

some traumatic surgery resulting from local accidents, alcoholic excess, assaults, and the acts of fools.

In June, 1942, and the few anxious months which followed and preceded General Montgomery's offensive at Alamein, it was my privilege to command a rifle company in defence of the hospital against attack from parachutists, fifth columnists, and any native rioting, should this arise. Much attention was paid to key points, fields of fire, and other features of such co-ordinated aggression as we could bring to bear against any opponents.

Such things are temporarily interesting distractions from the small but very pleasant field of eye surgery.

I am indeed grateful to Cpl. W. Buyers, the eye department orderly, whose industry, resourcefulness and constant good humour did so much for our patients and the efficiency of the team.

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A SIMPLE METHOD FOR THE EARLY DIAGNOSIS OF ABNORMALITIES OF THE PUPILLARY REACTION

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AN early diagnosis of disturbances of the pupillary reaction in diseases of the central nervous system is frequently extremely difficult. Only complicated apparatuses with cinematographic registration—only available in a few large research departments—can with certainty establish early disturbances of the pupillary reaction; the neurologist has usually to content himself with vague expressions as "pupillary reaction perhaps somewhat sluggish": which do not mean anything definite to him. A disturbance of the normal mechanism of the pupillary reaction, however, is frequently one of the earliest symptoms of a disease of the C.N.S., and of great importance for the diagnosis.

An accidental observation made during slit-lamp examinations demonstrated a way to detect these early disturbances. External factors made it impossible to observe more than a very small number of neurological cases; but these 10 or 12 cases were so convincing and the method seems to be so valuable that its publication may be justified.

If a fine pin-point light is projected on the eye with the slit-lamp in such a way that it just enters the pupil near the margin of the iris a light reaction follows, the pupil contracts. That means that the iris margin moves towards the centre of the pupil and prevents the light pencil from entering the pupil. As no light now reaches the retina the stimulus for the contraction of the pupil is no longer present, the pupil dilates—and thus again allows the light pencil to reach the retina. The whole mechanism starts again, the pupil contracts, screens off the light pencil, dilates, allows the light pencil to pass, etc. This artificial "hippus" continues regularly in a normal eye so long as the light pencil enters the pupil. Physiological differences such as age, colour of the iris, errors of refraction, etc., have no influence on the reaction. Elderly persons and those with dark irises show less extensive movements; but in every normal person the reaction is easy to produce: the pupil contracts and dilates ten times in 7 to 8 seconds, which can easily be measured by the stop-watch. The time of 0.7 to 0.8 seconds for one cycle of the "hippus" corresponds with the physiological figure for the pupillary "reflex": the "reflex time," *i.e.*, the latent period plus contraction time is in the region of 0.8 seconds. In the method described the contraction does not reach its maximum because the stimulus disappears before it is reached, and the contraction time is therefore shortened. This means that the time of 0.7 to 0.8 seconds consists of (1) the latent period, (2) the shortened contraction time, and (3) the re-dilatation time. A disturbance of any one of these three periods would be expected to slow down the "hippus"; this, however, did not occur in the pathological cases so far examined.

In the cases of latent syphilis, early tabes, etc., with clinically normal pupillary reaction the artificial hippus could never be produced by the slit-lamp. Usually a good if not extensive contraction followed the first stimulus; but then, either the pupil did not dilate sufficiently to let the light pencil enter the eye, or a few irregular, sluggish contractions followed, after which the pupil finally remained immobile. In no case could the regular play of the normal pupil be produced.

As previously stated, these results seem convincing enough to justify their preliminary publication. Certainly many ophthalmologists have observed the artificial "hippus" on the slit-lamp; it is simple to demonstrate. A large number of cases of, for example, early tabes, with apparently normal pupillary reaction, should be examined with this method. If the results of these investigations are found to agree with my observations, this method might then become a useful diagnostic aid for the physician.