Save for an allusion in the obituary published by the Royal Society, Purkinje's observations seem to have been completely forgotten. The rest of Thau's paper deals with the early history of the ophthalmoscope. He gives some interesting letters from Helmholtz written to his father, and refers to William Camming's observations in the late forties of last century, but omits any mention of Babbage's ophthalmoscope, which antedated that of Helmholtz by three years. The paper is illustrated by pictures of Purkinje, Helmholtz, Czermak and among other subjects figured is a convenient diagram illustrating the ophthalmoscopic methods of Purkinje, Helmholtz, and Ruetü. We shall look forward to the publication of Dr. Thau's book and offer our congratulations on this first instalment.

ABSTRACTS

MISCELLANEOUS


(1) Mann and Pullinger contributed this very important paper to the meeting of the section of ophthalmology, Royal Society of Medicine, on September 26, 1941. Rabbits are suitable for experiments since "they reproduce lesions almost identical with those seen in man, though they require a larger dose to do so. The pathological processes are speeded up in proportion to their shorter expectation of life, and since the life of a rabbit is roughly one-tenth that of a man, a result which would take ten years to develop in a man may be obtained in a rabbit within a year." It is not an easy paper of which to give an abstract and those who were not present at the meeting would do well to read this paper in full.

The course of mustard gas lesions of the rabbit cornea compiled from observations on 138 eyes is set out in tabular form and a similar table has been constructed to show the course in man, compiled from observations on 65 cases.

It will best serve the purpose of this note if we abstract the latter table relating to human observations. After exposure to mustard gas there is no immediate sensation but exposure is later followed by a burning sensation and hyperaemia and lacrymation come on in 2-6 hours. Thereafter, the table divides cases into three groups (1) very mild cases; (2) mild cases; (3) severe cases. In the first of these the lids are not closed, the conjunctiva is hyperaemia, the cornea is normal in 24 hours and the condition clears up within a week. In the second group of mild cases there is injury to the
epithelium, punctate staining, hyperaemia and oedema of lids and epithelium. The eyes are partially closed 3-4 days. The condition clears up in 4 days to 6 weeks and the case is left with a healed corneal lesion which will not relapse.

In the third group of severe cases there is hyperaemia of the conjunctiva, oedema of epithelium and substantia propria with damage to the limbal blood supply; also oedema of lids and the eyes are closed after 8 hours. From now onwards the table is arranged in two columns (1) severe cases; (2) very severe cases. In the less severe cases the eyes open at 5 days, there is then onward subsidence of primary oedema and beginning sub-conjunctival haemorrhages; this stage lasts 3-5 weeks and is followed by vascularization and secondary oedema for another 8 weeks or more. The state finally subsides and will probably not relapse.

In very severe cases the eyes are closed for 7 weeks, there is persistance of oedema, increased and repeated vascularization which may last 2 months to a year and may then end in one of three ways: the first, subsidence with vascular scar. Such an eye is unsafe and the condition may break down from one to six years. In the second class, cholesterin and fatty degeneration make their appearance and recurrent ulceration may go on for 6 to 20 years. The last class consists of perforation and phthisis bulbi.

There is a coloured plate and six other plates which have been well chosen and admirably reproduced.

R. R. J.


(2) Livingston reviews recent work on dark adaptation and refers to the extreme complexity of the subject. He says that for the examination of Air Force personnel it is clear that “a binocular test should provide the basis for examination . . . . so different can be the characteristics of two eyes, it is not possible without examining very great numbers to produce evidence to substantiate the claim made for monocular tests.”

In describing a technique developed for the R.A.F. he states that the requirements appeared to be best met by creating an apparatus which:—

“a. Provided for a condition of preliminary preparation that caused no abnormal sensations, and acted as a passive introduction to the test itself.

b. Examined 6 personnel at a time, and could deal with 72 in the course of the day, by testing seven groups in the morning and five in the afternoon.

c. Produced a number of stimuli for solution, thus providing a wide scatter for the assessment of results.”
"When a subject is dark adapting two phases can be differentiated. The first is associated with the reactions taking place in central, photopic, or cone vision; a curve can be plotted which occupies approximately the first ten minutes. After this, central vision, having attained its highest value, resigns its effectiveness in favour of a curve of different character. This, the curve of paracentral, scotopic, or rod vision, goes on to attain its perfection in approximately 60 minutes from the commencement of the test."

The instrument adapted to the requirements of the R.A.F. is a rotating hexagon 24 in. high, with four rectangular apertures in each face. The apertures associated with the standard test are those in the middle and bottom sections. In the middle section are two identical apertures separated by one inch, while the bottom aperture is single. Behind each panel is a white flashed opal screen, visible only in the apertures. The screens can be moved up or down by means of knobs, so that objects etched in black upon them can be readily altered. It is thus possible to change the objects visible in each panel. By rotating the hexagon on its base all six panels can be presented to the same observer. Each panel contains 16 objects for analysis, there are therefore 96 possible combinations. The middle apertures contain 3 letters each, set either normally or in an abnormal position. In the bottom aperture are two objects such as an aircraft, an arrow, or a cross. The top panel is only employed when consideration is being given to the examination of possible malingerers. Each section of the hexagon is lighted by a central single electric 12-volt lamp of 4 watts, surrounded by a blue filter, so as to reduce the red effect of the lamps. Each lamp illuminates the six sides of its own section, so each observer examined is subjected to the same brightness level. The observer sits one yard from his panel. The visual angle subtended by the letters and objects at this distance, when taken separately, is not sufficiently large to stimulate the rod area, but when seen in groups as designed, the angle subtended is one of 6°, therefore meeting all requirements.

The candidates are prepared by wearing dark goggles of equal transmission for half-an-hour before entering the test room, in this way the six examinees are in a comparable state of adaptation. They enter the room, from which all light can be completely excluded. Some points about the test are explained while the room is still illuminated. The light is then turned out, and the subjects, taking off the dark goggles, remain in complete darkness for a further 15 minutes. This total period of preparation, viz. 45 minutes, is considered fully sufficient for accurate comparison. Each subject is given a board on to which a Braille type card is clamped. A central metal strip, provided with buttons, which are easily differentiated in the dark, provides a means for localization and pencils are attached. What the examinees have to do is next
fully explained during the 15 minutes when they are in complete darkness. Scoring is done by giving a mark for each correct answer. The examinee writes on the left side of the Braille card the objects recognized; on the right side of the card he writes what he can make out of the letters.

It is of interest to note that "at the extreme end of the scale it has been found that approximately 3-5 per cent. of personnel record between 30 and 32 marks, while 2-5 per cent. score less than 2 marks. Between these come the main body of all subjects of the ages 18-30 years; the peak lying in the region of 20 marks."

The author ends this instructive paper by general considerations, such as the night sky, the influence of oxygen on night visual capacity and visual preparation for night flying. A short summary concludes the paper, together with a list of references. The paper is illustrated by a couple of graphs, a photo of the hexagon, the examinee and the controller, with an enlarged facsimile of the Braille recording card. There are also cards showing (a) the highest score possible 32/32; (b) a poor result, 2/32; (c) a score of 23/32 representing at ground level in the average group; and (d) a score showing the effect of oxygen want upon night vision in the same subject whose card was c, where the score was reduced from 23/32 to 6/32.

R. R. J.

BOOK NOTICES


In his preface to this admirable monograph Alan Woods states that it is the custom in the Johns Hopkins Hospital for orbital tumours to be divided into two groups. The anterior ones, where there is no reason to suspect an intracranial extension, are removed by the conjunctival or upper orbital route, the others are referred to the neuro-surgeon who employs a transfrontal approach opening first the skull and then removing the roof of the orbit. By this means intracranial extensions can be more adequately dealt with and infection avoided. Although removal of the orbital roof might be expected to produce a pulsating exophthalmos, this did not occur.

The main part of the book consists of an account of 31 cases giving full details of signs, symptoms and operative procedures, with illustrations remarkable for their clearness. These cases are described in such a graphic manner, that they make fascinating reading, very different from the usual case records, and they certainly provide a strong argument for the transcranial approach to orbital tumours.

This monograph will be eagerly read both by ophthalmic and by cranial surgeons.