolin or scopolein, a glycoside contained in the root of scopolia japonica or roto, one of the Solanaceae ; santonin, obtained from the flowers of the composite plant artemisia maritima ; solanin, obtained from several solanaceous plants, as solanum nigrum ferox, dulcamara and lycopersicum ; spigelin, from the stems of spigelia marilandica, one of the Loganiaceae ; an alkaloid obtained from sucupira or Bowdichia major, one of the papilionaceous-leguminous plants ; thalictrin, from the ranunculaceous plant, thalictrum macrocarpum ; tropa-cocain, from erythroxyton japonicum, one of the Erythroxyloceae ; tulipin, from the liliaceous plant ; tulipa vulgaris ulexin or laburnin, found in the leguminous plants ulex europaeus and cytisus laburnum ; veratrin, found in veratrum sabadilla and v. viride, belonging to the Ranunculaceae, and veratrum album, one of the Colchicaceae ; yerba del perro, a Mexican composite plant ; and zigadenus venenosus, a South American plant belonging to the Colchicaceae. Some of these alkaloids are identical, as scopolin and rotoin, and several, as atropin, hyoseyamin, hyoscin, duboisin, scopolein, and daturin, are isomeric, having the formula $C_{34}H_{23}NO_6$. Some of them paralyse both the sphincter iridis and the ciliary muscle.

7. Action of atropin in epileptics.

MM. Ch. Féré and Ch. Laubry (*Recueil d'Ophthalmologie*, No. 7, July, 1898, p. 385) remark that the paralyses which succeed epileptic attacks are now generally admitted to be due to exhaustion of the cerebral cortex. M. Féré has elsewhere shown that not only voluntary movements are weakened after an epileptic attack, but most of the organic functions. Amongst these, the reaction of the iris to atropin may be mentioned. The authors of the article have made some researches on this point. They employed a watery solution of atropin sulphate containing 0.00076 grm. to each drop, which was dropped into one eye only. They observed on several occasions after the lapse of five or six minutes a slight contraction of the pupil in the eye receiving the drop, though both eyes were equally exposed to the light. Two or three minutes before the pupil expanded on exposure to light, it was found to be more dilated than the other when the lid was raised, and remained dilated longer. Twelve patients had a drop of the solution instilled into one eye, once at a period remote from the epileptic attack ; seven had an instillation made about one hour after an attack ; seventeen had two instillations—the first time just after an attack, and the second time several days after an attack ; eleven patients had two instillations, the first a long time after an attack, the second time just after an attack. The results of the experiments showed that in all the cases the dilatation is more prompt when the instillation is made just after the attack than when it is made at a remote period. The paralyzing action of atropin is therefore favoured by the attack.

8. The mode of employment of pilocarpin.

Dr. E. Herbert Burnham, of Toronto (*Archives of Ophthalmology*, edited by Dr. Knapp, Dr. Schweigger, and Dr. W. A. Holden, vol. xxvii., No. 2, p. 175, 1898), is of opinion that pilocarpin is a remedy possessing great possibilities when used either alone or combined, not only in cases of eye disease, but in affections of other parts of the body. He holds, however, that a certain routine should be followed if the best results are to be obtained. The strength of the solution he uses is 5 grains to 1 drachm of water ; the dose varies from $\frac{1}{12}$ gr. to $\frac{1}{4}$ gr. By always dipping the needle into a lotion of carbolic acid containing one part in twenty, he finds the same formula can be injected for the whole group without perceptible soreness. The injections are given daily in groups varying from six to twenty-one, unless nausea, headache, or oppression over the cardiac region is experienced, in which case it is stopped for one or two days. No stimulants

are required. The temperature of the room should be about 75° F. Flannel sheets are put on the bed with the ordinary amount of additional bedclothes only. The patient is clad in a flannel suit of underclothing, with a mug to catch the saliva. The injection is then made and the patient well tucked in. Profuse perspiration of the whole body with a free flow of saliva should always follow. In the course of two or three hours the reaction has, as a rule, quite disappeared. On rising, he is wiped dry with warm towels. He is allowed to go about the house, but not into the open air. A moderate meal is then to be taken. The interval between the groups of injections varies from three to eight weeks. Pilocarpin has, he believes, a strong and direct action upon the nerve centres, influencing the absorbent processes, rendering them very active and also exceedingly sensitive to external and internal impressions. One cause at least of the beneficial action of pilocarpin is the power of arousing very greatly increased physiological activity. The apparent inertness or the very limited effect in the case of many medicines—as, for example, potassium iodide and mercury—may be due to the inability to arouse this increased physiological activity. As soon, however, as a medicine is added which can do this, then immediate good results follow. Hence, in order to get the best results from pilocarpin, it should be associated with other medicines suited to the disease.

9. Subconjunctival injections.

A discussion on the therapeutic value of subconjunctival injections was introduced by Prof. Pflüger at the Ophthalmological Session of the Moscow Congress (see Report by A. Nieden, in Knapp's *Archives of Ophthalmology*, vol. xxvii., p. 106). This mode of treatment was first proposed by Prof. Donders. The strength of sublimate solutions should not be greater than 1:40,000 or from that to 1:4,000. Amongst other substances that have been employed are cyanide of mercury, salicylic acid, iodine trichloride, sodium salicylate, and ordinary salt solution. The best results are obtained where such injections are used in cases of infectious processes occurring in the eye or cornea. Prof. Darier considered that mercuric chloride and cyanide used as injections possess marked antiseptic power. The fluid he injected consisted of mercury cyanide 0.1, sodium chloride 10, and water 500, a drop or two being injected at a distance from the cornea. In infectious corneal ulcers they afford, with the galvano-cautery, a rapid and sure means of saving the healthy tissue and restoring what is diseased. In cases of macular choroiditis, Prof. Darier has found that a few injections often restore vision promptly and cure

rapidly. Dr. Alonso, of Mexico, had found them serviceable in cases of retinal detachment, as in infectious corneal ulcers and in chronic choroidal and retinal disease.

10. The treatment of trachoma.

Professor Dr. Hoppe remarks (*Zehender's klinische Monatsblätter für Augenheilkunde*, Bd. xxxvi., July, 1898, p. 225) that excellent results are said in reports to have been obtained by very different methods of treatment of this disease. Unfortunately, however, the benefits do not appear to last much longer than the period during which the patient is detained in hospital. He has been able to follow up no less than 272 cases in which excision of the tarsal fibro-cartilage had been practised for trachoma. Of these, 34.3 per cent. were cured, 12.8 per cent. had catarrh, 40 per cent. follicular inflammation, 8.1 per cent. follicular disease and pannus, and 4.8 per cent. pannus and catarrh. The best results were observed in young subjects, especially if the disease was recent, and in such cases the cure was effected upon the average in forty-three days. Bad results were rare, and complete loss of the eye occurred in only three cases, and in two of these it appeared to be due to intercurrent measles. The operation does not confer immunity from recrudescence of the trachomatous state if the patient be placed under unfavourable hygienic conditions. It should not be adopted indiscriminately; but when other measures have been adopted and have failed, Prof. Hoppe thinks it is deserving of trial.

11. Therapeutic indications afforded by bacteriological examination of the conjunctival secretions.

M. Darier (*Société d'Ophthalmologie de Paris*, June 7, 1898; *Recueil d'Ophthalmologie*, No. 7, 1898, p. 413), in a paper read before the French Ophthalmological Society, states that for two years he has made a practice of examining the secretion of the conjunctivæ in various cases presenting themselves in the clinic of M. Abadie. He finds that acute catarrhal conjunctivitis is characterised by the presence of Week's bacillus, and is in general cured in two or three days by daily cauterisation with protargol. Sub-acute conjunctivitis accompanied by the diplobacillus of Morax is at first rapidly ameliorated with the protargol, but relapses are frequent, the membrane appearing to become habituated to it. The treatment in such cases should be changed, and M. Darier has tried zinc sulphate, but it did not prove satisfactory, and he exchanged it with good results for acetate of lead and ichthyol to one-tenth, either in watery solution or in oil.

In the case of purulent gonococcal conjunctivitis brilliant

results were obtained from the protargol treatment employed twice daily even in the most virulent forms. At the same time if the treatment was intermitted before fifteen days the disease reappeared. In two cases of acute pseudo-membranous conjunctivitis which were not diphtheritic, protargol effected complete disappearance of the false membranes in three or four days. In the course of the discussion which followed the reading of the paper, M. Parent stated that he had obtained excellent results in cases of purulent ophthalmia from the use of nascent silver iodide recommended some years ago by Dr. Sedan, the action of which is obtained by the double decomposition of an alkaline iodide, and a silver salt introduced simultaneously into the *cul-de-sac* by means of glass rods. M. Morax stated that he had found a solution of sulphate of zinc in the proportion of one to forty very serviceable in cases of sub-acute conjunctivitis. It occasioned sharp pain, but if that were borne recovery quickly followed. M. Darier, in reply, maintained his point, urging that no ulcerations of the cornea nor production of false membranes followed the use of the proteinate of silver or protargol, as occurred not infrequently from the abuse of silver nitrate or other cautery. He had given up entirely the use of weak solutions, and now preferred to employ the protargol in the proportion of one part in two parts of water, which formed a syrupy liquid that should be applied with a brush, and which gave very little pain. The cauterisation should be performed twice daily, and once or twice in the intervals a drop of a weaker solution should be instilled to keep up the action. This plan effected a rapid cure of all cases of conjunctivitis due to the gonococcus or to Week's bacillus. On the other hand, those forms of conjunctivitis which resulted from the diplo-bacillus of thoral were more effectively treated with zinc sulphate and ichthyol.

12. Rodent ulcer of the cornea.

A careful study of a case of this intractable affection has been made by Dr. Ahlström (*Zehender's klinische Monatsblätter*, Bd. xxxvi., p. 170, 1898). It occurred in a day labourer, aged forty, sickly-looking, but presenting no symptoms of constitutional disease. The ulcer was typical in its characters, and progressed from bad to worse in spite of the application of a pressure bandage, scraping the base of the ulcer, the employment of the thermo-cautery, irrigation, cauterisation with carbolic acid, iodoform, atropin, hyoscin, and subconjunctival injections of sublimate. Dr. Ahlström on repeated occasions had recourse to bacteriological investigations, employing agar, gelatine, and serum, and examining the tissue of the cornea in advance of the ulcer, but was unable to find any

micro-organism except those that are generally present in disease, and even in the healthy conjunctival sac, the most frequent being staphylococcus aureus and s. albus, whilst amongst the rarer forms were streptococci and diplococci, and occasionally bacilli. Puncture experiments with material obtained from the ulcer in the cornea of the rabbit never produced any other type of disease than the ordinary infiltration ulcer, which presented none of the features of the rodent ulcer. He regards the disease as a progressive necrosis of the superficial subepithelial layers of the cornea, and suggests that special attention should be paid to determine the degree of sensibility of the cornea, in view of its being possibly a neurosis. Most cases of rodent ulcer end in total loss of vision. Fuchs believes that the progress of the ulcer can always be arrested by the application of the actual cautery, but several cases are on record where this remedy has failed in competent hands.

13. Tattooing the cornea.

This proceeding is of great service in removing the white spots which follow ulcerations of the cornea and which are disfiguring, but it is not always successful; and Dr. H. Villard, of Montpellier, has recently ("Rapport de la Société Française d'Ophthalmologie, Congrès de 1898," in *Recueil d'Ophthalmologie*, June, 1898, p. 376) undertaken a series of experiments to demonstrate the histological changes that take place in the normal cornea after tattooing, and in cases of artificially produced leucomata. In both instances the effects were followed at first hour by hour, and subsequently day by day. Tattooing the normal cornea caused immediate disappearance of the epithelium. The perforations of the laminae of the cornea by the needle were visible. The laminae were dislocated, and between them layers of Chinese ink were arranged with tolerable regularity. Some hours after the operation the anterior part of the corneal tissue becomes infiltrated with leucocytes, which are most numerous in the vicinity of the tattooed area. These leucocytes serve for the nutrition and reparation of the injured region. The epithelium quickly undergoes renewal, and in the course of twenty-four hours covers the whole of the tattooed part. The cells proliferate, surround the masses of Indian ink, become charged with minute black particles, and at the end of two months complete reparation has taken place, and the pigment grains are tolerated by the corneal tissue. The same series of phenomena are observed when leucomata are tattooed. The strata of pigment are, however, somewhat less regularly disposed, and both leucocytes are more numerous and persistent than in the case of normal cornea, and the fixed corpuscles and cells become much more hypertrophied, whilst the pigment granules disappear more rapidly. These effects

are due to the presence of vessels in the leucomata. Hence it follows that to obtain a good and durable effect in tattooing, care should be taken only to tattoo leucomata unprovided with vessels.

14. The ætiology of regular corneal astigmatism.

Dr. Evers, of Leipzig (*Zehender's klinische Monatsblätter*, Bd. xxxvi., p. 240), points out that whilst corneal astigmatism was formerly regarded as a congenital and unalterable affection, it is known to be induced by many different causes, and to be liable to increase and diminution under different circumstances. Thus it may be the consequence of cataract operations, of iridectomy, of perforating wounds of the cornea or sclera, of pterygia, and of ulcerative processes. According to Steiger, who examined 3,170 eyes for astigmatism, the degree in seven-eighths of the whole varied from 0.25D. to 1.25D., and of these a large proportion became reduced or even normal at about the age of forty in women and of fifty in men. As Dr. Brailey has shown, there is a relation between glaucoma and astigmatism; and Pfalz has shown that about 80 per cent. of glaucomatous patients are astigmatic, usually against the rule. A remarkable case of induced astigmatism is recorded by Parker, in which a coastguardsman, who originally had no astigmatism, but developed the affection as a result of six hours' daily observation with the right eye, the left being closed, and therefore subject to the pressure of the orbicularis muscle. It does not appear that tenotomy, for strabismus, of either the external or internal rectus, has any influence on the curvature of the cornea, but Dr. Evers has observed astigmatism produced by keratitis interstitialis.

15. Suture of the cornea after removal of the lens.

This proceeding has been once more advocated by Dr. W. H. Bates (*Archives of Ophthalmology*, vol. xxvii., No. 2, p. 181), of New York. Originally practised by Dr. H. W. Williams, and subsequently by Suarez de Mendoza, Kalt, and others, about 150 cases have been reported, with about 4 per cent. of prolapse of the iris, and only one or two cases of suppuration. In some instances the suture was applied by passing the needle through the superficial layers of the cornea after the extraction; in others a preliminary incision was made in the cornea, the needle passed through the edges, the loop of thread drawn aside, and the cut for the extraction made to traverse the space between the limbs of the loop. Dr. Bates's experiments were made on seventy-eight rabbits, animals that have eyes not very well adapted for such experiments on account of the lacerability of the conjunctiva, the thinness of the cornea, the gaping of the wound after section, and the

prolapse of the iris, which cannot be returned. Moreover, the eye is not steady, and it is almost impossible to apply a bandage, as it is quickly scratched off by the animal. The constant prolapse of the iris in the rabbit seems to be due to the incurvation, and therefore non-adaptation, of the edges of the section. It was found the best plan to insert the first suture before the section was made, and before the removal of the lens, a loop being left, otherwise loss of vitreous usually occurred. The needle was half an inch long and was used with a needle-holder. The finest black silk was used, without, however, any aseptic precautions. From three to ten sutures were employed, and they were allowed to remain from three days, which was all that in most cases was necessary, to fourteen days. The suture was found to be very serviceable in controlling prolapse of the iris, in effecting the return of the prolapsed vitreous, and in preventing intra-ocular hæmorrhage. Primary healing occurred in 80 per cent. of the cases, with a clear central and nearly circular pupil.

16. Extraction of cataract.

Prof. C. Schweigger (*Archives of Ophthalmology*, vol. xxvii., No. 3, p. 255, 1898) adduces facts and figures to prove that the simple extraction downward, as performed a hundred years ago, gives better results than any of our present methods. He recommends that the incision should be made with Richter's broad knife, sharp on both edges to about 2 millimetres from the tip, the back straight and thin, but not cutting, and the surfaces of the blade a trifle convex. The width of the blade increases gradually from the point, so that at about 15 millimetres from the latter it is 6 millimetres wide, and remains so up to the base. The edge is not straight, as in Beer's knife, but a little curved. This form of knife, it is claimed, keeps the wound closed until the section is completed, preventing too early escape of the aqueous, and doing away with the necessity of sawing. Prof. Schweigger has devised a new instrument for fixation, instead of forceps; it is a kind of two-pronged fork, with buttoned ends 4 millimetres apart, and he maintains that the fork prevents rotation or deviation of the globe, and permits a useful resistance to the knife in finishing the section. He uses the ordinary capsulotome, but capsular forceps when a capsular cataract is present. If the cortex is soft, he often removes the lens in the capsule, the lens in that case being delivered by pressure on the upper portion of the cornea with a spoon. He operates without iridectomy; and out of 1,223 cases he finds he has had 5 per cent. of total losses with iridectomy, and only 3.8 per cent. without. He generally bandages both eyes.

17. Sudden and recurrent ocular hæmorrhages in the young.

In a paper read before the French Ophthalmological Society (*Archives d'Ophthalmologie*, t. 18, p. 456, 1898) Dr. Abadie, of Paris, called especial attention to these hæmorrhages, which differ in their ætiology, nature, and treatment from those of mid-life and advanced age. Von Graefe noticed that in many cases they were preceded by violent epistaxis. Eales and Nieden considered that the blood proceeded from the equatorial region of the eye, and that they were in general benign. Panas applied to them the term intra-ocular epistaxis. In this form the treatment to be adopted is the same as in the epistaxis of puberty—that is to say, attention to general hygiene, tonics, especially quinine, the preparations of iron, citric acid and sulphuric acid, lemonade, and the preparations of ergot. There is a second form of intra-ocular hæmorrhage in youth, named dyscrasia by Dr. Abadie, which comes on insidiously, and is sometimes scarcely noticed till the fundus can no longer be explored with the ophthalmoscope. When, however, it is seen early, delicate hæmorrhagic striæ may be observed along the sides of the vessels, and particularly of the veins of the retina, which gradually enlarge into spots of considerable size near the macula. Their formation is not accompanied by pain, nor by any inflammatory reaction of the conjunctiva, and the tension of the globe is normal. The absence of any definite scotoma distinguishes them from cases of detachment of the retina. The treatment required is nearly the same as in the foregoing class of cases—viz. iron, quinine, and ergotin, with citric acid or sulphuric acid, lemonade, and perhaps dry cupping. Analogous hæmorrhages occur in pregnancy, hæmophilia, phosphaturia, azoturia, oxaluria, dilatation of the stomach, progressive pernicious anæmia, leukæmia, paludal intoxication, and influenza. There are still other forms which are distinguished by Dr. Abadie, and described as occurring as a secondary condition in retino-choroiditis, and as constituting apoplectic retinal hæmorrhages, the latter being serious, and usually leading to loss of the eye. Such cases are associated with disorder of the sympathetic system of nerves. In the discussion which followed the reading of the paper, Dr. Gouvea, of Paris, contended that in a large proportion (42 per cent.) of his cases of ocular hæmorrhage there was lesion of the vascular walls due to hereditary or acquired syphilis; and Dr. Dor, of Lyons, called attention to the occasional existence of troubles of menstruation in these cases.

18. The after-consequences of the different modes of treating glaucoma.

(*Beiträge zur Augenheilkunde*, Herausgegeben, von Prof. D. R.

Deutschmann, Heft 32, 1898.) Whilst all text books give the immediate results of the different methods of treatment recommended for the relief of glaucoma, but little information can be obtained from them in regard to the permanency of their good effects, and it is still uncertain whether iridectomy, sclerotomy, or the employment of myotics, is to be on this ground preferred. Dr. Sidler-Huguenin, of Zurich, has endeavoured to obtain some facts by an examination of seventy-six cases of glaucoma occurring amongst 25,000 patients in the practice of Dr. Haab, of Zurich, of which twenty-one were cases of acute and chronic glaucoma, thirty-six of glaucoma simplex, ten of glaucoma hæmorrhagicum, and nine cases that were treated exclusively with eserine or pilocarpin. The cases, which were often difficult to trace, were examined as long after the operation as possible. From examination of the notes he was able to obtain he arrives at the conclusion that in cases of acute glaucoma the operation of iridectomy effects a cure in 50 per cent. of all the cases, whilst it acts beneficially in nearly all. Good results were more frequent after the operation of iridectomy in a larger number of cases of subacute and chronic glaucoma than is generally admitted. In the former set of cases 62·5 per cent., and in the latter 60 per cent., recovered with fair vision. The use of myotics and the performance of sclerotomy are, in cases of acute glaucoma, far behind iridectomy in value. In glaucoma simplex also iridectomy is to be preferred to sclerotomy. The use of myotics is that by their means the glaucomatous process may be arrested, and in about 33 per cent. of the cases vision is preserved; but the augmentation of pressure, which sooner or later leads to amaurosis, is not permanently reduced. In regard to hæmorrhagic glaucoma, he arrives at the following conclusions: Sclerotomy, combined with the employment of eserine and pilocarpin, is to be preferred to iridectomy, since the results of this operation are, on the one hand, not very good, even if successfully performed; and on the other, because the operation is attended with great danger of further hæmorrhage. Still the prognosis of this form of glaucoma is not so very bad, since there were 20 per cent. of recoveries and 40 per cent. in which there was preservation of vision.

19. Malarial affections of the eye.

This subject is one that is rarely touched upon in the text-books, but appears from an article by Major T. M. Yarr, F.R.C.S.I. (*Brit. Med. Journ.*, vol. ii., 1898, p. 870), to be of considerable importance. The lesions observed in malarial affections all originate in troubles of the circulatory apparatus, which may be classified under the heads of neuritis, retinal hæmorrhages,

retino-choroiditis, and effusions into the vitreous. In most instances the patients have suffered from repeated attacks of malarial fever; supra orbital pain and photophobia are very commonly present; night blindness frequently occurs. There are remarkable variations in the visual acuity in the course of a few days. The field of vision remains nearly intact. The retinal changes that may be seen with the ophthalmoscope are swelling of the papilla, which assumes a greyish-red colour, œdema of the circumpapillary area of the retina, causing loss of definition of the papillary margin, with enlarged and tortuous veins. The peculiar coloration of the papilla due to parasites in the capillaries is pathognomonic. In about a third of the cases minute peripheral hæmorrhages and occasionally large peripapillary and macular hæmorrhages are also found. About 80 per cent. of cases terminate in partial atrophy, indicated by varying diminution of visual acuity, irregular contraction of the field, and slight greyness of the disc; many end in apparently complete recovery, and some terminate in complete atrophy.

20. Insertion of an artificial globe in Tenon's capsule.

This is a modification of Henle's operation, which has been suggested by Dr. H. McL. Morton, of Minneapolis (*New York Med. Jour.*, Oct. 30, 1897). In Dr. Henle's operation the sclerotic is preserved, but in this proceeding the optic nerve is divided and the sclera removed; but as each ocular muscle is divided, a double needle catgut suture is inserted in it from within outward, enclosing the central portion of the tendon, and tied on its external surface. After arrest of the hæmorrhage, a glass sphere, or, as some have recommended, a celluloid or a rubber sphere, is placed in the cavity, and the sutures from the opposing recti muscles are tied over it and cut off close. The conjunctiva is carefully closed over them.

DISEASES OF THE EAR.

BY GEORGE P. FIELD, M.R.C.S.,

Surgeon for Diseases of the Ear, St. Mary's Hospital, London.

1. Replacement of the external ear after complete severance.

Two or three cases of successful engraftment of severed ears have been reported lately. The method adopted by Purall (*Lancet*, June 11, 1898) was as follows:—The ear was placed as soon as possible in warm water nearly at blood heat, washed and cleaned. The patient was next washed and prepared likewise. The ear was then replaced as accurately as possible, all landmarks being carefully noted, and interrupted sutures passed all round, these being tied afterwards, but not until the last was passed; by this means the needle was capable of being inserted through both edges exactly at points of correspondence. When the sutures were tightened, the ear fell into its natural position. Circulation was restored and the ear kept warm by the application of hot salt-bags over the dressings and bandages.

2. The treatment of chronic non-suppurative catarrh of the middle ear by surgical methods is being pursued energetically by our French confrères. Since the publication of Garnault's book (see "The Year-Book for 1898") additional papers have appeared on this subject by Miot, Moure, and Malherbe. (*Revue Hebdomadaire*, May and August, 1898.) Moure's paper merits careful attention owing to the conscientious manner in which he weighs all arguments both for and against the advisability of operating for the relief of this disease. In order to appreciate the difficulty with which this question is surrounded, and the conflicting views prevalent amongst otologists regarding it, some knowledge of the pathology of dry catarrh and sclerosis is, of course, essential. Moure especially insists that in the sclerotic form, not only do we find thickening of the membrana tympani, rigidity of the ossicular chain, ankylosis of the stapes, and atrophy of the expansion of the auditory nerve in the labyrinth, but also changes specially affecting the fenestra rotunda, these consisting of various degrees of thickening of the membrane and its bony frame, amounting in extreme cases to complete obliteration. Extension of chronic inflammatory mischief to the