THE VISION OF THE SOLDIER, WITH SPECIAL REFERENCE TO MALINGERING.

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(Concluded from p. 49.)

V.—Blindness in One Eye, Actual or Alleged.

We now come to consider that group of cases in which it is alleged that there is blindness in one eye.

It will not have escaped notice that in the preceding chapter the only piece of apparatus referred to, apart from the ophthalmoscope and trial-lenses, was Bishop-Harman’s diaphragm test. The reason for this is that the less the medical officer depends upon mechanical appliances in the detection of alleged visual defects the better. In the civil courts, of course, he must be prepared with an answer when counsel, to make the most of himself, springs on him the question, “Did you try the plaintiff with so-and-so’s apparatus?” mentioning a complicated affair, invented, tried, found wanting; and scrapped. But in military ophthalmology, the three instruments, combined with the medical officer’s own sleight of mind, are all that are necessary.

Here again, the ophthalmoscopic examination may immediately solve the problem. There may be present that definite, visible lesion to which reference has been made, which will confirm the patient’s statement. But if the fundus shows no gross changes, no mydriatic being used in the first instance, the history, especially if there has been an injury, must be scrutinized in the smallest detail. The eye may be amblyopic from want of use; there may be evidence of an old operation for strabismus or for advancement; the pupillary reaction should be noted.

War injuries in particular demand the closest investigation as to their nature and extent: there may be commotio retinae without external wound; concussion cataract may appear some months after the date of injury. These points, of the highest clinical interest, may severally support a soldier’s statement that he has completely lost the sight of one eye, and the medical officer’s duty is to verify that statement apart from the alleged cause.

The tests should be of the simplest. Bishop Harman’s may prove binocular vision at the outset and so save much trouble. But if one eye appears with it to be amblyopic, which eye it is should be noted. In a case of malingering, the test may be used again in course of the examination, and perhaps show this time that it is the “good” eye that is now amblyopic.

Hazelberg’s test-types, in which the letters are partly red, partly black,
The Vision of the Soldier

are based on the fact that a red object by reflected light is invisible to the eye looking through a red glass of the same value. The difficulty is to obtain a correct balance between the tones of the printing ink and the glass, for if the ink is not exactly neutralized it may appear grey, and so defeat the test. The black letter C is converted into an O by the addition of a red segment. The black P has a red tail added to it to make it an R. Similarly, F becomes E, V becomes W, and so on. The soldier stands at the proper distance with the red glass before the "good" eye and some lens of very low power before the "blind" eye. When this is done, and not until it is done, the test-types are exposed. Here a careful watch must be kept on the man's eyes, and on the slightest attempt to close one, the medical officer's hand should quickly cover the trial-frame. The soldier, ignorant of the physics of the test, imagines that he sees the red part of the letters with the red glass before the "good" eye. If the "blind" eye is really blind, the red glass before the "good" eye will obliterate the red segments so that he will read C P F' V. But if there is sufficient sight in the "blind" eye, he will see the red segments and the letters will be read as O R E W. When a result has been obtained, the red glass and test-types should be removed out of sight to prevent curiosity.

For the test with transparent red and green letters the trial-frame is fitted with disks of the same colours, the physical fact being that a transparent green object becomes invisible when looked at through a red glass. Thus if all the letters are identified, irrespective of their colour, there must be sight in the "blind" eye. Care should be taken beforehand to see that the reds and greens do negative one another. For the too familiar FRIEND, which reads either FIN or RED, may be substituted the somewhat cynical and suggestive TRUANT CHAINS.

Tests with prisms are used in the following ways:

(a) A prism base downwards is placed before the "good" eye while the man looks at a distant candle-light. If he sees two lights, binocular vision is present.

(b) A prism of ten degrees with the base outwards is placed before the "blind" eye. If there is any sight in this eye diplopia will be produced, and the eye will move inwards to correct it and fuse the two images.

(c) The "blind" eye is covered. A prism of ten degrees is placed before the "good" eye in such a position that its apical edge lies horizontally across the centre of the pupil. This produces monocular diplopia. The prism is then moved up so as to be completely in front of the "good" eye, and the "blind" eye is uncovered. If diplopia is produced or admitted, there is sight in the "blind" eye.

This test may fail owing to the difficulty of placing the edge of the prism in position without some preliminary adjustment, during which the man may be on his guard from having seen single at one moment and then double through the same glass. It demands intelligence on the part of the patient, and may defeat its object.
(d) Maddox’s double prism consists of two prisms of twelve degrees ground out of a single piece of glass with base to base. When it is held in front of a seeing eye so that the sharp line formed by the junction of the two bases is exactly horizontal in front of the pupil, monocular diplopia is produced, the other eye being covered. Thus, when a candle-flame is the object, the eye sees two, one above the other. If there is sight in the other eye, now uncovered, a third object is seen somewhere between the two. In making the test, both eyes are kept open, and the double prism is adjusted before the “good” eye, the medical officer’s hand somehow getting in front of the “blind” eye. When all is ready, the man is told to look at the candle. If he sees three, there must be sight in the “blind” eye.

A neutralizing test may be employed, but in this the medical officer’s eyes should never be taken off the examinee’s for an instant. The trial-frame is fitted with a + 10 D. in each, both eyes are to be kept open, and the trial-case so placed that the medical officer can find the required lenses by touch without having to look for them. The man is told to ignore the “blind” eye and say what he sees with the other. Neutralizing then begins, and the scale is gone up with minus lenses moving at the rate of quarter dioptres for the “good” eye, and whole dioptres for the “blind” eye. If the scheme succeeds, there should be about −2 in front of the “good” eye, and −8 D. in front of the “blind” eye. Thus he will still have a high plus glass for the “good” eye, and a low plus glass for the “blind” eye. If he reads anything it must be with the “blind” eye. The success of the test lies in the man never being allowed to close one eye. If, however, he attempts to close the “good” eye, the evidence against him is all the stronger.

The trial-frame is adjusted with + 10 for the good eye and a low + glass for the “blind” eye, it having been ascertained beforehand that the man is emmetropic or slightly hypermetropic. He is then told to read ordinary print. If he does so at twelve or fifteen inches, he must be seeing with the “blind” eye, for if it were really blind he would bring the type to about four inches from his face so as to read with the “good” eye. If he saw with the “blind” eye, he naturally would prefer the more comfortable reading distance to which he was accustomed.

In the case of a myope, these tests would be applied after he had been made approximately emmetropic with his correction.

Another neutralizing test can be carried out with cylinders. The trial frame is fitted with a plane lens for the “blind” eye, and a plus and minus cylinder of about 2 D. for the good eye, their axes being parallel. The man is told to read. While he is doing this, the medical officer, by way of adjusting the trial frame, “accidentally” jerks one of the cylinders so that its axis is at right angles to the other. If the reading is continued, the man must be using his “blind” eye.

Advantage may be taken of the limitation of the visual field to the nasal side. The man is examined in the dark room. Both eyes are kept
open. A candle-light is held directly before him, and then moved slowly towards the side of the "blind" eye. If the light is still seen when it is in such a position that it is cut off from the "good" eye by the interference of the nose, there must be sight in the "blind" eye.

Similarly, the consensual pupillary reaction affords evidence of vision. When one eye is absolutely blind, there is no pupillary reaction, but in doubt the "blind" eye should first be covered, and then light admitted to it. If the pupil of the "good" eye reacts, there must be sight in the "blind" eye.

In all these tests the difficulty of proof is the greater if the man has already been examined by means of them. In any case it is advisable for the medical officer to begin by saying, "We won't bother about the 'blind' eye just now. I want to see what you make of this with your 'good' eye."

Functional or "psychic" blindness associated with war-neuroses has claimed the attention of clinicians. In this there is not as a rule an ascertainable organic lesion, but there will most frequently be a history of some form of functional paralysis. This should be investigated. The patient may be so convinced that he does not see with one eye that the possibility of being suspected of malingering does not occur to him.

With shell-shock cases, in which there have been concomitant disturbances, it is well to begin by assuming, or pretending to assume, that the defect is genuine but curable, and to proceed on the lines laid down by Yealland in his "Hysterical Disorders of Warfare," p. 52.

Although treatment does not concern us here, it cannot be dispensed with in eliciting the facts. Here, once more, it is the medical officer who first sees the case, who has the best chance of obtaining a good result, but as it is unlikely that a man suffering from "psychic" blindness has not already been examined by others who have lacked the patience or the insight to study and appreciate the mind of the patient, the tests may fail, and a further examination may be necessary, the patient meanwhile being if possible kept under observation.

It sometimes happens that monocular blindness is ascribed to a hysterical disorder which has passed off, if indeed it ever existed. The diagnosis will then rest upon the exclusion of fundus changes, and the application of the tests mentioned. The case then passes into the category of assumed blindness of one eye and the "psychical" element may be discounted, except in so far as most if not nearly all malingering has a psychic foundation.

So much has been published on the neurological results of war that a malingerer with some intelligence will not have difficulty in informing himself of a plausible chain of symptoms and the tests to which he will be subjected. Acute observation of the man himself, with the alleged blindness ignored for the moment, and a close interrogation upon apparently trivial side-issues, may lead to a clue.

When malingering is suspected, the motive must be sought for.
this class of case usually is found among soldiers who have undergone the severest strain to which the mind and body of mortal man can be subjected, the benefit of the doubt, when doubt is present, must be in favour of the patient.

But the idea of monocular blindness may be due to suggestion, to unconscious study of others, to the comparing of notes, to inquiries as to personal experiences of warfare, to the open examination of others by expert medical officers.

The motive may be pecuniary, grasped at in one case, scorned in another. It may be born of misdirected sympathy, of undue familiarity and association springing from joy-rides and tea-parties with much be-photographed "war-workers." The future too has to be taken into account, the prospect of honest labour, the willingness to shed the stars and crowns of temporary service for the well-earned stripes of toil.

The examination of the mind, with the vision as an after-thought, will serve to distract the attention of the patient sufficiently for the sudden surprise-test. In all examinations the medical officer has to drag the patient out of himself, he has almost to change places with him so that the patient begins to study his examiner curiously and be interested in him. But in the midst of apparent irrelevancies the main issue must never be lost sight of, and though the patient may at times feel anxious about the medical officer and think him in worse mental plight than himself, he must not be allowed to see that there is "much method in his madness." What the surprise-question may be will depend on the examiner's mother-wit and his assumed air of thoughtlessness, leading the patient to imagine that the medical officer is off his guard. Thus the medical officer's carefully calculated indiscretion may entice the patient into a damning admission.

**DIPLOPIA.**

It is unlikely that a man will have sufficient knowledge to assume with success the symptoms of diplopia, but he should be examined as if his complaint were genuine, every precaution being taken to guard against a serious nervous lesion being overlooked. The medical officer must be prepared to exercise the utmost patience, for even when a paralysis does exist, the man may not always be ready with his answers.

It is a good plan, and sometimes saves time, to make diagrams of the various positions of an object, such as a candle or electric bulb, representing each form of diplopia, and to ask the patient to indicate which corresponds with his double vision. If he is malingering he will be puzzled to find that there are several ways of seeing double, and whichever diagram he chooses can be verified by the tests given below. After the routine examination of muscular balance, media and fundi, a close study of the clinical history should follow. A red glass is placed before one eye with the electric bulb in the dark room as the object, or, better, a strip of white
paper, twelve inches by two, pinned vertically on the black wall. The man is then told to describe what he sees. If he is malingering, he may say that the false image is vertical and the true image oblique. The red glass is changed over to the other eye and again he is told to describe the position of the white and red objects—if he is seeing double. The malingerer always sees double, no matter what the direction of the eyes may be. The typical turning aside of the head and some lame explanation may be expected at this stage. With the "good" eye covered he is told to touch the examiner's hand or to pick up a piece of paper from the table. In a genuine case he fails, and false projection is proved. Told to go up or down stairs with his good eye covered, if diplopia is present he will say he dare not. When there are grounds for doubting the man's statement, and when the existence of graver lesions has been excluded, the safest treatment is none. If he is malingering, he will not undergo any inconvenience; if he makes his complaint in good faith, the consistency of his answers and his anxiety to see well will decide the question.

Monocular diplopia is rarely met with, but it exists and can be particularly disconcerting. In one case, that of a medical officer who had over-long hours with the ophthalmoscope, it usually made its unwelcome appearance in the right eye towards the end of the day's work. It took the form of a faint grey duplication of every object. With Snellen's types each letter was seen twice, the pale second image being about halfway up the black. There were no lenticular opacities, and it vanished on the addition of a $+0.75$ cylinder to his hypermetoric correction. In the soldier it may be disregarded, unless he has been occupied daily and hourly with microscopic or ophthalmoscopic work—a state of affairs scarcely likely to occur. In any event, however, the routine examination should not be neglected.

A soldier who complains of hemianopia must, if malingering, be possessed of all the knowledge of his examiner and possibly a good deal more. His statement, when investigated, will without much difficulty, decide its credibility. The perimeter and stereoscopic X-ray plate will clear up doubts, along with the evidence of occipital injury. The calcarine fissure is a region not in the day's journey of everyone.

A case may be mentioned here in which hemianopia, though genuine, was used for fraudulent purposes. It was in the days when some looked upon the perimeter as a toy, and Wassermann was an unknown name. A man presented himself at an eye clinic for a certificate of vision, in order to claim a pension from the Admiralty. He had been a draughtsman in the Navy. What was singular about him was his gaze. In conversation his eyes were fixed on a point over the observer's head. It was evident that he had lost the lower sector of his visual field, and the perimeter confirmed this. Lesions existed in both fundi, and the case was dealt with as specific. The certificate was refused. About eighteen months later, he came to the
same clinic for the same purpose. He was recognized by the fixation of
the gaze, but denied that he had ever attended the clinic. He further
maintained that the name that he had given on the former occasion was
not his. The medical officer being sure of his ground, did not make an
ophthalmoscopic examination, but asked a colleague to do so, and then
proceeded to describe to him what he was likely to see. The fundi had
not altered and the colleague verified their condition. The man admitted
—he could not do anything else—that he was the old patient.

Hemeralopia—to give the adopted but confusing name to night­
blindness—has been identified with active service since the days of the
Crusades. In plain language it means that a man cannot see in the dark.
He is blind at night.

It may be accepted as true that everyone coming from a brightly
illuminated room into sudden darkness sustains a retinal shock. This
shock equally disables when the conditions are reversed, such as sudden
emergence from shadow into full blaze of sunlight in one's eyes. There is
a solar scotoma which may persist for twenty-four hours or may be
permanent. Night-blindness may be induced suddenly by a physical
cause, a slip of the foot in the dark, a want of solid resistance on a step
into vacancy, an unexpected buffet in the dark from a comrade, binding
the limbs and blotting out all vision. When complained of, it should not
be regarded lightly, and the medical officer who would dismiss a case as
imaginary, would take upon himself a serious responsibility in sending a
man back to the line without a searching examination. There may be no
abnormality discovered in the fundi, but the perimeter may afford a clue.
It may be due to conditions of the media, to refractive errors uncorrected,
especially in myopia. In some instances it may have been latent since
birth, to be lit up by the exactions of service. A chain of heredity may be
discovered stretching back for more than a generation. But its existence,
even among men wishing to do their best, cannot be ignored. In warfare
of position as opposed to movement, with so much depending upon
operations to be carried out in darkness, a man with night-blindness is a
danger to his comrades, with the added anxiety to himself that his vision
may fail him at the critical moment. It will be generally agreed that a
man affected with "retinitis pigmentosa" is unfit for the Army, but there
may be greatly contracted fields without any pigmentary disturbance.
Cases of malingering were rare at home stations. They were dealt with
on whatever front they occurred, and were not given the chance of a
transfer to home service. The only way by which malingering can be
detected is to have the man watched at nights, or to question his comrades
as to his behaviour in the dark. Dissimulation under these conditions
cannot be kept up for long; the instinct for self-preservation is bound to
assert itself and betray the deceit.
Malingering is a disease due to a microbe of a particularly virulent type. Young and healthy men at clerical work in comfortable offices resist it for a time, but when there is a "comb-out" or a medical examination for a draft, it develops with alarming rapidity. The eye specialist should be in close touch with the regimental medical officer so that suspected cases or contacts may be isolated and dealt with at once.

The manner of the specialist will do much to stop the rot. It is in his own interests as well as those of the authorities that he should do so, for there is nothing more irritating than to find men pitting their brains against his. Personal acquaintance with the class of a man's work, as clerk or draughtsman, the lighting of the building in which he is employed, the conditions of service maintaining at the time, may put him on the track.

This chapter will deal with a few examples out of many.

Sometimes interference may come from an unusual quarter outside. A man had been conscripted, and within forty-eight hours his wife wrote to the local M.P. (Labour) protesting indignantly that it was disgraceful that a half-blind man should have been enlisted. The Member believed the story and gave notice that he would put a question in the House to the Under-Secretary of State for War. A type-written copy of the question was sent to an eye specialist, and the man followed. He turned out to be a flagrant malingerer and a report to that effect was passed to the War Office. The M.P. had been "had." The question was not put, and it is to be hoped that he "got something back" on the wife.

At one time numbers of young men were being sent from a certain office with extremely low refractive errors. It was a not uncommon device for men who had been clerks in civil life to get their sight tested by an optician who did not let them off till they had bought a pair of glasses, generally little more than half a dioptré with perhaps a cylinder of 0·25 D. These they produced as if to impose upon the medical officer and impress him with the presence of a visual defect. They were examined and dismissed with advice. But as they still kept arriving in parties of a dozen at a time, a "comb-out" was suspected. The latest corners were paraded and told that if any more like them appeared, the medical officer would have the entire staff medically examined at once. No more came.

In a large district the specialist had at one time to examine the eyesight of some hundreds of men belonging to what were then called provisional battalions. These were units made up of men who had been sent home from over-seas with various temporary disabilities. It struck the President of the Travelling Medical Board as somewhat odd that men sent up for a report on their visual defects no longer complained of their eyes at their next Board, but had something else the matter, and he
sought out the medical officer for an explanation. It was simple. The medical officer had invented an idiotic sort of jargon which he called his Riot Act, and this he solemnly read out to hardened sinners. Highly irregular, perhaps, but it worked.

A man had been sent up for examination with a view to his discharge. The President of the Board, rather doubtful of the good faith of the man, sent him to the specialist. A civilian practitioner's report was produced which referred to posterior synechiae in both, but to nothing else. The pupils were small and partially blocked, but the man denied all recollection of having had acute pain, and this raised suspicion. He stated that he had been in the Army while between the ages of 19 and 23, and had rejoined when over 40. As his second term of service had been only ten months in duration, it was extremely unlikely that the iritis was of so recent date, and homatropin and cocaine were instilled. The pupils yielded irregularly, but sufficiently so as to allow the fundi to be seen, and extensive choroiditis, probably specific in origin, was found in both. The condition was of old standing, and not "in or by."

The importance of an immediate ophthalmoscopic examination in every case of injury, not only of the affected eye but also of the good eye, cannot be pressed too urgently. A man was brought up for consultation with the history that on the previous evening he had been struck on the left eye with a rope. He was in the Flying Corps, and the medical officer in attendance had put in a drop of atropin. There was no evidence of serious injury, but the man said he had never seen with the eye. This alarmed his medical officer who wisely sent him at once to a specialist. The media were clear, but the fundus was covered with masses of choroidal pigment which could not have developed in a night. Further, there was a patch of choroiditis in the macula of the good eye, which confirmed the opinion that the condition was of old standing and not due to the injury. But suppose the man had made light of the injury at the time, and a year later had exaggerated its effect in order to base a claim upon the blindness, he might have fallen into the hands of an examiner who possibly might have given him the benefit of the doubt and, without examining the other eye, decided that the choroiditis was traumatic. This case exemplifies the wisdom of the rule: Examine both eyes. The condition of the "good" eye may throw a light upon the alleged defects of the other eye.

The risk of accepting a man's or any statement without a full examination is shown in the following case.

Towards the end of August, 1914, Private H. had some sand and earth thrown up in his face from a bullet striking the parapet of his trench. As the debris had gone into his eyes he was hurriedly bandaged and removed to a clearing station whence he was immediately transferred to a military hospital in England. Owing to the conditions that prevailed at the time, no complete examination was made on admission. The statement on his tally, however, was accepted; a message on an Army Form was sent to his
wife to the effect that he was suffering from a gunshot wound of the right eye, and a railway warrant was enclosed. Shortly afterwards he was dismissed cured, to rejoin his regiment. But he was clever enough to keep the Army Form referred to, and on the strength of it succeeded in imposing upon everyone and evading duty for over a year. His regimental medical officer very naturally accepted the opinion on the Form without of course knowing that it had been given entirely under a misconception. Fourteen months later the man fell into the hands of a specialist, and triumphantly produced the Form. The right eye was said to be greatly impaired by the injury, and the vision was under $\frac{3}{5}$. The left eye read $\frac{2}{3}$. There was no trace of injury, the fundi were normal, and by the interchange of $+$ and $-$ lenses, the vision was brought up to $\frac{3}{5}$ in each with $+1.25$ D.

The deliberate upsetting of the trial frame may give a clue to unusual sharpness of sight when rimless lenses are picked up without hesitation from the floor of the dark room. Evidence may be forthcoming whence it is least expected. A man called up under the Derby scheme was sent from the recruiting office to a specialist for a report. He stated that he could only read $\frac{3}{5}$, and in order to do this resorted to various bodily contortions. The fundi and media were normal, there was no refractive error, but tests with trial lenses failed. As the medical officer sat down to make his notes, certain that he had a malingerer to deal with but without a clue, the man, thinking that the examination was over, threw open his coat and stuck his hands into his trouser pockets. The medical officer caught sight of a number of cheap silver medals hanging from his watch-chain, and casually asked what they meant. The man replied that he had won them in competitions. "What kind?" asked the medical officer. "Quoits competitions," replied the man. "I'm a champion quoits player." "Thank you," said the medical officer. The vision was returned as normal.

Sent from the same recruiting office another presented himself one Sunday morning. There was nothing suggestive about him of malingering. He wore a neat civilian suit of black, black bowler hat, white shirt and collar, black tie. He said he was a bricklayer, an occupation which somehow did not agree with his get-up. Still less did his vision of $\frac{3}{5}$ in each. From this he refused to budge. During the ophthalmoscopic examination, which revealed nothing abnormal, he was told that he could see quite well and would be detained until he passed the test, even if had to be kept till ten at night. He was put back and examined a couple of hours later, when he read $\frac{3}{5}$ with ease. Then came the expected whine about three brothers in the Army, his small family, his loss of work, ending with, "and me going to bury my poor old mother this afternoon." So all, down to the suit of clothes, was satisfactorily cleared up.

At an ophthalmic centre there were two medical officers at work, A., a civil surgeon, and B., a commissioned officer. B. was washing his hands in a bunk whose window overlooked a plot of grass where the men to be examined were gathered. A. was finishing the test of a man, who, when
William Wallace

it was over, left the building, jumped down the steps, and burst out laughing when he reached the others. This was not lost on B., who looked at the man's record on the card. It was: "Right $\frac{2}{3}$, Left $\frac{2}{3}$. Refuses any correction. Fundi clear." B. remarked, too, that it was scarcely sufficient. A. agreed, and suggested that the man should be re-examined. After a few more men had been seen, the man in question was called up. He declared boldly and resentfully that he had passed the doctor. B. quietly said, "You haven't passed me." The result of that incautious laugh was, "Vision normal. N.A.D."

A perfunctory test with trial lenses may lend an air of malingering in the case of a man who is doing his best to see. Instances of this must have come to the notice of every ophthalmic surgeon. One only will be mentioned.

A man aged 38 was in from a Dispersal Board for a report on his vision. He brought his B. 178 on which was entered an apparently complete statement of his visual defect. "V.R. = $\frac{6}{6}$; L. = $\frac{6}{6}$.

R \[ \frac{1}{1} + 1 \]
L \[ \frac{1}{1} + 1 \]

"Old macular choroiditis in each. Glasses would not be of the slightest use." This was stated to have been the condition ten weeks before the request of the Dispersal Board. It was found in the first place that the man was myopic. Second, that the macular choroiditis, if ever present, had miraculously disappeared, and the fundi, after a searching examination under homatropin, were normal. Further, with $-2$ D. in each he read $\frac{6}{6}$.

This case is instructive. Had the earlier report been accepted, the man on discharge would have claimed his pension, probably on the ground of causation, certainly on the ground of aggravation, and he might thereby have been tempted to trade on his defect.

On many occasions men's papers were marked "malingering" when there was the clearest external evidence, such as nebulae, or a high degree of myopia, to account for their visual disability. From one unit alone in the early months of the war, nine men were sent up as presumed malingerers whose vision ranged from $\frac{6}{6}$ to less than $\frac{6}{6}$, with myopia or myopic astigmatism from $-4$ to $-8$ D., and some tact was necessary to convince the commanding officer that these measurements could be made independent of the men's statements.

The concealment of facts is not confined to the soldier: it may extend to his wife. A certain officer of high rank asked a medical officer to examine his wife's eyes as she had difficulty in sewing at night, and possibly was in need of spectacles. Her distant vision was normal; fundi normal; no refractive error with the ophthalmoscope. While being examined in the dark room she was casually asked what her age was. She gave it as 42. During the test with trial lenses her face was closely studied, and particularly her neck and hands. She was presbyopic, and from the amount of correction that she accepted the conclusion was that
her age was 52, and she was prescribed for on that assumption. After a consultation of "Who's Who," the startling fact was discovered that if her alleged age of 42 was correct, she must have been married when 11 years of age, and if so, her husband ought to have "done time."

The "pictures," while valuable for detective work, may be just a little overdone. One morning an urgent telephone message came through that a certain George at a V.A.D. auxiliary hospital had "bad eyes," and could he be seen to at once, please? "Bring him at once," was the reply. The medical officer had visions of acute glaucoma. Some time in the afternoon an ambulance arrived, and therefrom alighted a breathless old lady in V.A.D. uniform, plentifully besprinkled with every conceivable or inconceivable Red Cross badge, the "dressing" of which conformed with no known rule in the book. She said she had come forty miles in the ambulance (shortage of petrol), and George was produced. George, boot and lamp cleaner, handy man in the garden, always absent "on an errand for me to the village," when the inspector arrived—George, it appeared, wanted glasses in order to see the "pictures," and his vision of each eye separately was $\frac{1}{8} + 1$ combined with $-1 \text{D.} = \frac{3}{4}$.

"Take him away," said the medical officer.

"But are you not . . .?" exclaimed the lady.

"Take him away," repeated the medical officer, and turned to matters more important.

The net result was petrol wasted for a run of eighty miles. George proved a malingerer, and was ordered to report to his depot without delay.

VII.—The Use and Abuse of Spectacles.

The issue of spectacles to troops was by no means an unmixed blessing to those concerned. A large number of men did not make the best, if any, use of them, and the specialist felt that time was often spent to no purpose.

The Army Spectacle Depot came into existence about February, 1916. Previous to that date, in one district at least, all that the ophthalmologist had at his disposal were empty spectacle frames and loose lenses, ranging from $+1$ or $-1$ to 4 D.

When at length the Army Spectacle Depot appeared, things improved. The system was elaborate—sometimes there were twenty or more particulars to be entered on each prescription—but it was easy to follow. There were, however, grave disadvantages owing to the limitation of strength of the lenses. In a War Office letter, dated February 2, 1916 (24/G.N./3999, A.M.D. 3), the following restrictions were laid down:—

The maximum strength of glasses to be supplied will be spheres, 6 D.; cylinders, 4 D.

Quarter-strength glasses will be supplied between 1 D. and 3 D. only, and half-strength glasses above 3 D. up to the maximum referred to.
This seriously handicapped the ophthalmologist and laid on his shoulders the disagreeable burden of explaining to one soldier why he could not get his glasses, while his mate was supplied without hesitation. It also put the specialist in an invidious position. He well knew that if he made a mistake in a correction—excluding presbyopia—the prescription and the spectacles would proclaim it to every specialist whom the patient consulted, and would be a concrete witness to his inefficiency.

Constantly there were grievances which a conscientious medical officer was at his wits' end to settle. The average soldier does not understand compromise. At the same time he does not understand refraction. But seeing his mate provided, let us say, with — 2 5 sph. combined with — 1 cyl. he is furious when told that his correction, which brought his sight up to normal, is outside the limit and that he must go without spectacles unless he buys them himself. At once his sense of injustice is roused, and a willing man is converted into a "grouser."

From time to time "strict compliance with the spectacle scheme" was enjoined, but it was only in December, 1916, that the limits were withdrawn and the strength allowed to be exceeded, "to any reasonable extent." By this date, and much earlier, men who had been operated upon for traumatic cataract were ready for their glasses.

Equipment from the Army Spectacle Depot began to dribble in by the end of February, 1916, and ophthalmic centres were in working order by March. Much of the material came from America, and a word must be said about the trial lenses. Unlike ours and the French, the rims were not coloured (gilt and silvered) to show which were plus or minus. Some genius had decided that the best place for marking the denomination of the lens was the handle, where it was hidden by the finger and thumb. The cylinders had handles, numbered in the same fashion, and their axis was engraved so faintly that mistakes were frequent. The trial-frame was of the time-wasting pattern, in which the lenses were slipped in from below. For retinoscopy in the dark room it was useless, for with the patient's face in shadow, one could never be sure of finding the cell for the lens by touch alone. The refraction equipment was designed to double or treble the amount of time taken over a case, and there was nothing for it but to mark every glass in "plain figures" with a diamond, scrape the trial frame and use one's own.

By May, 1916, the Army Medical Department became conscious that a great deal of wastage was going on in the issue of spectacles, and embodied its views in a letter (May 15), which may be summarized. It pointed out that in many cases glasses were ordered quite unnecessarily, that in the present war of bombs and hand-grenades a high standard of marksmanship in every individual was not essential, that with gunners shooting was done by map and telephone. It went on, "a soldier will not wear glasses unless the benefit which accrues from their wear is very obvious and apparent to himself. In a large number of cases complaining of their sight (quite forty per cent of those tested at the ophthalmic
centres at the front in France), it has been found that glasses are quite unnecessary. It should, however, be remembered that many soldiers of the New Armies have become so accustomed to use glasses in civil life that they are at a very serious disadvantage without them. Finally, attention was called to the difficulty that a soldier had in keeping his glasses clean in the mud of the trenches, that they thereby became useless and the men would not wear them.

Four weeks later the material points of the letters were repeated. At this time nothing was said about gas masks, which at first could not be made to fit closely owing to the sides of the spectacles. This defect eventually was overcome.

It is unnecessary to go into details as to the various changes in the strength of the lenses, which enabled the ophthalmologist to recover his self-respect. It is more important to consider the question of how far the issue of glasses went towards rendering a man more efficient or raising him to a higher category. With regard to the latter, the A.C.I. 690 of April 27, 1917, may be quoted, para 2: "Immediate steps should be taken in all units to ensure that every man classified lower than category A, on account of defective eyesight, is reported on by an ophthalmic expert and provided with suitable spectacles if thereby he can be rendered fit for category A."

A record accordingly was kept to see how far this influenced the situation. In eleven weeks 723 new cases were examined—not all refractions. Of these, forty-five went up from B to A, and ten went down from A to B. Those who went down had nebule, strabismus, lenticular opacities and so forth, but they were able to reach the old standard of R. $\frac{6}{14}$, L. $\frac{6}{14}$, no matter what the refractive error was. They could not reach the new standard for category A, laid down in A.C.I. 211 of February 4, 1917, which was $\frac{6}{14}$ in one eye without glasses, and the right eye brought up to $\frac{6}{14}$ with glasses. In one ophthalmic centre, at least, the result scarcely justified the trouble entailed in carrying out the Instruction.

Although the issue of spectacles was satisfactory from the point of view of the consulting room, it was difficult to ascertain whether they were used. In a garrison town, swarming with soldiers on Sunday afternoons, singularly few were seen wearing army spectacles. On one occasion a brigade was met, returning from field exercises. With its strength estimated at the time at less than 3,000 it was interesting to count the men who had on army glasses. There were four. This of course does not imply that many others did not possess them: on the march spectacles were not of urgent utility, but the inference is that only four benefited by them to the extent that they wore them constantly. It may have been accounted for by the well-known prejudice among certain classes against spectacles, the idea being that they are a sign of age, and that a man who wears them will lose his job. Whether the war has had anything to do with it or not, it is the case that far more young people
that one sees in the streets and trains are wearing spectacles than did so six years ago.

When a man's vision is less than \( \frac{2}{3} \) and is brought up to normal with the appropriate correction, he discovers that he has a visual defect which can be greatly improved. If he is intelligent there is no risk in conveying this information to him, but with the knowledge thus gained he may make himself a nuisance to every specialist whom he encounters. Thus the test with glasses may defeat its own end. Let us take a case, not wholly imaginary. A myopic recruit whose vision is \( \frac{5}{9} \) is minutely examined by specialist A. at P. The result with spectacles is \( \frac{8}{9} \) and the glasses are issued. The recruit shortly afterwards is transferred to another unit and to another station Q., without his papers. He carefully preserves his glasses which enable him to see "the pictures," but does not wear them. He fails to recognize an officer, is reported, cautioned, and sent to specialist B.

At this stage the recruit has gained some valuable information. He knows that he has a visual defect and that with glasses he can see perfectly, but finding life in the Army not quite up to his expectations he proposes to make the most of his bad sight. He says he has never had glasses; and specialist B., overwhelmed with refraction cases, does his best at one sitting, contenting himself with getting \( \frac{1}{2} \), and orders glasses accordingly.

The recruit has added to his store of knowledge. He has one good pair of glasses and another fairly good, he finds that one specialist is extremely careful and that another can be hurried. He is next sent, this time with his papers, to camp for musketry, says he can't see the target with his glasses, and is bundled off to specialist C. This person, having chiefly musketry cases to deal with, has gone to the range and made himself artificially myopic in order to determine how much a myope with a given amount can see without glasses. He has also got himself initiated into the forms and ceremonies observed in the whole art of shooting. The recruit is now faced by a specialist who combines the urbanity of Harley Street with the subtlety of Scotland Yard. His papers are all correct, with a copy of the prescription signed by B., but he thinks he had better not see quite so well as he did, and manages only \( \frac{4}{5} \). Specialist C., knowing how B. is situated, leaves the question of glasses on one side for the moment, and talks to the recruit about his first days in the Army, discovers that he had been stationed at P., where he himself once was, and proceeds by casual questions and an indifferent manner to suggest, but never to mention its purpose, the eye department at the barracks. The recruit lets slip the information that on the wall at the foot of the stairs someone had drawn in white chalk a huge human eye. Then C. says suddenly, "What did you see at the pictures last week?" The recruit tells him, and after a few remarks which have nothing to do with spectacles, C. remarks as an afterthought, "About your glasses—there's a little thing the matter with them, so you had better leave them and come back in a week." As there is only one cinema in the place, it is easy to tell off a corporal to watch him there.
The point is often overlooked that in many instances men have to be educated in the use of their glasses. A man who has gone about the world all his life with an uncorrected error has to become accustomed to his spectacles, and if they do not immediately respond to his needs, he is apt to become impatient and throw the things aside. He has, in fact, to uneducate his eyes first of all, and then re-educate them.

In consequence of musketry cases an attempt was made in one district to re-educate men with a rifle as part of the ophthalmic equipment. Musketry instructors seemed inclined to take the view that once a man was supplied with spectacles he ought to be able to shoot with them. With his spectacles on, the soldier was told to aim at the test-types over the sights and read them. It was found that when the correction was above plus or minus 3 D., or even not so much, and more especially when a cylinder was a component, the vision when tested by the rifle with spectacles, was always two or more lines worse than with the direct gaze with spectacles. Some men, further, said that their glasses were of no use for shooting in the prone position. It was rare to find that a man who could read with his correction could make out the same line over the sights, except when the correction was a low one, and then his unaided vision was sufficient for musketry up to 200 yards. Thus the man whose spectacles were of such a power that they did not affect accurate shooting was better without them. With a high power, on the other hand, they were embarrassing, for although he could see the target with the direct gaze, everything was blurred when he took a sight, and he blamed the specialist:

The explanation of the failure of spectacles to improve shooting is simple. The man does not look through the optical centre of his spectacle lens when sighting, but obliquely through the upper and inner segment. In taking aim he rotates his right eye inwards while the spectacle lens remains fixed. He cannot adjust his head so that he can look through the optical axis of his spectacle lens, and the further and more obliquely the gaze is from this point, the greater the distortion. When a cylinder is a component, the blurring is still more pronounced: Periscopic lenses might meet the case in some, but decentred glasses for shooting only would be out of the question.

It is worth pointing out that at one time the best shot in the American Army, an officer, had only 20/15 with his right eye, corrected with −2·25 to −3, but it is not stated if a specially decentred lens was used.

The question of shooting with glasses—shooting as part of military training, that is, and not match-shooting—is full of difficulties and apparent contradictions, and if many men with normal vision make poor shots, and if others with poor vision can pass their musketry, some account must be taken of intelligence, attention, and the muscular balance and "sense" in bringing the rifle to the shoulder. Long practice with sporting rifles develops an instinct for aiming at a bird in its flight, and in match-shooting the various allowances that have to be made are often "felt" after incessant practice.
During the Bisley meeting of 1920, a journalist remarked that a large number of the competitors were wearing spectacles, and asked if this was not due to the authorities having given great attention to the eyesight during the war. It might equally have been due to the use of decentred lenses so as to overcome the distortion that has been alluded to, and to the employment of aperture or "peep" sights worn in a spectacle frame. The aperture sight has an effect similar to the pin-hole diaphragm of a photographic camera, by cutting off the circles of diffusion and sharpening the image on the ground-glass plate of the camera or retina. Thus hypermetropes and moderate myopes using a peep sight see the object clearly without glasses. For example, a man's vision is $R. \frac{5}{6}$ hazily; $+$ 3 d. $= \frac{5}{6}$. $L. \frac{5}{6}$ hazily; $+ 5 = \frac{5}{6}$. But with peep sight and no correction, $R. = \frac{5}{6}$.

It would be of advantage if the peep sight, which at present is provided for ranges from 1,600 to 2,800 yards, could be adapted to service rifles for the shortest ranges. Several patterns are in existence, fitted both to match and sporting rifles, but for service conditions they are not officially recognized.

While vision for shooting is of the utmost importance in a standing army, there are many branches of the service outside the combatant ranks, in which a man with appropriate spectacles can be actively employed. Taking the men of the New Armies all round, the number of those visually defective was surprisingly low. In one Division, examined before it went over-seas, the eye cases of all kinds, including external diseases, amounted to a little over four per cent.

It would be worth consideration to codify on broader lines the present standards, so that men fit and willing for particular grades of military service should not be lost to the Army and the Country. And as many ophthalmologists have seen service over-seas and at home, and thereby have made themselves familiar with a diversity of military duties, it would be well to draw upon their knowledge and experience, and enlist their cooperation in all that concerns vision. Neglect to do so must inevitably lead once more to the difficulties which forced themselves upon the attention in 1914-15, and had to be met by the creation of an organization of dimensions which none could have anticipated or dreamt of in times of peace.

One matter may appropriately be mentioned here. Early in the war, the then headmaster of a great public school wrote to the press complaining of the numbers of "fine young fellows" who were rejected on account of defective eyesight and teeth, and with not quite incomprehensible density blamed the authorities for being too strict in this respect. It did not occur to him that he himself, morally responsible for the welfare of the school, that the boys' tutors and the parents, if at all anxious that these "fine young fellows" should be fit for service, should have taken steps beforehand that no physical defect stood in the way of their passing the army standard for officers. After all, consultations with ophthalmologists and dentists were not beyond their financial resources.
The Vision of the Soldier

It so fell out that the writer was detailed for duty as ophthalmologist on a Medical Board which visited this school to examine candidates for Woolwich and Sandhurst. The proportion of myopes who had never worn spectacles was one in ten. These failed to reach the minimum standard without spectacles, and would have been rejected on account of their defect had not the writer estimated the approximate error with the ophthalmoscope and brought their vision up with a correction that was sufficient for the purpose.

In the course of conversation with one of these myopes, whose father's exalted social and political position presumably implied some common sense, the question was put to him how with so great a handicap he could take part in games or sport, or enjoy the theatre or the cinema. Among other things, he said that he sometimes went out shooting with his father. "You'll not go out shooting with me, my lad," was the dry comment.

The issue of spectacles brought into the field a certain class best described as "refraction fiends." Fortunately they were rare. Not skilled ophthalmoscopists or clinicians, but trained as refractionists, on a plane little higher than the commercial optician, they met the case by ordering spectacles in and out of season. It was a constant experience to meet with men who said that the spectacles supplied were of no use, and it needed no searching examination to discover the reason in an obvious pathological condition. The very fact that facilities existed for the provision of spectacles led to abuse of them, and while it was right and just to help a man who therewith could be and was willing to be, made more efficient, it was undoubtedly the case that too often the prescribing of them was the refuge of many civilians, destitute of all knowledge of military requirements, or of the point of view of the soldier, quite apart from ophthalmological training.

Hospital cases, of course, were given every assistance, but the practice could be overdone. For one man, a cot case, three prescriptions were sent in, one for distance, one for near, and one for playing the trombone. Another young man, sent up by his uncle, who ought to have known better, wanted spectacles for billiards. He was told to bring a billiard table with him next time he came.

It must be admitted in all fairness that the unexpectedness of war found us unprepared in the department of ophthalmology. It has already been said that the demand for man power forced us to see through the eyes of our Allies as to what should be accepted in the way of sight. But the traffic in spectacles would have been reduced by the elimination in the recruiting office of thousands of visually defectives, instead of drafting them into the Army where their inefficiency absorbed a great deal of the time and attention of commanding officers and medical officers who had more serious affairs to occupy their minds.

To decide how a visually defective could best be employed in the Army was by no means the least of the many minor problems which the authorities had to solve.