letters of medium difficulty, the number of mistakes made in their recognition being approximately equal. The letters in the case of Green's type were D, F, H, N, P, T, U, X, and Z. We recommend that these letters be alone used on the test card.

5. These letters of medium difficulty were recognized, without any mistakes, when they were placed at such a distance that they corresponded to Snellen's fraction of $6/3$. We, therefore, recommend further that lines of type corresponding to $6/4$ and $6/3$ be incorporated on the test card.

PRELIMINARY COMMUNICATION ON INJURY AS A CAUSE OF DIABETES INSIPIDUS WITH BITEMPORAL HEMIANOPIA

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DURING the late war four cases of wounds involving the chiasma have come under my observation, one of which is worth recording

FIG. 1. CASE I.

on account of the accompanying symptoms, especially the occurrence of diabetes insipidus.

This case was that of an officer wounded on March 22, 1917, by a bomb explosion. He was unconscious for 20 days following the injury, which was over the right eyebrow. At the end of a month the following symptoms were observed: bitemporal hemianopia (Fig. 1), diplopia, polydipsia, polyuria (from 4.5 to

9 litres in 24 hours), falling of hair, loss of sexual appetite, anhydrosis, staggering gait, marked asthenia, anosmia, deafness of the left ear and loss of sensation with absence of reflex of right cornea. R.E. V. 6/24; L.E. V. 6/9.

Urinary analysis was as follows:—Specific gravity, 1,004; no sugar or albumin.

Blood examination showed:—

Lymphocytes		31.8 per cent.
Large mononuclear lymphocytes...	2.3	„ „
Transition forms		4.5 „ „
Polynuclear neutrophiles		60.4 „ „
Eosinophiles		1.0 „ „

The patient has remained under my care for the last 3 years and has been treated by electricity and injections of pituitary gland. He has improved considerably and can walk well and feels much stronger. The bitemporal hemianopia and the polyuria have remained unchanged, and there has been no improvement in the left labyrinthine deafness and the general sensation of cold, especially in the feet. Radiographic examination only shows a relative enlargement of the sphenoidal sinus.

The chief importance of this observation lies, in my opinion, in the coincidence of the bitemporal hemianopia with the diabetes insipidus and the common cause of both of them. Doubtless the shock of the injury was conveyed from the right eyebrow to the sella Turcica and the left petrosal bone, and so produced a lesion of the chiasma, the hypophysis, and the left labyrinth. The affection of the right oculo-motor and optic nerves may be regarded as a secondary inflammatory lesion.

Such a lesion caused a bursting fracture of the base of the skull and must have acted in a crossed direction with regard to the fronto-occipital line; the line of fracture would necessarily pass through the sphenoidal sinus and the sella Turcica, and so injure the hypophysis. That the hypophysis was affected is shown by the loss of hair and sexual appetite, muscular weakness specially affecting the legs (he was unable to walk), and in particular by the polyuria, a symptom which has been produced experimentally by lesions of the pars intermedia.

As regards the connection of diabetes insipidus with lesions of the hypophysis, the question arises why this symptom is not always present in disease of that structure. In the absence of post-mortem evidence it is difficult to say, but speaking from a clinical point of view, I consider that much depends on the nature and situation of the disease. I have observed two other cases of bitemporal hemianopia, in one of which diabetes insipidus was present, but not in the other. In both cases there was a tumour

of the hypophysis. The case in which diabetes insipidus was present had a sudden onset with intense headache. Forty days later vomiting set in, with failure of vision. Thirst was complained of and water was passed three or four times a night. Pains on the top of the head and about the waist were also present, and there was occasional diplopia. Sweating ceased, and all sexual desire was lost. The patient slept much and complained of feeling very weak and cold. The visual field showed bitemporal hemianopia with a relative central scotoma for colours (Fig.2). Right and left vision was 6/60, and left pupil was larger than right.

Urinary examination showed a specific gravity of 1,005, no sugar or albumen; 6 litres in 24 hours. A radiograph showed no abnormality in the neighbourhood of the sella Turcica.

FIG. 2. CASE II.

In this case the symptoms are exactly the same as in the traumatic case first described, bitemporal hemianopia, diabetes insipidus, anhydrosis, the sensation of cold and the absence of sexual desire. In addition, there is the headache due to compression from the tumour.

The third patient was a doctor of philosophy who noticed a dark spot before the left eye accompanied by headache on July 11, 1913. Four days later he suffered from noises in the ears, loss of equilibrium and vertigo. Marked sweating, together with bleeding from the nose were also present. A week later he had improved, and 2 months after the onset of the disease consulted me on account of the failure of vision. His vision was then 6/60 in each eye.

The visual field showed bitemporal hemianopia with bitemporal

hemiachromatopsia (Fig. 3). Pupillary reaction was good, but the left pupil was larger than the right.

There was no polyuria, and the urine was normal, with a specific gravity of 1.014. Pulse was slow (60).

As there was a history of a chancre, although the Wassermann reaction was negative, treatment with salvarsan, mercury and strychnine was tried. His vision improved to 6/24 in the right eye and 6/18 in the left, but the headache remained. Sight again failed in 1914, and on April 23 of that year he was operated on by Professor Neumann in Vienna for tumour of the hypophysis. After the operation his sight immediately improved and remained good until the end of 1919, when the left eye again failed. The pupillary reaction to light was then lost, though that to accommo-

FIG. 3. CASE III.

dation and convergence remained. The right pupil was greater than the left. The temporal half of the left disc was pale. R.E. V. 6/9, L.E. V. counts fingers at 20 cm. He was unable to read on account of the scotomata (Fig. 4). His temporal visual field was less clear than the nasal one. Objects in the temporal half were seen as through a fog. A fortnight later the fields were as shown in Fig. 5.

In this case there was no diabetes insipidus in spite of the existence of a hypophyseal tumour. The case is also interesting on account of the absence of a definitely limited hemianopia and the return of almost normal vision after operation. Although the vision recovered at once the headache persisted for a fortnight. The operation was followed by right hemiplegia and aphasia which lasted a year to a year and a half, and he has still some difficulty

in articulation. The immediate improvement in vision was followed by a relapse in which the fog on the temporal side

FIG. 4. CASE III.

reappeared and he was unable to read as the letters danced before him. This dancing of objects and constant movement I have also seen in a case of cerebral hernia in the occipital region.

FIG. 5. CASE III.

In October, 1919, he again noticed a dark patch before the left eye which projected in the form of a cone over the nose to his right side. After a rest the patch lost its dark colour and became greyish and vision improved.

A radiograph then showed extensive change in the neighbourhood of the sella Turcica. One anterior and both posterior clinoid processes were destroyed.

The development of the hemianopic symptoms in this case show that both before and after the operation, in spite of the long duration of the disease, the affection of the chiasma was not so definite and advanced as in the first two cases.

In this case the first definite symptom observed pointing to hypophyseal disease was, as in the first case, the loss of equilibrium accompanied by weakness of the feet. The headache, which in these cases is always felt on the top of the head, was due, as in the second case, to the pressure of the tumour. As there was no other definite symptom of disease of the hypophysis, had it not been for the operation, the diagnosis might well have been one of cerebral syphilis.

Conclusions

1. The importance of bitemporal hemianopia as a symptom of disease of the hypophysis.
2. The nature of the headache which radiates from the central parietal region to the top of the head.
3. The unsteady gait accompanied by weakness of the feet.
4. In cases in which diabetes insipidus is present the constant sensation of cold, especially in the feet.

Other symptoms, anhydrosis, loss of hair, absence of sexual appetite and acromegaly are not always present. The physiological function of the hypophysis must be a very complex one, either in itself or in its relations to the other endocrine glands and the nervous system.

COUNCIL OF BRITISH OPHTHALMOLOGISTS— REPORT ON SIGHT-TESTING BY OPTICIANS

IN 1906, and again in 1919, opticians have made application to the Legislature that their craft may be legally recognized for the purpose of sight-testing, and it is consequent upon these efforts that the Council of British Ophthalmologists has thought it desirable to consider the matter in the interests of the general public.

Training of opticians

The Council would warmly welcome any scheme which would lead to greater efficiency in the making and fitting of spectacles. It fully recognizes that there is a very definite need for a greater