A PLEA FOR AN IMPROVED VISUAL TEST FOR RECRUITS.

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That the "dot" test is but a very poor test of a recruit's vision will, I think, be conceded by all who have considered the question. For the testing of recruits this method was adopted over forty years ago, and the distance at which the dots were then required to be counted was 15 feet; in 1870 this was reduced to 10 feet, which is still the regulation distance, except in the case of Militia and Departmental Corps, where it is only 5 feet. Every army medical officer must be familiar with instances of men who are able to count the dots at the regulation 10 feet, but whose vision is so imperfect that as rifle shots they are useless.

By a War Office Circular issued in 1863, it was ordered that no man should be admitted into the service whose vision was such that he could not see a circular black figure, 3 feet in diameter, on a white ground, at 600 yards (or 1,800 feet). It follows that a man who can see a figure 36 inches in diameter at 1,800 feet, will be able to see at a distance of 10 feet a figure whose diameter is \( \frac{7}{10} \times 36 \) inches, or \( \frac{5}{6} \) inch. This is the basis of the dot test, each dot being slightly less than \( \frac{5}{6} \) inch, or about \( \frac{1}{3} \) inch in diameter. Such a standard corresponds to about \( \frac{6}{5} \) on Snellen's types; therefore, a man who can read only \( \frac{6}{5} \) at the types, or whose vision is only one fourth of the normal, will be able to read the dots at 10 feet; and conversely, a person whose vision is normal (\( \frac{5}{6} \)) will have no difficulty in counting the dots at 40 feet. In a good light, I have been able to get persons with normal vision to count the dots at a distance of 50 feet. Again, the dot test takes no account of visual acuity or sharpness of vision, by which is meant the power which the eye possesses of perceiving the shape or form of objects; thus a man may be able to count the dots at 10 feet, although the edges appear to him blurred and hazy, and he simply sees so many smudges on the card. Times have changed very much since 1863, and in these days of rifles with small calibre, high velocity and smokeless powder, a soldier is required to see something more distinctly than a blurred 3-feet bull's eye at 600 yards. Good shooting depends on good visual acuity, and perfect vision is necessary to ensure a man being a good shot or a keen scout. In South Africa,
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the common ranges were 1,000 or 2,000 yards, and the enemy were frequently indistinguishable from the ground on which they were lying. How is a man who can barely see a 3-feet bull's eye at 600 yards, to distinguish a much smaller object at 1,000 yards? As will be seen from the cases described below, a man with pronounced hypermetropia can count the dots without difficulty, or can sometimes even read Snellen 8, by exercising his power of accommodation; but even slight refractive errors are sufficient to prevent the eye being accommodated in rapid succession to the target and the fore and the back sights of his rifle. A hypermetrope may pass the dot test by bringing his accommodation into play, but this may break down after a severe illness or constitutional disturbance, and then we find him for the first time complaining of defective vision. One frequently meets with a patient who states that his sight first began to fail after an attack of enteric fever, and on examination he is found to be the subject of hypermetropia. That a myope can also read the dots will be seen from some of the cases to be mentioned later.

This subject of defective vision in recruits bears a very important relation to the question of voluntary enlistment, and to the efficiency of the soldier as a fighting unit. I am aware that it is difficult enough to get recruits even with the present low standard of vision, but I fail to see the advantage of taking men into the service who are found after a few months, or it may be years, to be unfit because of their bad sight. The present test admits, without discrimination, men whose visual acuity is normal as well as those whose vision is only one fourth of the normal. What is wanted is a test which will discriminate between men whose sight is good, and those whose vision is indifferent, and which will at once reject men whose vision is bad. Such a test exists in Snellen's types. The vision of each eye should be recorded separately by the recruiting medical officer, and (if the man is passed into the service) entered on his medical history sheet. This procedure would involve no more trouble than the present method of getting the recruit to count the dots. It would be necessary to have a variety of test cards at the recruiting station, otherwise the recruiting sergeant would soon learn them off, and instruct the recruit as to what he had to say; while for the benefit of the illiterate, special charts as designed by Curry and Paxton should be provided. Those who do not come up to the normal standard should be put aside, to be subsequently tested with lenses, and if their vision is not capable of correction with suitable glasses, they should be forthwith rejected.
Much subsequent trouble and expense to the State would be thus avoided. Under the present system, a recruit who counts the dots is enlisted, provided that he satisfies the other requirements. He is then sent to his unit, and it is only after a lapse of at least three months that he commences his course of musketry. After some time, men who fail to shoot accurately are suspected by their company officers of having defective vision, and are then, and then only, sent to have their vision properly tested. Such men are found, almost invariably, to be suffering from errors of refraction, as will be seen from the cases to be described, which are selected from the notes of a large number of similar cases which came under notice during the past year.

There is no doubt that many men get into the service every year who, through visual defects, are quite unfitted for it, some perhaps through laxity of the examiners, but mainly owing to the inadequacy of the present visual test. A further advantage of having the recruits tested with Snellen's types would be that it would prevent men who are tired of soldiering going sick with defective vision, and relating some improbable story of how the recruiting sergeant helped them to count the dots. The man's vision on enlistment would always be marked on his medical history sheet, and an infallible guide as to the truth of the matter would be readily accessible.

The following are cases illustrative of men who, though able to count the dots at 10 feet, have been found on examination to be suffering from errors of refraction, which, unless properly corrected, would render them quite unsuited for modern soldiering.

**Case 1.**—Private C. R. V. = $\frac{9}{24}$; L. V. = $\frac{6}{12}$ c $- 1'50$ D. = $\frac{6}{24}$. There was a small central nebula on the right cornea, which, though it reduced his distant vision to $\frac{6}{24}$, still permitted him to count the dots at the regulation distance.

**Case 2.**—Private W. R. V. = $\frac{6}{12}$ and Sn. 2'5, $\frac{c}{6} + 3$ D. = Sn. 0'5. L. V. = $\frac{6}{12}$ and Sn. 2'5 $\frac{c}{6} + 3$ D. = $\frac{6}{6}$ and Sn. 0'5. Retinoscopy (under homatropine):—R. $\frac{6}{6} + 6$ D. L. $\frac{6}{6} + 7$ D.

This patient was employed as a bicycle orderly; it was found that he constantly made mistakes in delivering letters, and he was accordingly sent for examination. He now wears $+ 3'50$ D. lenses for constant use, and sees perfectly.
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**Case 3.**—Private M'C. This patient read the dots at ten feet, by an enormous effort of accommodation, but on retinoscopy his refraction was found to be as follows:

- R. $+8\, \text{D.}$
- L. $+10\, \text{D.}$

**Case 4.**—Private S. R. V. = $\frac{6}{24}$. L. V. = $\frac{6}{24}$. Retinoscopy:

- R. $-2\, \text{D.}$
- L. $+3\, \text{D.}$

This was a case of mixed astigmatism, and with correcting glasses his vision was improved to $\frac{6}{12}$.

**Case 5.**—Private M. R. V. = $\frac{6}{18} \, \text{c} - 1:50\, \text{D.} = \frac{6}{12}$. L. V. = $\frac{6}{60} \, \text{c} - 0:50\, \text{D.} = \frac{6}{12}$. Could not count the dots with left eye.

**Case 6.**—Private K. R. V. = $\frac{6}{24} \, \text{c} - 5:5\, \text{D.} = \frac{6}{12}$. L. V. = $\frac{6}{60} \, \text{c} - 5:5\, \text{D.} = \frac{6}{12}$. Could not count the dots with left eye.

**Case 7.**—M. H. R. V. = $\frac{6}{24} \, \text{c} + 3\, \text{D. sph.} + 2\, \text{D. cyl. axis}$ $180^\circ = \frac{6}{12}$. L. V. = $\frac{6}{60} \, \text{c} + 3\, \text{D.} = \frac{6}{12}$. Near vision: R. Sn. 4 at 30 inches, $\text{c} + 6:5\, \text{D. sph.} + 2\, \text{D. cyl. axis}$ $180^\circ = \text{Sn. 0.5}$; L. Sn. 0.8 at 30 inches, $\text{c} + 6\, \text{D.} + 0:50\, \text{D. cyl. axis horizontal}$ = Sn. 0.5.

**Case 8.**—Lance-Corporal W. R. V. = $\frac{6}{24}$; internal squint. L. V. = $\frac{6}{24}$. Retinoscopy:—

- R. $+3:50\, \text{D.}$
- L. $+6\, \text{D.}$

The squint was operated on, and a suitable correction ordered for the right eye, with a plane glass for the left.

The following are some cases of men who are supposed to have passed the dot test on enlistment, but are now unable to do so, from one or other of the causes mentioned above:

**Case 9.**—Lance-Corporal B. R. V. and L. V. = $\frac{6}{18} \, \text{c} - 2\, \text{D.} = \frac{6}{12}$.

**Case 10.**—Private N. R. V. and L. V. = $\frac{6}{60} \, \text{c} - 4:50\, \text{D.} = \frac{6}{12}$.

**Case 11.**—Private M., belonging to a departmental corps, where only a five-feet standard is required. R. V. = $\frac{6}{60} \, \text{c} - 5:50\, \text{D.} = \frac{6}{12}$. L. V. = $\frac{5}{60} \, \text{c} - 5:50\, \text{D.} = \frac{6}{12}$. This correction was ordered for distant vision, and a $- 4\, \text{D.}$ for near work.

**Case 12.**—Private W. R. V. and L. V. = $\frac{3}{60} \, \text{c} - 5\, \text{D.} = \frac{6}{12}$.

**Case 13.**—Private V. R. V. = $\frac{6}{36} \, \text{c} + 3:50\, \text{D.} = \frac{6}{24}$. L. V. = $\frac{5}{18} \, \text{c} + 1:75\, \text{D.} = \frac{6}{12}$. In this case the remains of a pupillary membrane were found stretching across the pupil; the patient had to be invalidated.
Case 14.—Private M'K. R. V. = \(\frac{3}{60}\). L. V. = \(\frac{6}{18}\).

Retinoscopy: \[\begin{array}{c|c|c}
R & -14 \text{ D.} & -9 \text{ D.} \\
L & +4 \text{ D.} & +1\frac{1}{2} \text{ D.}
\end{array}\]

This was a case of high myopia in the right eye, and mixed astigmatism in the left; this man was also invalided.

These are but a few cases selected from many similar; but enough evidence has, I think, been produced to prove that such men could never have been enlisted had they been tested originally with Snellen's types.