NOTE ON TESTS FOR COLOUR BLINDNESS.¹

By KARL GROSSMANN, M.D., F.R.C.S.E.,
Ophthalmic Surgeon, Stanley Hospital, Liverpool.

At the last meeting of this Association at Glasgow I demonstrated some models of tests for colour blindness. Through various circumstances it has not been possible to have them turned out in large quantities up to the present. Meanwhile, some criticism has been brought against my tests. I should, perhaps, not have answered, considering that the criticism appeared in the lay press; but it was asserted to be backed up by a medical authority competent in the matter, but whose identity I am ignorant of. This slight controversy appears to me due to nothing else but a mere oversight.

Owing to the great difficulties which I met in the way of the practical multiplication of my models, and which were purely accidental from one cause or another, there were only a few sets made altogether. As I demonstrated at the Glasgow meeting, some of these twin-coloured tests were to be used by lamplight, some by daylight. I showed how, by means of pale greenish-blue glasses, the lamplight set could be changed into a daylight set, while a certain pale yellow glass held in front of the daylight set made it answer for gas or lamplight. It seems that these two sets have become mixed up, and the misunderstanding arose through the lantern not being supplied with the blue and yellow glass discs.

As far as the principle of the tests is concerned, I need not say anything here. It has been said in those criticisms to which I before alluded that Holmgren's test is the best because it is at once simple and infallible. It certainly is a simple test and a very good one, and I should not like to be without it; but infallible it certainly is not.

Not so very long ago a case came under my notice where a red-green blind person—well educated—acquitted himself perfectly well of the examinations (repeated ones) with Holmgren's wools, but failed to recognise some of my glass letters and other tests. I am sorry to have to keep the gentleman's name to myself, as he strongly objects to having his defect known; but for those who perhaps think my experience in this instance too exceptional I need only refer to similar experiences published by Professor Pflüger of Berne. He found in a post-graduate course on ophthalmology which he was then giving to sixteen army surgeons that there were two of them completely red-green blind, as proved by his own and other tests; but when tried with Holmgren's wools they made not the slightest mistake.

This may suffice to show that Holmgren's test is not sufficient for every case of colour blindness. Especially in the case of the educated we have to be extremely careful, and men who prepare for the command of a ship belong to this class.

I may just mention another point in connection with this, not of a very first-rate importance in itself, but not to be neglected when it comes to the examination of large numbers. In order to compare the quickness with which different tests could be applied I examined schools. For Holmgren's tests the average time for each schoolboy was about five minutes, so that not more than twelve could be tested in an hour. With the twin-coloured tests I could easily go through the tenfold number in the same time. Once the teacher, who soon very kindly helped me, hit upon a very expedient plan, when I wanted some colour-blind boys quickly for some other purpose. He took a few of my glass discs, held the sample disc up, and said to a class where no investigations had been held before: "You see this letter; it is a B. Write it down on your paper. Now, I hold up another letter; write down what this is." Up went four boys, who said they could not distinguish any letter at all; and these four were soon found to be red-green blind.

This shows that a considerable advantage may be derived from the promptness which my tests admit when perfect. The only drawback I have been able to detect up to the present is the difficulty in producing them, and the great amount of personal annoyance and fatigue they imposed upon me. For these reasons I have tried to modify them. Instead of the glass mosaic I tried to get patterns printed on gelatine, after the style of the imitation stained glasses. I have not been able to obtain any proper samples to be shown at this meeting to-day. It seems

as though manufacturers do not care to put themselves to great trouble for any scientific or other work which, to all expectations, "does not pay." I then made an attempt to have a sample letter printed in some twin colours, without any trace of gloss on them, and for this purpose I thought a white woollen material would be the most suitable. For this I had to go across the Channel to one of the best known firms in Saxony, and I have pleasure in showing you herewith the first batch, which I only got quite recently. The colours are not quite perfect yet, but it will be sufficient to show what can be done. I intend going to the manufacturer at an early date, and we may be able to obtain something good. These prints could easily be multiplied to any extent, would be cheap, and could be mounted in any suitable form.

I may add that this mode would have the additional advantage of allowing an edition of prints adapted to non-typical colour blindness, such as experienced in tobacco amblyopia, etc. At present I have not had time nor a sufficient number of cases to have settled the colours suitable for those defects.²

OPERATION FOR DEAFNESS AND TINNITUS, DUE TO IMMOBILISATION OF THE OSSICLES, AND FOR OTORRHOEA.¹

By SAMUEL SEXTON, M.D.,
New York.

I HAVE been led to operative procedures in otherwise irremediable deafness or otorrhoea largely by the increased facilities afforded us in examining the fundus of the ear by the electric light, and by the advantages in diagnosis through the use of illuminating and magnifying lenses, which can be easily applied to the aural speculum. By these aids one can examine the drum of the ear minutely, and operate on the delicate parts with the same safety as elsewhere. I cannot go into all the details of the procedures in these cases, but they can be found in my work on the ear.²

It has been found that in a large number of cases of purulency of the drum, with greater or less loss of the drumhead, and perhaps with old sinuses leading through the membrana flaccida into the atticus tympanicus, that a cure can scarcely ever be hoped for by the ordinary treatment. In these cases I remove the remains of the drumhead from the auditory plate and annulus by means of a small tenotome, and then detach the diseased anvil and hammer with forceps, after loosening their attachments and separating the incus from the stapes where they remain united. There is rarely any hæmorrhage where the granulation tissue has been previously reduced by treatment.

The principal results of the operation are the arrest of purulency, the drum cavity becoming lined with dry, whitish cicatricial tissue, and often a marked improvement in the hearing. In these cases the advantages of the most important principle of modern surgery is illustrated, namely, the establishment and maintenance of drainage, for in a few weeks, or months at most, according to circumstances, the parts healed, and the presence of a larger or smaller pus reservoir was done away with. It is surprising to observe in many cases the decided improvement in general health.

The operation in schlerosing aural catarrh, where immobilisation of the ossicles has occurred, does not differ greatly from the above.

The cases selected were (1) those where ordinary conversation could no longer be heard close by, or a sound tone of voice at a distance of from three to five feet, though the indications could not all, of course, be stated so briefly; and (2) where distressing noises in the ear and head existed in connection with more or less deafness. The results I have obtained in a three years' experience have been exceedingly gratifying; hearing was improved in greater or less degree—often very greatly—and in some very marked cases of tinnitus there had been a cure.

Perhaps the best test of one's results in these cases is the gratification shown by patients; their own experience is better

² Since the above paper was written, I have been engaged in designing a test on an entirely different principle, which will obviate the difficulties of manufacture referred to above, and which I hope to bring forward very shortly.

¹ Read in the Section of Ophthalmology at the Annual Meeting of the British Medical Association held in Leeds, August, 1889.

² *The Ear and its Diseases*. New York: Wood and Co. 1888.