the cornea for the removal of which they indulge individual fancy for such implements as a well-sucked camel-hair brush, or a disused toothpick or a bodkin to quote a few of the agents which are responsible for seriously infected corneal abrasions and pan-opthalmitis.

Instruction about the first aid care of eye injuries should stress the danger of attempting the removal of a corneal foreign body except by those well trained in aseptic methods, possessed of the necessary skill, and under good conditions of lighting. They should also be taught the importance of posture in perforating wounds of the eye in which vitreous loss is likely to occur; the first aid treatment of burns of the lid and eye, and how to apply a pad and bandage with the correct degree of pressure. Beyond this and the irrigation of the eye with a bland lotion and the instillation of a drop of ol. paroloin they should not go.

ABSTRACTS

MISCELLANEOUS


(1) Shlossberg and Prizer report a rare case of blindness associated with measles in a female child aged six years, in whom sight failed on the fourth day of the illness and was reduced to no perception of light in either eye on the fifth day.

The optic discs were hyperaemic, the edges blurred, the retinal vessels engorged, the arteries small and threadlike. Small round retinal haemorrhages and pallor and oedema of the retina were followed by punctate retinal exudates on the 13th day. These exudates affected the macula and became confluent.

There was ultimately some visual recovery to R.V. 4/200 and L.V. 5/200. A diagnosis of acute neuro-retinitis or neuro-choroidoretinitis was made.

H. B. Stallard.


(2) Bamford and Barber describe the case of a male, aged 46 years, who on May 26 and 29, 1940 had severe haematemesis. On May 31 he noticed gradual concentric contraction of the visual fields, and on June 4 was blind. The haemoglobin was reduced to
41 per cent. and the red cells to 2,340,000 per c.mm. There was marked oedema of the retina at the posterior pole.

The authors comment that in other case reports the earliest subjective visual changes are diminution of central vision, paracentral scotomata and sector field defects.

H. B. STALLARD.


(3) Bakker's attention having been called by an industrial accident to the toxic action of saponin on the eye, he undertook a series of experiments on rabbits. He found that saponin has a marked effect on the cornea owing to its entering into chemical union with the cell lipoids. On this basis he explored cholesterin as a counter-measure and found that provided 5 per cent. cholesterin ointment is introduced into the conjunctival sac soon after the affected eye has been cleaned, serious damage to the eye can be prevented. Cholesterin ointment should, therefore, be at hand in all factories in which saponin substances are dealt with.

ARNOLD SORSBY.


(4) Bouman in a brief review, points out that if electrodes are applied to the eyeball directly or through the eyelids, constant current passing through them results in three different effects. There are light flashes at the start and at the end of the passage of current, and there is a constant illumination during that passage. The colour of this illumination varies with the intensity of the stimulating current and differs with anodal or cathodal stimulation. The theoretical basis of the excitation by the constant current is complex and not well understood; phenomena related to repetitive discharge in nerve probably play an important rôle.

From a clinical study on three patients, the author concludes that electrical excitation is due to stimulation of the optic nerve itself. The method can therefore be used for differential diagnosis in cases where severe loss of vision is due either to changes in the optic nerve or to changes in the retina. In lesions of the optic nerve the eye can no longer be excited, in lesions of the retina the excitability for constant current stimuli is normal but the time constant of electrical accommodation is that of a dark adapted eye even when the experiments are performed in broad daylight.

ARNOLD SORSBY.

(5) Goede found radiological evidence of calcification of the carotid artery in 43 out of 120 cases. He considers that the injury of the optic nerve does not occur by pressure but is due to a disturbance in circulation and nutrition.

D. R. Campbell.


(6) Lyons reports two cases of staphylococcal cavernous sinus thrombophlebitis which recovered on being treated with a combination of heparin and chemotherapy.

The first case was a female aged 31 years with a nasal furuncle. She had been treated with sulphanilamide at home for three days before entering hospital. Findings on entry are summarized in Table I and the clinical course in Chart 1. Briefly the treatment was as follows: 1st hospital day, heparin and sulphapyridine started; 4th hospital day, sulphathiazol substituted for sulphapyridine: 11th hospital day, pulmonary infarct; 17th hospital day, heparin stopped after a total dosage of 225,000 units; 20th hospital day, sulphathiazol stopped; 34th hospital day, clinical signs of meningitis confirmed by lumbar puncture, sulphapyridine started; 49th hospital day, meningitis still present, sulphathiazol substituted for sulphapyridine; 57th hospital day, afebrile and symptomatically improved; 77th hospital day, discharged, taking sulphathiazol. On discharge there was a partial IIIrd nerve palsy and a complete VIth nerve paralysis on the right side. Chemotherapy was continued for a total period of four months. At the time of reporting the only "apparent residuals of the illness are a slight ptosis and high voltage fast brain waves in the electro-encephalogram."

The second case occurred in a male, aged 41 years, who also had a nasal furuncle. Sulphapyridine was started on admission; 4th hospital day, heparin begun; 5th hospital day, pulmonary infarct; 11th hospital day, sulphathiazol substituted for sulphapyridine; 19th hospital day, heparin stopped after total dosage of 580,000 units.

In each case the pulmonary infarct healed uneventfully. Bacteraemia persisted for eight and six days respectively, and ten days of treatment were necessary before clinical improvement was definitely reassuring as to final outcome.

Both patients developed palpable thrombosis of the frontal veins. Intra-cranial infection persisted for many weeks after the external evidence of infection had subsided. This was controlled by chemotherapy alone.
Cranial nerve palsies, demonstrable at the height of the disease, cleared up very well during convalescence.

Sulphapyridine is known to diffuse into the spinal fluid more effectively than sulphathiazol. "Apparent recovery and omission of chemotherapy in the first case was followed by the development of chronic staphylococcal meningitis which did not respond to sulphapyridine but did respond to sulphathiazol. Full sulphathiazol dosage sufficient to maintain a blood level of 5 mg. per cent. was needed to control this meningitis . . . Sulphathiazol in adequate dosage appears to be the drug of choice in this type of infection. . . . The combination of chemotherapy and heparin in these two cases has given better results than has been observed with chemotherapy alone."

Photos showing Case 1 on admission and nine weeks later, and Case 2 on admission and four weeks later are included.

Twenty thousand units of heparin were added to 1,500 c.c. of isotonic saline or glucose solution and administered by constant intravenous drip a rate sufficient to maintain the clotting time of the blood at about 90 minutes as determined by the five tube method.

R. R. J.


(7) In this article Friedenwald gives an excellent summary of recent work on glaucoma of which a considerable amount has been carried out by him and his co-workers. The first important observation on the formation of the aqueous was made by Wessely, who was able to show, with fluorescein, that the concentration of the dye in the aqueous was equal to that in the diffusible fraction of the blood. This laid the foundation for work by others who showed that the composition of the aqueous resembled that of the non-protein fraction of the blood plasma. That thermodynamic forces are not the sole means of production of the aqueous has, however, been shown in recent research work. Thus Duke-Elder and his co-workers have shown that after proper precautions, not only the chloride but also the sodium ions and the total crystalloids of the aqueous are present in an amount 2-4 per cent. greater than would be expected on physico-chemical grounds. One explanation for this discrepancy is that water may be lost through the cornea, another that oxygen and carbon dioxide may penetrate the cornea with sufficient velocity to affect appreciably the partial pressure of the gases in the aqueous. Even if the chloride discrepancy can be explained, however, there remain far bigger discrepancies with regard to other substances, Ascorbic acid for example, has been found in the aqueous in a concentration at least ten times as high as in the blood, although these concentrations rise and fall together,
showing that the ascorbic acid in the aqueous is derived from that of the blood. Another substance, hyaluronic acid is present in the aqueous in appreciable concentration although not demonstrable at all in the blood.

There is thus evidence of a secretory activity in the formation of the aqueous, though this does not necessarily affect the watery fraction. The intervention of some other factor in aqueous formation is further shown by Robertson's observation that there was no rise in intra-ocular pressure during nephrotic oedema when the protein osmotic pressure of the blood was extremely low, nor was there any fall when recovery ensued and the protein osmotic pressure of the blood rose again. Similar phenomena occur in cardiac decompensation, when increased venous blood pressure develops without any corresponding rise in intra-ocular pressure though the cerebro-spinal fluid pressure may go up to 500 mm. of water. The stability of the intra-ocular pressure under these varying circumstances indicates the existence of regulating mechanisms. One of these is the iris, another, Schlemm's canal. With regard to the iris, its endothelium has been shown to be actively phagocytic towards colloids, both foreign and native, and these substances can therefore be regarded as being "secreted" out of the anterior chamber; towards water, the iris probably acts as an inert semi-permeable membrane. With regard to Schlemm's canal, recent work by Scholz and the author shows that blood cells and plasma can be present in it in the undisturbed eye and that if they are present in increased amount, as after the instillation of ammonia or in the presence of congestion of the anterior ocular vessels, hypotension is produced, presumably by osmotic attraction of fluid from the aqueous. On the production side, work by the author and by Steihler has shown that the ciliary processes are secretory organs of considerable complexity, and that at any rate in the guinea-pig, they require adrenalin or some similar substance for their activation, so that in this animal at least, the ciliary processes fall into the line of other adrenergic organisms. This observation forms rather a pretty contrast with the mechanism for drainage of the aqueous whose efficiency is increased by dilatation of the anterior vessels of the eye, presumably a response to a cholinergic mechanism. It may also help to explain the occurrence of glaucoma after exposure to cold, or in times of mental stress and anxiety.

F. A. W-N.


(8) Irvine, in this article, reviews the histories of 63 cases of sympathetic ophthalmitis recorded at the Massachusetts Eye and Ear Infirmary between the years 1922 and 1935. Contrary to the
opinion held in some quarters, sympathetic ophthalmitis is by no means a very rare disease since the figures show that it occurs in 1 per cent. of cases where there has been traumatic perforation of the globe. Of these, in 37 per cent. of the proved cases and in 31 per cent. of unproved cases, the disease followed operative procedures. There was no record of sympathetic ophthalmitis occurring without there having been operative or traumatic perforation of the globe prior to its onset. As showing the difficulty in excluding perforation of the globe in cases thought to have arisen without previous injury, a case of Anderson's is quoted in which it required serial sections before a small needle sized puncture could be revealed. Pyogenic infection in the exciting eye does not necessarily protect the fellow eye from developing sympathetic disease, since there were two instances of this occurring in the proved and two in the unproved cases. In all proved cases, there was incarceration of uveal or lens tissue in the wound, except for one in which the wound was not described. The majority of the post-operative cases followed cataract extraction, but it is noteworthy that in the glaucoma series of eight, no fewer than four had had the operation done for haemorrhagic glaucoma, a point in favour of enucleating such eyes if the fellow one has serviceable vision. In the cases under review, the average incubation period was eight weeks, in three it was as short as three weeks. In six cases, symptoms developed after enucleation of the injured eye, the interval ranging from 7 to 28 days. From these observations, the author concludes that enucleation must be done within two weeks of the injury if sympathetic ophthalmitis is to be prevented. After analysing the clinical records of the cases under review, the author suggests that the course of sympathetic ophthalmitis runs somewhat as follows:—specific infiltration in the region of the wound in the exciting eye, resulting in plastic inflammation, subsequent transference of the disease to the posterior segment of the sympathising eye, as shown by the early appearance of keratic precipitates, almost simultaneous involvement of the anterior segment of the exciting eye (iris adhesion, aqueous flare), followed by posterior involvement. This course of events may have some diagnostic value, since uveitis occurring in one eye subsequent to trauma in the fellow eye is unlikely by a 10 to 1 chance to be sympathetic disease if keratic precipitates do not appear first in the uninjured eye. The author's conclusion with regard to enucleation of the exciting eye is that it cannot be said to lessen the severity of the disease or to shorten its course; he therefore recommends retention of this eye, if potentially useful. For treatment, he advises in addition to local measures, the injection of diphtheria antitoxin by Verhoeff's method. The percentage of cases retaining useful vision is about 50.

F. A. W-N.