was $\frac{3}{8}$, but there was a central scotoma for green. The left eye happened to be much more seriously affected, and had vision of $\frac{3}{8}$ only, with central scotoma for form and colour. Even at the present time this man, quite unfit for duty, could easily pass the tests, provided he did not voluntarily elect to take the higher standard of form vision test, which is not compulsory till January 1st, 1914. For, with $\frac{3}{8}$ in one eye, whatever the state of the other, it is not necessary to use the pellet test.

The large number of rejections of candidates with normal colour perception by the examiners may be partly explained by reference to page 43, where Clause (5) states that the examiner "should note any incorrect skeins selected and withdrawn or seriously handled or compared with the test skein by the candidate," and report to the principal examiner. My experience is that the less intelligent class of candidates with normal colour perception always handle and select incorrect skeins, and that it sometimes takes much explanation to prevent this being done. The following is a case in point:

CASE III.

In November, 1909, a lad, who had just been rejected as colour blind in a Board of Trade examination, was brought to me by the family medical attendant, who witnessed the boy make several glaring mistakes in matching the Holmgren wools. Recognizing, however, that the mistakes were due to stupidity, I showed him coloured lights, which he named correctly in every case. On my advice he appealed, and successfully passed the examination in London.

Since November 1st, 1909, two additional test skeins—purple and yellow—have been added to the Holmgren test by the Board of Trade, thus stultifying the statement still given at page 42 that the colour vision is tested by means of Holmgren's wools. The addition of these two colours seems to be a tacit abandonment of the Young-Helmholtz theory of colour vision and the adoption of that of Dr. Edridge-Green. With its added complications, however, my expectation that this "improvement" in the hands of laymen would still further increase the proportion of "normal" rejections has been fulfilled. One of these cases is as follows:

CASE IV.

On January 10th I saw a fisherman who had been rejected for colours. On testing him, I found that he performed the Holmgren test correctly, and that he made no mistake with coloured lights, so I advised him to appeal. On February 15th I received a note from him stating that he had passed the tests in London.

The matching of a blue with the purple skein, or even an orange-yellow with the yellow, would necessitate the rejection of a candidate by a lay examiner who acted according to his instructions!

CASE V.

In January I examined a mate, who obtained his ticket two years ago, and who was about to apply for a skipper's certificate. He matched pink and blue, also yellows, drabs, and greens; he said yellow was green. When tested with coloured lights, he called white green three times, but made no mistakes with red and green.

CASE VI.

The father of this mate, who had been a trawl skipper for twenty-one years and is still on duty, was present at his son's examination. As he evinced no surprise at his son's mistakes, I managed, much against his will, to get him to submit to a superficial test. He also matched pink and blue skeins; moreover, he called a blue light green, and a green blue several times.

CASE VII.

In August last a man who held a second fisherman's certificate was rejected on applying for a mate's certificate. When tested by me with wools, he matched green and grey; pink and blue; red, green, and brown. With lights, he called dull-white green; red was also called green, and green was called red and also white.

CASE VIII.

In August, 1909, a fisherman, applying for a second hand's certificate, was rejected for colours. When tested by me, he matched pale-green with bluish confusion colours. Tested with lights, he called blue green, and green white regularly. Red he named correctly.

The following case, seen in December, 1909, illustrates the importance of the increased stringency of the form vision standard ($\frac{3}{8}$ in one eye and $\frac{1}{2}$ in the other) which was advocated in my paper in the *Ophthalmoscope*, but which is not compulsory till January 1st, 1914. (The old standard is barely $\frac{1}{12}$ with both eyes open and not tested separately.)

CASE IX.

In December, 1909, an A.S., aged 29, failed to pass the sight test at a navigation school.

His vision tested by me was:

Right, $\frac{3}{8}$ Hm 2 D. = $\frac{3}{8}$.
Left, $\frac{3}{8}$ Hm 5 D. = $\frac{1}{2}$ 3 letters.

Many hypermetropic cases of this nature could easily pass even the improved standard, and it is only a matter of time for failure of accommodation to cause unfitness for duty.

CASE X.

In February, 1909, a trawler went ashore in a snowstorm shortly after being left in charge of the mate, whose vision after the accident was:

Right eye, $\frac{3}{8}$ and J. 14. Convergence of 25 deg. and amblyopic.
Left eye, $\frac{3}{8}$ partly — 1 D. = $\frac{3}{8}$ partly.

This eye showed traces of old keratitis; a cycloplegic made no material difference to the refraction. Colour perception was normal.

CASE XI.

In February, 1909, I saw a mate who had been taking his turn of watch on a trawler until one week before the examination. He had had misty vision for three weeks, worse in sunlight. His vision was as follows:

Right eye, $\frac{3}{8}$. Central colour scotoma; disc pale.
Left eye, $\frac{3}{8}$. Central scotoma for green and red.

He smoked 2½ oz. of shag per week.

The following case will make an interesting finish to the present series:

CASE XII.

In December, 1908, I saw a fisherman who had obtained his mate's certificate, which, however, had been subsequently taken from him on failing to pass an eyesight examination. When tested with Holmgren's wools, with pink he matched yellow, with pale green he matched greys and browns. When tested with coloured lights, he called blue green, dull white red, dull red green, also green he called white. Consequently I refused to give him a certificate of fitness. Some time after he came back and told me the following story:

Being refused leave to appeal, he re-entered for the eyesight examination under an assumed name; he passed all three tests—form, colour perception, and colour ignorance—under a different examiner and obtained his certificate; he then wrote and informed the officials what he had done, whereupon he was summoned to a fresh examination and was rejected, the certificate being taken back.

In view of the undoubted possibility of dangerously colour-blind candidates passing the Holmgren wool test, and also of the frequent calling of white light red or green by certain classes of the colour blind, greater attention should be directed in future to Dr. Edridge-Green's wools and lamp, which provide for these and other contingencies.

A NOTE UPON PHLYCTENULAR AFFECTIONS OF THE EYE.

BY

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THE view that phlyctenular affections of the conjunctiva and cornea are tuberculous is an old one. The earlier writers spoke of the affection as "strumous" or "scrofulous ophthalmia," a name which indicates clearly enough the view held by them with regard to the origin of the disease. But with the more or less general abandonment of the vocable "strumous," which marked the era following the discovery of the specific micro-organism of tuberculosis by Koch in 1882, there came a corresponding giving up of the word as applied to those affections of the eye. The suggestion made many years before by the famous Glasgow oculist, William Mackenzie, that for "strumous" the word "phlyctenular" should be substituted, was very generally adopted, except perhaps in Germany, where the disease is usually spoken of as "eczematous" conjunctivitis or keratitis, as the case may be.

The pendulum has now swung in the opposite direction. The tuberculous or para-tuberculous origin of phlyctenular disease, after having been under a cloud for a good many years, is again to the fore. Nobody asserts that the

phlyctenule itself is of tuberculous histological structure, or that it contains the tubercle bacillus. Nevertheless, it is now widely believed that, practically speaking, the characteristic lesion occurs only in those who are the subjects of tuberculosis, latent or otherwise.

The main facts that have led to this change of opinion are:

1. The frequency with which a family history of tubercle can be obtained from the subjects of phlyctenular disease.

2. The frequent coexistence, along with phlyctenular disease, of other manifestations of tuberculosis—as, for example, enlarged glands or joints, otorrhoea with or without mastoid disease, phthisis pulmonalis, dactylitis, and scrofuloderma.

3. The fact, as shown by the experimental work of J. B. Nias and Leslie Paton,¹ that the blood of patients suffering from phlyctenular disease behaves in a manner which is typical of a definite tuberculous infection. As the result of examination of the blood in upwards of fifty patients with phlyctenular disease, these authors claim that their observations of the opsonic index go far to support the hypothesis that phlyctenular ulcers are due to the escape of attenuated or dead bacilli from some distant focus, identified or otherwise, of tuberculous disease.

4. The positive result obtained in phlyctenular cases by employing the Koch, Wolff-Eisner-Calmette, von Pirquet, or other specific test for tubercle (Stephenson, Derby, Weekers, etc.).

The observations with von Pirquet's test recently made by us at the Queen's Hospital for Children, London, confirm the view that phlyctenular disease is a tuberculous manifestation, or, at least, that it occurs in tuberculous subjects. During the last few months we have employed the von Pirquet vaccination in 20 cases in children, whose ages have ranged from 2 to 12 years. The series has included five males and fifteen females. Practically every kind of phlyctenular disease was experimented on, varying from recent conjunctival or corneal eruptions to long-standing scars upon the cornea, which had almost certainly resulted from former attacks of phlyctenular inflammation. The cutaneous reaction, of course, varied much as regards intensity, but the important point was that a positive result was obtained in every instance. In two cases, however, the inoculation was made more than once before a positive result was produced.

It should be added, finally, that a notable proportion of our cases, estimated at 50 per cent., presented more or less obvious signs of tubercle, medical or surgical, while an even larger proportion, estimated at 75 per cent., gave a family history of tubercle.

REFERENCE.

¹ *Trans. Ophthalmological Society*, xxvi, 1906, p. 232; and *Lancet*, December 1st, 1906.

A SERIES OF CASES OF CONGENITAL OPTHALMOPLÉGIA EXTERNA (NUCLEAR PARALYSIS) IN THE SAME FAMILY.

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"THIS series of cases came under my notice a short time ago, and is, I think, of sufficient interest for publication.

A youth of 21 (son A. in table) came to me with a small foreign body in his right eye, which was easily removed. He had marked ptosis on both sides, and on further examination I found that all the external eye muscles were paralysed. The only movement of which the eyeballs were capable was an almost imperceptible tremor when he made an effort to follow a moving object across the field of vision. The pupils both reacted perfectly to light and accommodation, and his sight was normal. He had served his time as a boilermaker, and had never had any difficulty in doing his work. He stated that he was "born like it," and that his father was similarly affected.

His father I also interviewed, and he gave me all he knew of the family history, which I have embodied in the accompanying table, in which cases are shown in italics.

The father, T. R., aged 57, a sailmaker, stated that he had been affected from birth, but had always had good eyesight.

When working he always held his head on one side, as it came natural to him to use his left eye most, owing to an external squint in the right eye. He had almost complete paralysis of both levator palpebrae superioris muscles and complete paralysis of all the external eye muscles, except the right external rectus, which had enough power to cause a small degree of external strabismus. The eyeballs were quite immovable, there being no tremor even when attempting to follow a moving object across, or up and down, the field of vision. The internal ocular muscles were normal and the sight good. He enjoyed good health, and so far as he knew there was no history of any diseases prevalent in the family.

He stated that his father and grandfather were both born with the same affliction, but had no squint, the paralysis being complete save for the internal ocular muscles (grandfather and great-grandfather in table). He had two uncles, one affected, one not. He had two aunts, neither affected. He had two brothers, one affected and one not; the one who was not affected died some years ago in an asylum. Of his own children he said:

I have had six. The first and third died in infancy, and so far as I know were not affected.

The second, my eldest son, is not affected. He is married and has two children who are both unaffected.

My fourth is the boy you have seen. (Son A. in table.)

The fifth, a daughter, is not affected.

The youngest, a boy, is affected, but not so completely as I am; he can raise his eyelids a little bit, but his eyeballs are fixed. (Son B. in table.)

It is interesting to note that so far as he can remember

1. No female member of the family has been affected.

2. No case has ever developed after birth, but all have been congenital.

3. The ptosis has been almost complete in all cases except that of his youngest son, who is the first of the series in whom the affliction has appeared in a lesser degree.

ON MUCOCELE OF THE NASAL SINUSES, AND ITS COMPLICATION BY OPTIC NEURITIS.

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DURING the last few years a considerable amount of attention has been given to affections of the nasal sinuses which cause ocular disturbance. In such cases the pathological factor is generally suppuration in the frontal or ethmoidal sinus, or in both, and the symptoms, if not clamant, are tolerably well marked. The three cases which I now record differ from the suppurative variety in that they followed a slow and unobtrusive course; nevertheless, they present points of interest and practical value, especially in regard to the close and important relationship between these sinuses and the eye.

Two of the patients were referred to me from the Ophthalmic Institution; and I have to thank Dr. Maitland Ramsay for supplying notes on the condition of the eyes, and for allowing me to publish the cases.

CASE I.—Mucocoele of the Right Ethmoidal Region causing Optic Neuritis.

K. G., aged 20, a laundress, was referred to me on May 28th, 1909, from the Ophthalmic Institution by Dr. Maitland Ramsay for nasal treatment. The patient, who looked strong and healthy and gave a good family history, had been employed in a public laundry for the previous six years. For three years she had frequently suffered from headache of the right frontal region, which yielded to powders obtained from her doctor, but she was unconscious of anything being wrong