Correspondence

The orderly medical officer who admitted him, considered it a case for isolation. On examining the man, shortly after admission, I was struck by the symmetry of the swellings, and the remains of a boil on the middle of the forehead. On closer examination there remained no doubt that it was a case of septic absorption from the base of the apparently healed boil.

I am, etc.,

J. E. H. GATT.

EYESIGHT, SPECTACLES AND RIFLE SHOOTING.

TO THE EDITOR OF THE "JOURNAL OF THE ROYAL ARMY MEDICAL CORPS."

Sir,—I have read with interest the articles by Captain William Wallace, M.D., "The Vision of the Soldier," and would like to add a few comments with special reference to his remarks on p. 124 of the August number of the Journal in which he deals with spectacles and musketry.

I have, for a considerable number of years, been interested in the question of the use of spectacles in connexion with rifle shooting, and can write with some authority, also with the hope that my experience may prove of interest to your readers.

I am in entire agreement with Captain Wallace when he says that to obtain the best result by the aid of glasses one must use decentred lenses (i.e., those in which the optical centres are displaced from the geometrical centres). I had such glasses constructed for use at Bisley in 1920, with gratifying results.

To obtain the maximum benefit, the Toric lens ought to be used, and this should be fitted to a hinged frame, the object being to adjust the plane of the glass in such a way as to make it at right angles to the desired position of visual alignment. Inasmuch as the prone position is the one almost invariably adopted for target shooting, the advantage of the hinge is obvious.

As to the degree of decentring, this depends on the reciprocal position of firer and rifle. Some lie almost, or quite straight to the rifle; others at a very acute angle; some very close to the ground, others rest high on the elbows.

Consequently, in fitting glasses for rifle and target shooting, it is necessary to decide the point of displacement of the centring, by actual experiment for each individual firer, in accordance with the personal equation.

For this purpose it is required that the optician lie immediately opposite the firer (who has his rifle in position).

He (the optician) should then carefully watch, and mark the exact place on the glass through which the firer aims, in order to determine the precise decentring point.

I find that ninety-nine per cent of rifle-shots who use glasses for optical purposes do not employ decentred lenses, and I am convinced that if the advantage of employing them was better known, much improvement in rifle shooting would follow in those who have to use spectacles.

As regards Bisley, a very large number of competitors only use glasses to protect their eyes from the sun. The glasses mostly worn are of the green, or greenish yellow colour, of various degrees of shade. I personally use two pairs,
Correspondence

an ordinary white clear pair, and a light tint of green and yellow called chlorophil. It has been found that this greenish or greenish-yellow colour cuts off all the actinic rays and helps to give a clean-cut defined edge to the aiming point, when shooting at targets in which the aiming point is irregular and ill defined, the colour of the target being made up of neutral tints as in the standard musketry figure target of 1920; they have less value in the “tin-hat” target of 1921, and still less in the bull’s eye target (black bull’s eye on a white ground) except that they diminish glare.

In the case of high or even moderate myopes in prescribing glasses for shooting, it is impossible to get a lens that will, at the same time, give clear definition of foresight and target, even if a peep back-sight is used instead of the Government pattern U.

The question is, what is the best to prescribe? and without hesitation I say, use a lens which will clearly define the foresight, even if it leaves the target in a slight haze.

The winner of the Grand Aggregate, and of the Service Rifle Championship at Bisley in 1914, used this kind of lens in his shooting spectacles. You cannot shoot with a hazy or blurred foresight, especially in changing lights.

To revert to the question of decentring the optical centre: at Bisley there are two distinct kinds of rifles used, the Service one, fitted or otherwise with a peep-sight, and which is used in ninety per cent of competitions, and all are in the prone position, and the match rifle proper.

The match, or any rifle is fitted with optical sights, and a spirit level; these give a magnification of between plus three and plus four. The back-sight of this rifle is fitted at the very end of the butt. To shoot with this rifle one has to use the back position with feet towards the target. Sighting through the optical centre (i.e., the midpoint of the principal axis) is the best way if using glasses for this type of rifle shooting.

The question arises, from a musketry point of view, is it worth while in our small army to accept anybody where the sight of the right eye is below normal, owing to the time, difficulty and expense involved in fitting those whose eyes are below normal with glasses suitable for musketry purposes?

As regards peep-sights or aperture sights for military rifles, Bisley has been using them for twelve years or more past.

A rifle was designed by the Government just before the war, which was fitted with a peep-sight, but war intervened, and this rifle had to go. We now hear from the Small Arms school at Hythe, that the next new rifle to be issued to the troops when money is available (when ??), is to be fitted with a peep-sight, and that they now accept the peep-sight as the best type of sight for a military rifle. Why cannot they fit one to the present S.M. Lee Enfield rifle—the cost should not be prohibitive?

This decision is a move in the right direction. It will lessen strain on the eye in the first instance, as with a peep-sight, one has not to try and focus three points at the same time, viz., back-sight, foresight, and target, which, in those with anything other than normal vision often ends in either losing the foresight or the target.

One cannot lose the foresight if one has to look through the back-sight, two
points of focus instead of three. Here the fore-sight is as large as life, and has only to be put on to the object aimed at.

For all distances the peep-sight is the best.

Peep-sights mean three very important items in musketry: (a) accuracy; (b) rapidity of aim and fire; (c) clearness of definition.

It is much easier to teach shooting with an aperture or peep-sight, than with the old fashioned opened back-sight and fore-sight.

With the peep-sight there is no question of how much or how little of the fore-sight you are taking in, and no eye strain.

The fore-sight has to be placed in the centre of the peep or aperture-sight, and the ordinary eye can centre the peep-sight automatically to $\frac{1}{1000}$ of an inch, if the peep is not too large say in and about $0.1$ of an inch, an error of $\frac{1}{10}$ of an inch only means approximately 1 inch error on the target for every 100 yards you are away, provided the hold and let off is good.

The aperture-sight makes for definition as it cuts off circumferential rays.

The question is what sort of peep-sight will be adopted.-

There are certain factors necessary in relation to this:—

(1) The peep-sight must be sufficiently strong and stable to withstand rough usage.

(2) The aperture should be bored in a disk or plate sufficiently large to prevent the "bottom of the aperture dropping out." If the circle of metal round the aperture is not sufficiently thick or broad this is quite likely to happen, if the aim happens to be prolonged, and in certain lights.

(3) The aperture itself must be sufficiently large to afford a good field of vision, and to give luminosity. A too small aperture is a great fallacy. I personally use 0.06, 0.07, 0.08 of an inch. 0.1 of an inch is probably better than any of these if one talks of musketry in contra-distinction to rifle shooting. It is a great mistake to think that a small aperture means accuracy; it does not—it means loss of light, which means inaccuracy. I have already said that the ordinary eye will centre to $\frac{1}{1000}$ part of an inch in a 0.1 inch aperture, in fact it would do so in an aperture a good deal bigger than 0.1 of an inch.

(4) The aperture should be placed sufficiently near the eye; probably the best distance is about four to five inches away when lying prone. The Americans make wonderfully fine shooting with their Springfield rifle which has been provided with an aperture for years (as well as an "open sight"), and their aperture is placed a good deal further away than this.

Probably the best place for the peep- or aperture-sight on a military rifle is immediately over the bolt-race about the position of the "charger guide."

In deciding the exact position it should be borne in mind that the longer the sight radius (i.e., the distance between the fore-sight and the back- or aperture-sight) the greater the accuracy, as by lengthening the sight radius, mistakes in aiming are minimized on the target, and it is for this reason that in the match rifle which is shot from the "back position" the fore-sight is on the muzzle of the rifle and the back-sight is at the extreme end of the butt.

To my thinking Army Medical Officers should have a very clear insight in to the relationship of eyesight and musketry, and the kind of spectacles required for the type and condition of musketry practised in the Army for the time being.
Correspondence

In conclusion I would say that when testing men for spectacles for musketry, or for rifle shooting as practised at Bisley in contra-distinction to musketry, to get the best results the person tested must be absolutely true to the person testing, whether he be the ordinary medical officer or the ophthalmic specialist. If the man being tested is not out to help no good results can be expected, no matter how expert or cunning the tester may be. And as my last word I would re-echo Captain Wallace—You cannot expect to train a man who has never worn spectacles into a marksman the first time he wears spectacles. The eye must in the first instance be educated to the lenses used, as a certain time must elapse before full advantage will be experienced. A man should therefore wear them always when at aiming drill and snapping practice, and should not bring them out of his pocket, merely when he lays down to fire. Better still, they should be worn at all times in order to educate the eye to their use, or I should rather say, re-educate the eye to the lens used. There are some men, however, irrespective of their eyesight be it good, bad or indifferent, be they fitted with glasses or not, who can never be turned into—even third class shots; this is due to want of intelligence and inability to make deductions, and to weigh up factors from shots already fired.

I am, etc.,

LANGFORD LLOYD,
Lieutenant-Colonel, Royal Army Medical Corps,
Member of many International Teams, and Member of Council National Rifle Association.

IMPORT DUTIES IN INDIA.

TO THE EDITOR OF THE "JOURNAL OF THE ROYAL ARMY MEDICAL CORPS."

Dear Sir,— Officers coming out here next trooping season might like to know that the new import duties are much more serious than they used to be; they were enhanced on March 1 last as follows:

Motor cars and motor cycles subject to twenty per cent ad valorem.

Guns and rifles twenty per cent with a minimum of fifteen rupees, which means that on a .22 rifle costing 35s. in London one pays fifteen rupees, and is therefore hardly worth importing.

Cartridges are also subject to the twenty per cent duty.

As so many officers wish to bring motor cycles out nowadays—and, indeed, in some stations the work cannot be done without them—they may wonder if it is worth while bringing them.

I would strongly advise anyone who intends using one, to bring it out, as owing to the depreciation of the rupee prices have risen considerably out here, no importation is going on by dealers owing to the uncertainty as to which way the rupee is going—therefore the choice here is very limited. If a motor cycle is bought and used, its depreciation in value as a second-hand article can be deducted in assessing the value for customs purposes.

Petrol can be obtained on payment from the S. and T. at rupees 1.8 per gallon. Lubricating oil costs rupees 7.8 per gallon.