COMBATANT AND NON-COMBATANT: A MEDICAL LECTURE.¹

By Major A. C. Amy, D.S.O.
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I.—Co-operation.

It has fallen to my lot to deliver many lectures on divers medical subjects both to civil and military audiences.

At the beginning of a lecture I always sense an atmosphere of expectant curiosity. The layman, civil or military, looks on the doctor as a sort of conjurer or mystery man who, at each performance, is expected to leave out the old tricks and show a few new ones.

From the lecturer's standpoint this is disconcerting; it is not always easy to live up to expectations.

Hitherto, I have demonstrated my sleight-of-hand and tried to teach you its technique; but on this occasion I propose that we exchange roles; you shall provide the captions which I will endeavour to illustrate with the aid of Medicine.

For us the task should not be unduly difficult. Whereas the civilian doctor is but a lone individual in a universe, the Service medical officer is a brother officer within a small and strictly limited circle.

That is a great asset: it betokens co-operation.

Only by effective co-operation can the component parts of any force develop fully their inherent power.

This co-operation, which can be ensured only by unity of control, is an essential factor of success; all leaders down to those of the smallest units must endeavour to apply at all stages of a fight this principle of mutual support. (F.S.R. II, 2 (2) (viii).)

Indeed, co-operation is imposed on us.

Although King's Regulations and Field Service Regulations lay the burden of advisory responsibility for sanitation and hygiene on my shoulders, that of executive responsibility is laid on yours.

Besides, the exigencies of the Service have made you more or less familiar with woundings, disease and death, both at home and abroad.

Your first-hand acquaintance with these matters may be superficial and somewhat unsound—and certainly your ideas on medical ethics are simply shocking; nevertheless, the scope and quality of your knowledge is such that you cannot be fooled.

¹ Prepared for delivery at the Senior Officers' School, Sheerness, i.e., to an audience of combatant officers.

Critical medical readers may find some of the remarks rather far fetched; but it should be remembered that a deliberate attempt was made to present the subject in a novel fashion, with a view to arousing attention and stimulating interest.—A.C.A.
A civil audience is detached, gullible and receptive. A military audience is interested, knowledgeable and critical.

But the basis of co-operation—mutual goodwill, understanding and sympathy—does not, and cannot, rest on Regulations alone. It has a far deeper and stronger foundation. If we follow the excellent advice contained in F.S.R. II, 3 (3): To make sound deductions from experience, reflection and comparison are necessary—we come to an important, an indisputable, a definite conclusion. It is this: That co-operation must be the easiest thing in the world for the reason that the so-called non-combatant is, in truth, a combatant. Thus:

<table>
<thead>
<tr>
<th>Factor</th>
<th>Combatant</th>
<th>Non-combatant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training—1st</td>
<td>R.M.C. and R.M.A.</td>
<td>Medical School and University</td>
</tr>
<tr>
<td>2nd</td>
<td>S.O.S. and Staff College</td>
<td>R.A.M. College</td>
</tr>
<tr>
<td>Object—1st</td>
<td>War is the ultimate resource of policy, and every nation must be ready, in the last instance, to protect its vital interests by force of arms unless it is prepared to surrender them to an enemy without a blow (F.S.R. &quot;Intro.&quot; 1)</td>
<td>Prevention of injury and disease</td>
</tr>
<tr>
<td>2nd</td>
<td>War can be brought to a successful conclusion only by the defeat of the enemy's armed forces and the destruction of his powers of resistance (F.S.R. I, 1)</td>
<td>Cure of injury and disease</td>
</tr>
<tr>
<td>Enemy</td>
<td>Man, corporate and individual</td>
<td>Disease, decay and dissolution</td>
</tr>
<tr>
<td>Time</td>
<td>Intermittent and uncertain</td>
<td>Constant and certain</td>
</tr>
<tr>
<td>Terrain</td>
<td>Comparatively limited</td>
<td>Without limits</td>
</tr>
</tbody>
</table>

Nor is that the end of the story. To make the case for co-operation doubly, trebly sure, you may read F.S.R. I, 3 (2) and (42). War is an art and not an exact science.

In my profession the formula is "The Science and Art of Medicine."

We are all in pursuit of art; but whereas you practise an inexact science, I practise an exact one.

Be not deceived.

The science of medicine is exact; but it is of such vast extent and great complexity that exactitude in its practice is beyond human potentiality. Even Moses, the greatest of all military sanitarians, made mistakes.

12. Thou shalt have a place also without the camp, whither thou shalt go forth abroad;

13. And thou shalt have a paddle upon thy weapon; and it shall be, when thou wilt ease thyself abroad, thou shalt dig therewith, and shalt turn back and cover that which cometh from thee. (Deuteronomy, xxiii.)

Shallow trenching in the East.

After that, Napoleon may be forgiven a few of his worst blunders.
Finally: Over-concealment tends to prevent intelligent co-operation. (F.S.R. II, 42.)

The medical profession is a "close corporation."

This ancient truism is not weakened by the fact that, nowadays, "our medical correspondent" is a regular contributor to the columns of the public press. The initiated need only glance at these columns to realize how few secrets our medical correspondent is giving away; how absurd are his pretensions to educate the masses; how scared he is of the saying that "A little knowledge is a dangerous thing." To this there are exceptions, but they are few and far between, and hard for the layman to distinguish.

In the Services it has always been different. Your medical officers have tried to teach you everything necessary in the most open and sound manner possible. It is to their advantage, to your advantage and to the advantage of the Service that ALL should be well and fully instructed in matters which are capable of influencing the course of war to victory—or to defeat.

The very nature of things forbids us to have any sympathy with the close corporation idea.

II.—Information and Reconnaissance.

Detailed and timely information about the enemy... is a necessary factor of success in war.—(F.S.R. II, 33 (1).)

Time spent in reconnaissance is rarely wasted.—(F.S.R. II, 37.)

Before the recruit is attested he is examined by a medical officer. When he arrives at your depot he is examined again by another medical officer.

While undergoing training he is inspected by the deputy assistant director of hygiene for the area, and often also by the assistant director of hygiene for the command.

Why all this fuss and bother?

To obtain detailed and timely information about the enemy.

Time and energy in reconnaissance are rarely wasted.

It is not generally known that sixty-four per cent of those who present themselves for enlistment are rejected at the first examination on medical grounds. Of the remaining thirty-six per cent, half are rejected on military grounds. Thus, only eighteen per cent of the aspirants are finally accepted.

The application of the principles contained in the Regulations quoted above to recruiting procedure is comparatively recent; but good results have already been achieved, thus:—

<table>
<thead>
<tr>
<th>Year</th>
<th>Ratio of rejections and discharges per 100 examined.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>On first examination.</td>
</tr>
<tr>
<td>1922-23</td>
<td>37.7</td>
</tr>
<tr>
<td>1923-24</td>
<td>36.4</td>
</tr>
</tbody>
</table>

These decreases are of importance when it is remembered that, in 1923-24, over 57,000 candidates for enlistment came forward.
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The effects of timely information and reconnaissance on general physique, health and invaliding cannot be over-estimated.

III.—Protection.

The security of a force is the first responsibility of its commander.—(F.S.R. II, 48 (1).)

It is the duty of every commander to make the necessary arrangements for the protection of his command from hostile aircraft.—(F.S.R. II, 64 (1).)

Firstly, I would remind you of a case in which medical security and protection were denied to a force with results which can be described as deplorable.

Secondly, I would draw your attention to a recent medical extension of the above Regulations: an extension which, so far, has had the happiest outcome and which is certain to exercise great and beneficial effects in the future.

(1) Before the final advance in Palestine, marching loads were reduced as much as possible.

In conformity with this all mosquito nets were returned to store.

This meant that the troops were deprived of security, and of protection, against anopheleline aircraft.

Detailed and timely information about the enemy—malaria—was available, reliable and exact. It was to the effect that the Turkish army was absolutely riddled with a most malign form of this disease. And yet F.S.R. II, 33 (1) and 43 (1) were defied.

The results were felt throughout the whole force. As an example, the plight of the Desert Mounted Corps may be described. At this period the Corps consisted of the Australian Mounted Division and the 4th and 5th Cavalry Divisions. Up to September 25 these troops had a good bill of health.

Damascus was occupied on October 1. Its hospitals were full of Turkish sick. In the barracks alone there were 900 patients in a miserable condition.

Malignant malaria and influenza broke out amongst the British troops in and around Damascus; and with such severity that, by October 6, the medical situation was serious; all medical units were overcrowded, overworked and undermanned. Sickness took toll of the medical and nursing staffs, and there was a great shortage of medical equipment and supplies.

Admissions to field ambulances alone were as follows:

<table>
<thead>
<tr>
<th>Week ending</th>
<th>Sick</th>
<th>Wounded</th>
</tr>
</thead>
<tbody>
<tr>
<td>September 21</td>
<td>825</td>
<td>19</td>
</tr>
<tr>
<td>October 5</td>
<td>1,192</td>
<td>153</td>
</tr>
<tr>
<td>&quot; 12</td>
<td>2,748</td>
<td>72</td>
</tr>
<tr>
<td>&quot; 19</td>
<td>2,029</td>
<td>5</td>
</tr>
<tr>
<td>&quot; 26</td>
<td>886</td>
<td>38</td>
</tr>
<tr>
<td>November 2</td>
<td>772</td>
<td>4</td>
</tr>
<tr>
<td>&quot; 9</td>
<td>519</td>
<td>.</td>
</tr>
<tr>
<td>&quot; 16</td>
<td>496</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>11,323</strong></td>
<td><strong>299</strong></td>
</tr>
</tbody>
</table>

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The high sickness rates were due chiefly to the operations in the very malarious Esdraelon Valley, as well as to influenza. Malaria began after the enemy areas had been entered and the incubation period had elapsed. The rush of sick then was overwhelming.

Had it not been for the glamour of a great and glorious victory and for the momentous happenings in other theatres of war, there were, in these figures, the makings of another unsavoury "medical scandal."

(2) Autumnal malaria admission-rate per 1,000 of strength of British troops:

<table>
<thead>
<tr>
<th>Year</th>
<th>Lahore</th>
<th>Amritsar</th>
</tr>
</thead>
<tbody>
<tr>
<td>1923</td>
<td>850</td>
<td>710</td>
</tr>
<tr>
<td>1924</td>
<td>483</td>
<td>747</td>
</tr>
<tr>
<td>1925</td>
<td>569</td>
<td>608</td>
</tr>
<tr>
<td>1926</td>
<td>182</td>
<td>171</td>
</tr>
</tbody>
</table>

Statistics now available show that, in 1926, the malarial epidemicity in the Lahore-Amritsar area was above the normal.

How, then, are the remarkable figures in the table to be explained?

Up to 1925, the barracks in Lahore and Amritsar were like all barracks in India, not protected against the entry of mosquitoes.

In 1926, these barracks were made mosquito-proof.

It is yet too soon to say that this is the cause of the great drop in malaria incidence; many factors have to be considered and weighed in evidence, and the experiences of one season only are not enough. But how suggestive!

The Americans are firm believers in this form of prophylaxis—the proofing of buildings—and are a hundred years ahead of us in practice.

Did they not build a great canal through a region which used to be a malarial hell?

If their work counts for anything, and if the Lahore-Amritsar experiment fulfils its first promise, then the expenditure of a certain amount of money will open a new health era for our troops in India.

This expenditure must be reckoned as small when weighed in the balance with sickness, invalidings and deaths.

In reading Field Service Regulations we are apt, at times, to remark with a smile: "Oh, but this is a mere platitude!"

In face of the two occurrences which we have just been considering—one of error or neglect, and the other of logical compliance—we should hesitate before indulging in that remark.

IV.—THE APPROACH MARCH.

We need not discuss a matter notorious to all the world, but may state without fear of dispute that the conditions of modern war demand that the marching powers and endurance of the soldier must not be lessened by unnecessary weight, or by a defective mode of carrying the weight.

_Ceteris paribus_, the army that is least weighted, and that can move with the greatest rapidity must have the advantage. (Report No. II of a W.O. Committee.)

These wise words were written in 1867; and yet, if ever there was a call for increased mobility, surely it is sounding now.
Of course the problem is a general staff one from first to last. However, in between, let us co-operate, for it is a problem on which medical officers have expended much time, thought and work. The exactitude of our science has furnished us with strong feelings, definite ideas and useful suggestions regarding this matter.

The subject has a long history and an interesting literature, too long and interesting to be dealt with now.

What are the present facts?

On physiological grounds the load carried should never exceed a third of the body weight.

The average weight of the soldier is 135 pounds, so his load should never exceed 45 pounds.

In the South African War his load was 59 pounds.

In the Great War (1918) it was 80 pounds.

To-day it is 55 pounds 6½ ounces.

Destructive criticism is a poor thing; here is my own plan for reduction of the soldier's load: maximum weight, 42 pounds 9¾ ounces.

A word of warning: as soon as you reduce the load to 40 pounds, certain plausible individuals will attempt to foist on you a few new and imponderable trifles. Of that there is not the slightest doubt.

Well, repulse them.

Whenever such individuals engage in an offensive, remember that infantry allotted to the defence of a locality is responsible for holding it at all costs.

Be of good heart, for an outraged and powerful medical service will be your close support.

V.—Contact and General Plan.

The commander who first comes to a decision as to his course of action and who gives effect to that decision without delay... (F.S.R. II, 30 (1)).

Success in these initial combats will gain for a commander a general liberty of action. (F.S.R. II, 29 (1)).

These are arresting sentences.

Decide, diagnose—early.

Act on your decision, your diagnosis, without delay.

If you appreciate the situation rightly and promptly, and if you take appropriate measures to deal with it at once, you are assured of initial success.

Initial success in medicine, as in war, carries you far on the road to ultimate victory.

The recital strikes a personal note. It brings out more clearly than anything else the close resemblance between the soldier and the doctor.

1 For example, see "The Load carried by the Soldier," by the late Major N. V. Lothian, M.C., R.A.M.C.; and Army Hygiene Advisory Committee's Report, No. 3 of 1923.

* Here reproduced as an Appendix.

3 F.S.R., II, 93 (1).
While you are thinking of Marlborough, Nelson, Napoleon, I have in mind Jenner, Paget, Lister.

With you it is not merely a matter of rules, regulations and instructions; another element comes into play—intuition, genius, call it what you will.

With us it is not merely a matter of blood-slides, skiagrams and pulse-rates; another factor determines accuracy of diagnosis, appropriate treatment and speedy action; that factor we call the "Clinical Sense."

Think of Nelson’s instant decisions and consequent actions. Were they born of lightning calculations in terms of men, guns, ships, winds and tides? Certainly not! In the same way, the man in whom you have "perfect confidence" does not depend upon his microscope, stethoscope and test tubes, for he possesses that rare and priceless quality, the clinical sense.

It is not a common gift. If your "Medical Officer in charge of effective troops" possesses it, stick to him.

VI.—ADVANCING BY BOUNDS.

*These tactical points should be gained in a series of bounds.* (I.T. II, 28 (9).)

Many of you have to serve in the Far East. There you live in bungalows which are surrounded by servants’ quarters and stables. You work in close association with native troops.

Plague is common; between 1896 and 1911, it caused over 7,000,000 deaths in India alone, and it is still rife. Rats abound everywhere, and they are infested with fleas.

Fleas can advance by a series of bounds in a way which staggers imagination. A flea is only about one-tenth of an inch in length, and yet a human flea can bound vertically seven inches, and horizontally thirteen inches. That is equal to a jump of three hundred yards by a six-foot man.

Our infantry soldier with his present load cannot hope to rival that.

Also, when a flea bounds from one tactical objective to another, he sticks to the one strategical line. He does not shoot off at a tangent, haphazard fashion, from Champagne to Flanders, from Flanders to Belgium, Gallipoli, Salonika, Baghdad and Timbuctoo. No; unless forced by cruel circumstances or unhinged by mental and physical stress, *Pulex irritans* remains faithful to man, just as *Xenopsylla cheopis* clings to the rat, throughout the course of their respective lives.

There are known to be over 500 different kinds of fleas. Of these, about 46 are found in Britain; 26 on rats and mice; and of these 26 species, 5 are capable of carrying plague. A sixth, Xenopsylla, the great plague carrier of the Orient, does not like our climate. Nevertheless, he may come ashore at our ports at any time and bring plague with him.

So long as the drastic destruction of rats is neglected India will continue to suffer acutely from great epidemics of plague, and this country will remain liable to importation of that fell disease.

Besides, the rat is guilty of an enormous amount of economic damage; the employees of our huddled regimental institutes will testify to that.
In teaching us a useful lesson in the art of bounding, the flea has fulfilled his mission in life. Along with his host he may now be hissed off the stage. Therefore, I beg you to direct your attention to National Anti-rat Week.

This annual festival was founded by the Ministry of Health. It has extended its benefits in every direction and we are given the chance of participating. We do not take it seriously enough; we are too apt to regard it through the eyes of Mr. Punch—as a fit subject for good-humoured tolerance and jest.

That is wrong.

If we enter on National Anti-rat Week with earnestness and vigour, we shall accomplish one more prophylactic bound towards that great tactical objective, health.

VII.—The Attack.

There must be a good tactical plan, based on the best information obtainable. (F.S.R. II, 67, (1).)

I have talked about that supreme gift, the clinical sense.

However, before the plan of attack is decided upon, every piece of relevant diagnostic evidence must be brought up in support of clinical sense.

Where the clinical sense is weak, or absent, subsidiary diagnostic methods become the main sources of information.

To ignore these principles is to risk ambush: the ambush of symptoms. This is a risk which no honest, competent medical man will take. It is often taken by a certain type of “popular,” incompetent practitioner, and knowingly too; but whereas the competency of the one is always discoverable, the incompetency of the other is often camouflaged by that charming bedside manner which deceives those who would know everything about their ailments—except the truth.

Beware of the man whose habitual plan of attack is directed against symptoms. If you are really intent on defeating your enemy, you do not reply to his fire by stuffing wool in your ears.

The best information is that which directs you to the root of the trouble.

The sound plan is that which encompasses the uprooting of the evil. This will eradicate the mischief while others, less well advised, are still lopping the branches.

It follows that the attacking troops must be given definite objectives. (F.S.R. II, 68 (1).)

With rare exceptions, the more simple a prescription is, the better it is. You will find that, as a rule, a prescription which contains a dozen or more ingredients will raise a smile; that is, if the author of the thing is not the doctor to whom you have shown it.

The sharpshooter’s weapon is not the scatter-gun.

Success must be followed up until the enemy’s power is crushed. (F.S.R. II. 79 (15).)
A medical officer often asks himself: "Does this person think I am a miracle worker?"

The question arises when a patient (not always an appropriate designation) who has been ill, say for six days, becomes tired of it, calls in his medical adviser, and then becomes fractious because he is not cured in six hours.

From the patient's point of view, duration of illness : duration of cure :: x days : x hours.

This may be human: obviously it is not reasonable.¹

But then, even if you do defeat your enemy in six hours, the victory may—and probably will—cost losses which take six days to make good. In other words, cure does not necessarily connote an immediate return to health and strength; the initial success is followed by a period of convalescence during which the disease is followed up and finally crushed.

In the Service this is apt to be a difficult time for everybody. At one end the barrack-room houses the fit; at the other the hospital shelters the unfit. The medical inspection room is the bridge. The M.O. inscribes the morning sick report with such entries as "Discharged from hospital. To attend." He does not do this with a good grace for, although he is doing the best he can for the patient under the system, he is not doing the best that is possible. Also, he knows he is annoying the adjutant and irritating the sergeant-major.

In time of war this defect is blotted out by convalescent and advanced convalescent depots—institutions which are comparatively cheap and most efficient.

Should they not be given a place in peace establishments?

VIII.—THE DEFENCE.

The first essential is to decide on the general line in front of which it is intended to stop the enemy. (F.S.R. II, 91 (2).)

In organizing a defensive position the objects to be attained will be: . . . (iv) The establishment of a network of defended localities which will contain a hostile penetration. S.O.S. Tactical Exercise No. 4.)

Nature studied from the standpoint of medicine provides many, and striking, illustrations of these principles.

You all know about inoculations, but you do not know much about the disease for which "T.A.B." is the great prophylactic.

The germ of typhoid begins its attacks on the lining membrane of the lumen of the bowel, where it grows and multiplies, manufactures its poisons and damages its environment.

"The line in front of which" is the peritoneum; the membrane which

¹ The Service M.O. is constantly up against this view. See a suggestive chapter entitled "Medical Attendance on Military Families" in Major M. B. H. Ritchie's book "Æsculapius Armaque." Therein the author says: "Payment of a medical adviser is one of the psychological factors of effective treatment."
envelops the external surface of the bowel and lines the whole of the abdominal cavity.

Treatment is directed towards: (1) Supporting the general strength of the patient; maintaining morale. (2) Weakening the effects of the toxins; counteracting enemy propaganda. (3) Preventing penetration of the peritoneum; preventing rupture of “the line in front of which.”

If treatment fails us the germs thrive, their positions become ulcers which destroy the defences, the peritoneum is broken, and widespread invasion of areas vital to the patient’s life follows.

However, the network of defended localities may hold up the invading hosts; may even stabilize the penetration and afford time for the preparation of a counter-attack which, in turn, may change the whole aspect of the case.

These localities are the lymphatic glands, and they are connected by a network of lymphatic vessels. You know them well; the painful armpit which follows vaccination, the swollen groin which follows a septic foot. They are wonderful strong-points; they have saved many a patient’s life and many a doctor’s reputation.

Any tendency to regard position warfare as the normal form of warfare must be repressed. (F.S.R. II, 98 (2).)

Those of us who served through the Great War will say “Amen” to that; but the doctor who is engaged in perpetual warfare of a harrowing and depressing description, must be forgiven a measure of scepticism. Even the optimist is doubtful, for the trump card may be in the enemy’s hand. Too often the adversary imposes position warfare—and there is no escape.

Senility.
Monkey-gland?
No—let us succumb to senility.
Incurable disease.
Symptomatic treatment?
Yes, for uprooting is not possible. . . .
And yet, through it all Hope lives triumphant, for has it not been shown a hundred, a thousand, times that the incurable of to-day is the curable of to-morrow.

Nil desperandum—a splendid motto for soldier and doctor alike!

IX.—Retirement.

The retreats of great generals and of armies inured to war have always resembled the retreat of a wounded lion. (Clausewitz.)

With equal truth it may be said that the retreats of great doctors, and of modern therapeutics, resemble the retreat of a wounded lion.

Cholera is a disease in which the body tissues suffer from an extreme depletion of fluids. So violent and rapid is the attack, that the patient is
usually on the threshold of the other world before medical aid can be obtained.

There was a time—not so very long ago—when this medical aid was in the nature of a forlorn hope, but now, it is anything but that. An officer of the Indian Medical Service, Major (now Sir) Leonard Rogers, conceived the idea of injecting into the patients' veins some pints of strong salt solution. This, if carried out in the prescribed manner, lessens enormously the risk of a fatal issue.

By this procedure I have seen patients snatched from the jaws of death—speaking quite literally.

Another example from military medicine is that of blood transfusion by the "typed donor" method; one of the very few benefits which the Great War has conferred on mankind.

This measure is usually employed in cases of great loss or destruction of blood, and was of incalculable value in extensive shell wounds, etc., where shock was a factor.

It depends on the fact that, in human beings, there are found four different "types" of blood. The patient's blood type is first ascertained, and he then receives blood transfused from a volunteer donor, whose blood is of an appropriate type.

Here again, the patient who seems to be on the very brink of the grave will recover in the most astonishing manner.

So long as there is a spark of life left, a wounded lion may return to the charge at any moment.

"All very well" you say, "but what of the fashionable terrors of to-day?"

Well, it is true that we cannot see the sky for 'planes; we cannot hear our own voices for the roar of exhausts; we cannot taste or smell for the noxious products of chemistry.

All that remains to us is touch—and that is not enough.

Nevertheless, we need not despair.

When at work in a regimental aid post, and while wearing a gas mask, I have tried to stop the bleeding from a severed artery.

I failed.

It is unthinkable that chemists will be allowed to continue to release uncontrollable vapours which draw no distinction between friend and foe; which do not even single out the Red Cross of Geneva—except to bleach it white. The wordy protagonists of these methods are by no means the only people who are thinking about them.

The trouble at the present moment is lack of control. Why, even a mechanized force as often as not loses touch with its own commanding officer! Of what use to it is a M.O.? And as for the denizens of the air—so long as they remain content to kill, and be killed, without the slightest hope of earthly succour, so be it.
However, the day will come when gas, tanks and aeroplanes will not only be fashionable; they will be popular. The day of experiment will have been succeeded by that of experience, on which alone, sound practice can be based. It will then be found that these weapons have so altered, modified and developed their methods that they are able to do something which they cannot do now—to wage war in what we are pleased to call a "humane" fashion.

When that day arrives they will ask for medical aid, and the aid will be forthcoming for, in the past, Medicine has solved bigger and stranger problems than that.

APPENDIX.

SUGGESTIONS FOR LESSENING THE SOLDIER'S LOAD.

**Abolish:**

- Steel helmet - a relic of the trenches ................................. 2
- Pack, with supporting straps ............................................. 1
- Cap comforter ................................................................. 3

**Lessen weights of:**

- Braces, 4½ oz. ................................................................. 1
- Knife, clasp, 7 oz. ......................................................... 2
- Waistcoat, cardigan, 1 lb. 7 oz. ...................................... 5
- Bayonet, scabbard and frog, 1 lb. 12 oz. ......................... 8
- Water-bottle, with carrier, 1 lb. 6 oz. ......................... 9
- Web belt, braces with buckle, cartridge carriers and haversack, 4 lb. 8 oz. 1
- Mess tin and cover, 1 lb. 4 oz. ...................................... 6
- Knife, fork and spoon .................................................. 2

**Substitute:**

- For boots, ankle ............................................................ Shoes 1
- For cap, service dress, with badge .................................. Beret 3
- For drawers, woollen ...................................................... Pants, woollen 9
- For jackets, S.D., with titles and 1st fd. dress .................. Blouse, serge 9
- For puttees 1 pr., socks 2 prs. ....................................... Long stockings, to turn up or fold down, 2 pr. 7
- For trousers, S.D. .......................................................... Shorts 10
- For sheet, ground .......................................................... Poncho, waterproof, lined (No change) (N.B.—Load already includes cheese, 3 oz.)
- For iron rations ............................................................. Tea 1 oz., sugar 4 oz. 2

(Net saving) ................................................................. 12
Or, if box respirator is not carried, add 2 15

Net result on load .......................................................... 42 lb. 9½ oz.
Or ............................................................. 37 lb. 10½ oz.

_N.B.—(1) Present load includes unconsumed ration—say, 12 oz. But even if this is not carried, the weight is certainly exceeded by private belongings carried in the pockets.

(2) Abolish the greatcoat, and carry an extra pair of shoes and other necessaries in the transport which was used for the greatcoat.

(3) Decrease of weight often means better quality and increase of cost, and perhaps—not always—shorter life. Hence, changes such as suggested would lead to strenuous opposition from the administrative (not including medical) side._