additional webbing bands. It is often necessary to overcome a tendency to hitch the pelvis on one side by the traction of webbing attached to the fitting pelvic portion of the corset to the foot of the frame. When it is probable that the abductors of one hip will need temporary relaxation, it is economical to insert a joint in one vertical stem, as in the Jones abduction frame, when the bar which joins the medial leg bars must be adjustable.

The metal which has been used in the frame is given below, but heavier metal, as advised in Thomas's original

DETAILS OF CONSTRUCTION

Part of Splint	Material	Under 2 Years	2 to 6 Years	Over 6 Years	Thomas's Original Description
Chest wing ...	Galvanized iron under 6 Spring steel over 6	Inches $1 \times \frac{1}{16}$	Inches $1 \times \frac{1}{16}$	Inches $1 \times \frac{1}{16}$	Hoop iron $1\frac{1}{2} \times \frac{5}{8}$
Vertical stems...	Mild steel	$\frac{5}{8} \times \frac{1}{8}$	$\frac{3}{4} \times \frac{9}{16}$	$\frac{3}{4} \times \frac{9}{16}$	Malleable iron $\frac{3}{4} \times \frac{1}{4}$ Adult $1 \times \frac{1}{4}$
Thigh supports	Mild steel	$\frac{5}{8} \times \frac{1}{8}$	$\frac{5}{8} \times \frac{1}{8}$	$\frac{3}{4} \times \frac{9}{16}$	$\frac{5}{16} \times \frac{1}{8}$
Leg bars...	Mild steel	$\frac{5}{8} \times \frac{1}{8}$	$\frac{5}{8} \times \frac{1}{8}$	$\frac{3}{4} \times \frac{9}{16}$	—

description, is necessary to restrain very active, heavy children.

OPHTHALMOLOGY IN GENERAL PRACTICE*

BY

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The chief aim of medical training is to produce efficient general practitioners for the service of the community. An overburdened curriculum which tends more and more to fill the mind of the student with encyclopaedic vagueness rather than circumscribed precision, to make a memorizing machine rather than a thinker, is ill calculated to achieve its object. Of the special subjects ophthalmology is so advanced, progressive, and vast that it has become more than a whole-time job for the best of us. It has been said that the general practitioner ought to know ophthalmoscopy because some general disorders produce changes in the fundus. Woe be to the patient who has to wait for the detection of his ailment until his doctor discovers pathological change in the fundus! For our help to be efficient, disease must be recognized at its onset. Minute ophthalmoscopic abnormalities call for the expert eye, and now and then escape notice even with the pupil dilated; in some cases they can never be seen through the undilated pupil. Ophthalmoscopic signs due to general disorders appear mostly in the decades of life when it is risky to use mydriatics, and also late in the course of the disease. Apart from the impracticability of finding time for it, therefore, the careful routine examination of the fundus in each case is of very doubtful value to the general practitioner. He is asked to learn refraction as though it consisted just in prescribing glasses that give the patient normal acuity of vision in each eye. To do justice to refraction a sound knowledge of ophthalmology is required; one has to assure one's self that there is no disease in the eye before deciding that correcting the error of refraction is all that is needed. Each case has to be judged on its own merits, and considerable experience, skill, patience, and time are essential to deal with it satisfactorily. If the student intends to become a general practitioner the time and trouble in-

involved in getting a vague smattering of refraction and ophthalmoscopy is ill spent. Ophthalmic surgery is by general consent the province of the specialist.

CONGENITAL DISEASES OF THE EYE AND BIRTH INJURIES

The work of the general practitioner is mainly preventive, that of the specialist mainly remedial, particularly in regard to the eye. The aetiology of congenital abnormalities of the eye is obscure, but if steps are taken to ensure the mental and physical well-being of the expectant mother during the whole period of gestation, the chances are that their occurrence will be minimized, especially if care has been taken to deal with, and eliminate, venereal diseases where present in the parents. The latter precaution safeguards the infant both from congenital syphilis and from ophthalmia neonatorum. To save the eye from birth injuries, which range from trivial contusions, ecchymosis, and abrasions of the lids and globe to complete destruction of the eye, it is essential that difficult labour be prevented by timely induction in cases of contracted pelvis, by correction of malposition of the foetus, and by avoidance of instrumental delivery whenever possible. During the passage of the infant through the genitals the eyes remain as a rule well closed, so that only the lids are contaminated externally. To prevent ophthalmia neonatorum, therefore, it is essential to remember to leave the eyes alone until the rest of the body has been washed in the bath. After drying the baby, the lids should be carefully wiped with a clean wet swab without opening the eyes; the lids should then be separated and a drop or two of 1 per cent. silver nitrate solution instilled into each conjunctival sac. The importance of keeping the hands free from genital contamination should be impressed not only on the parents, but also on the nurse, who has been known to be the source of infection. As a further precaution a couple of drops of a 10 per cent. solution of protosil (Parke, Davis and Co.) may be instilled into the eyes thrice a day for a week or ten days.

OPHTHALMIA NEONATORUM

Ophthalmia neonatorum is a general term applied to conjunctival inflammation of the newborn. Unless proper treatment at home is really practicable, these cases are best sent at the very outset to specially equipped clinics. If it is decided, however, to treat the case at home the two guiding principles are: (a) to take scrupulous care not to traumatize the cornea in the slightest in the process of treatment; and (b) to maintain the general condition of the mother and child at its best. To achieve these ends it is preferable not to let the mother have the responsibility and anxiety of carrying out the treatment. If the inflammation is mild, instillation of a couple of drops of 1 per cent. solution of silver nitrate into each eye once a day, followed by instillation of 10 per cent. solution of protosil every two or three hours will do. The irrigation of the conjunctival sac to wash out the discharge and the instillations are best done before each feed; in this way the feed comforts the child and its sleep between feeds is not disturbed—conditions of at least as much importance in maintaining the resistance of the cornea to the invading micro-organism as the local treatment. The case should be carefully watched, and as soon as the inflammation shows signs of becoming severe 1 c.cm. of unadulterated cow's milk, boiled for five minutes and cooled to body temperature, should be injected into the buttock under aseptic precautions. If necessary, the injection may be repeated once or twice at intervals of twenty-four to forty-eight hours. This masters the inflammation better than anything else, especially where the gonococcus is concerned. Protecting

* Read before the Section of Ophthalmology at the Centenary Meeting of the British Medical Association, London, 1932.

goggles should be worn when carrying out the local treatment, and the use of instruments such as hooks and lid retractors should be avoided whenever possible. For irrigating, potassium permanganate 1 in 5,000 freshly prepared every day, boric acid 2 in 100, or sodium chloride 1 in 100, should be used.

GONORRHOEAL OPHTHALMIA OF THE ADULT

In contrast to ophthalmia neonatorum, which is generally mild, gonorrhoeal conjunctivitis of the adult is almost invariably very severe and dangerous. In the former, as a rule, both eyes are simultaneously affected, whereas in the latter, oftener than not, only one eye is involved at the outset. The first thing to do is to cut off the unaffected eye from contamination by fixing a Buller's shield over it. Five c.cm. of milk should then be injected into the buttock and the case removed with the utmost expedition to an institution specially equipped for its treatment. Pending removal, local treatment on the lines indicated for ophthalmia neonatorum should be carried out, and further milk injections of 7 c.cm. and 10 c.cm. given at intervals of thirty-six to forty-eight hours.

CONJUNCTIVITIS, IRITIS, AND PRIMARY CONGESTIVE GLAUCOMA

At the outset, it sometimes puzzles even the expert to distinguish between them. It is helpful to remember that in the first decade of life it is practically always conjunctivitis, in the second and third iritis and iridocyclitis are not infrequent, and from the fourth decade onwards it may be any of the three. Focal illumination with a lens and careful examination with a loupe is very helpful in detecting minute posterior synechiae and precipitates on the back of the cornea. Severe pain in and about the eye radiating to the head, ears, and jaws, and sometimes accompanied by vomiting and fever, is, as a rule, characteristic of acute congestive glaucoma and sometimes of iritis. If the diagnosis is at all doubtful, mydriatics in particular should be avoided and the specialist called in. But if the specialist is not immediately available, a brisk purge, hot moist fomentation to the eye, leeches to the temples, hypodermic injection of morphine, stoppage of all stimulants, including coffee, tea, and tobacco, and a low diet are helpful measures that the general practitioner can take.

Acute catarrhal, follicular, and eczematous conjunctivitis are the usual forms occurring in children. The first is contagious, and steps should be taken to prevent its spread. Cleaning the eye free of discharge with sodium bicarbonate lotion (2 in 100) and putting 5 per cent. protosil ointment into the conjunctival sac morning and evening for about a week often suffices to get the eye well. In inflammatory conditions of the eye, goggles with side protection are very comforting, and keep off wind and dust and minimize glare. Follicular conjunctivitis is characterized by translucent pinhead-sized elevations in the palpebral conjunctiva which may be few or many, and calls for treatment if symptoms are present. One-quarter per cent. zinc sulphate ointment used for several weeks will often cure the symptoms and sometimes the follicles. This ointment is a specific in diplo-bacillary conjunctivitis, which generally occurs in adults and often shows marked redness and irritation at the canthi, hence angular conjunctivitis. Eczematous conjunctivitis, with or without phlyctenulae—small solid nodules of infiltration elevated in the bulbar conjunctiva and nearly flat in the cornea—is a disease due to malnutrition, dirt, and lack of fresh air and sunshine. The children are often scrofulous, suffer from adenoids and enlarged tonsils, exhibit patches of eczema on the face

and elsewhere, and are sometimes verminous. So long as the general condition of the patient remains below par the attacks of conjunctivitis are liable to recur. Correction of errors of hygiene is therefore of the first importance in this disease. Cod-liver oil with malt extract and iodide of iron internally, and 1 per cent. calomel or yellow oxide of mercury ointment locally, should be exhibited.

FOREIGN BODIES IN THE EYE

Foreign bodies may lodge themselves in the conjunctival sac, on or in the sclera and cornea, or anywhere in the interior of the eye or orbit. Whenever a patient has the history that something went into the eye while chiselling, hammering, etc., even though no abnormality of the eye is detected, the case should be referred without delay to the specialist; oftener than not, the metal spicule has penetrated the eye. Sometimes a small foreign body which falls or gets blown into the eye lodges itself in the subtarsal sulcus; it can be easily removed by everting the lid. Such cases are not infrequently treated for conjunctivitis without avail. In workshops particles of emery or iron rust often get impacted in the cornea; in such cases, blockage of the lachrymal passage should be looked for, and if there is any sign of disease of the sac the foreign body should be left alone and the case referred without delay to the specialist. If the foreign body involves the pupillary area the case is again best left to the specialist, because it is easy to dig deeper than necessary into the cornea and leave a permanent scar which mars the vision; the foreign body may have gone so deep that the scar is inevitable, but in either case the practitioner is likely to be blamed.

In other instances, after removing the foreign body with a spud under cocaine local anaesthesia, 5 per cent. protosil, or other similar non-irritating ointment, should be put into the eye, which should be kept well closed by means of a pad and bandage. This treatment should be repeated every day until the abrasion is healed. Open-air workers, such as farm hands and gardeners, get pieces of husk, insect-wing, etc., impacted in the cornea, which occasionally start serpent ulcer, often accompanied by hypopyon. After removing the foreign body, on the first appearance of ulceration, the case should be referred to a specialist with the utmost expedition. In such cases it is advantageous to use 1 per cent. optochin ointment after removing the foreign body, since the pneumococcus is generally responsible for serpent ulcer. All cases of corneal ulcer are best left to the specialist to deal with.

OTHER ABNORMAL CONDITIONS OF THE EYE

In a case of serious accident involving laceration, perforation, or rupture, the eye should be cleaned free of foreign matter by careful irrigation with a sterilized 1 per cent. sodium chloride solution and the use of moist pledgets of cotton-wool. A sterilized pad should be gently applied over the closed eye and the patient hurried off to the specialist; if the specialist cannot be reached within about an hour after the accident, 5 c.cm. of milk should be injected into the buttock as a further first aid of the utmost importance.

Acute sty is a pyogenic inflammation of modified sebaceous glands associated with follicles of the lashes; it often produces alarming signs and symptoms out of all proportion to its seriousness. If at the onset tincture of iodine (B.P.) is applied to the swollen skin, followed by hot moist fomentations, and 5 per cent. protosil ointment is put into the eye twice a day the sty will resolve; if it suppurates and points it should be pricked, the pus thoroughly pressed out, and the ointment

continued for a few days. Sometimes styes recur in crops ; these cases call for general toning up of the patient. Chalazion—a solid tumour of the Meibomian gland—is best handled by the specialist.

Burns of the eye due to lime, acids, and alkalis call for very urgent attention ; every minute's delay is valuable time lost. In the case of lime, the eye should be washed free of loose lime by irrigation with lukewarm 10 per cent. solution of neutral ammonium tartrate or 8 per cent. neutral sodium citrate, and the open eye bathed in an eye-bath holding either solution for about fifteen minutes, morning and evening, until the cornea clears. This sometimes takes months, but perseverance is often well rewarded by improvement in vision. Of alkalis and acids, caustic soda is the most dangerous ; hydrochloric, sulphuric, nitric, and acetic acids and ammonia come next in the order given. One per cent. solution of tannin, lukewarm, is excellent in both acid and alkali burns, and thorough irrigation should be carried out within five minutes of the accident if possible. Milk can be used in the same way, as also 3 per cent. sodium bicarbonate solution in acid burns and 2 per cent. boric lotion in alkali burns. Subsequent treatment is best carried out under the guidance of the specialist.

As soon as a child is noticed to squint he should be referred to the specialist for treatment ; otherwise the squint may become permanent and the squinting eye amblyopic.

Any sudden drop in the vision means some serious trouble in the eye, and calls for expert handling.

Most serious diseases of the eye are due to some slow, chronic—often obscure—intoxication, and a thorough detailed examination of every part and organ of the body to discover any cause at all is called for. The general practitioner inclines to fight shy of looking for venereal diseases in his patient ; in the long run this is unfair to the patient and the community. The sensible patient does not resent the necessary investigation, and in the case of the touchy, conventional patient, there need be no unpleasant questions ; it is easy to take the patient's blood and have the Wassermann test done. As the welfare of the patient is our first concern, the general practitioner should be as thorough as possible in his part of the investigation to enable the specialist to do his best for the case.

The symptoms of eye strain are legion, headaches being the most frequent. Even when there is some general disorder which may account for them, errors of refraction and heterophoria should be rectified if the patient is to get full relief.

A patient incapacitated by bilateral cataract is a misery to himself and to those that have to look after him, and barring mental instability, there are very few contra-indications for operation. The operation itself is practically painless, and the chances of success are as high as ninety-nine to one. Even if the operation fails the patient is practically no worse off than before ; on the other hand, success means new zest and happiness in life to him and everybody concerned. The general practitioner, in collaboration with the specialist, should not, therefore, if at all possible, withhold from the patient his chance. *Mutatis mutandis*, the same view holds good of glaucoma.

With increasing knowledge of things medical through the daily press and medical books and periodicals in the public libraries, the average member of the community has become more exacting in his demands on the medical profession. His tendency to resort directly to the specialist has been causing concern to the general practitioner. By circumscribing his scope in special branches within feasible limits, and acquiring practical efficiency within that scope, the general practitioner can, to a great extent, retard this inevitable tendency. Whatever is

outside this narrowed scope should be referred without hesitation to the specialist. The average patient is sensible enough not to expect his doctor to be all-knowing ; he appreciates his doctor's candour in acknowledging this, and feels that in him he has a friend who will never abuse his confidence, never hit in the dark and miss the mark and then get the specialist to put things right. In other words, the patient feels sure that he is in safe hands, whose guidance he would not like to forgo.

Memoranda

MEDICAL, SURGICAL, OBSTETRICAL

A CASE OF RAT-BITE FEVER

The patient was a boy, aged 13 years, who was bitten by a rat in a cornfield on July 30th, 1932. The bites were upon both hands, and healed perfectly in a few days. He had no symptoms until August 20th, three weeks after the bite, when he had soreness of the throat and slight malaise. On August 23rd, twenty-four days after the bite, he was noticed to be feverish, and the temperature was found to be 105° F. On the following day it was normal, and he felt quite well again. On August 31st he appeared feverish, and the temperature was again found to be 105°. This temperature was checked by Dr. Kenneth Lachlan of Brentwood, with whom I later saw the case, and to whom I am indebted for his observations prior to our consultation. The patient was admitted to Charing Cross Hospital on September 14th.

The temperature chart shows the character of the fever. On the occasion of the fifth rise of temperature hourly

records showed that the fever was 103° or more for exactly twenty-four hours. On every occasion the rise of temperature occurred at about 9 p.m. The regular spacing of the rises of temperature is very striking.

Apart from the fever, there were present enlarged lymphatic glands in both axillae and a dusky red mottled rash over the trunk and limbs. The scars of the rat bites remained healthy throughout. The glands in the axillae were enlarged throughout the illness, but were tender only at the time of the fever. The rash appeared with each rise in temperature, and disappeared in about three days. There was no sore throat after the fever commenced, the spleen never became palpable, and no glands were enlarged elsewhere than in the axillae. The patient felt quite well between the rises of temperature. Frequent blood counts at various stages during the last two rises of temperature revealed only a slight polymorph leucocytosis. Blood cultures were sterile. Fluid removed by puncture of an enlarged axillary lymph gland contained mainly young lymphocytes and lymphoblasts, and no micro-organisms were recognized.

Dr. A. B. Rosher kindly investigated the case for me and succeeded in demonstrating the spirillum. During the fifth rise of temperature blood was drawn from a vein into sterile broth, and some of this was injected intraperitoneally into five mice, from a batch previously tested to prove the absence of spirilli in the peritoneal fluid. One week after the injection the peritoneal fluid of the