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Friday, June 10, 1892.

SIR THOMAS CRAWFORD, M.D., K.C.B., late Director-General
Army Medical Department, in the Chair.

AMBULANCE WORK AND MATÉRIEL IN PEACE AND WAR.

By Mr. JOHN FURLEY.

As soon as I had accepted an invitation from the Council of the Royal United Service Institution to give a lecture in this theatre on "Ambulance Work and Matériel in Peace and War," though fully appreciating the great compliment, I found myself in front of an immense task. The subject proposed is a very comprehensive one, and it might easily be divided into three separate lectures: 1. Ambulance work in peace; 2. Ambulance work in war; 3. The manner in which the former can be made subservient to the latter. It is perhaps within my competence to deal in some measure with the first and third parts of the subject, but I naturally hesitate from venturing to express opinions on matters which are exclusively military. However, after a week's consideration, I accepted the flattering invitation, and I now trust that, whatever my shortcomings may be, and inadequately as I may perform the duty assigned to me, full credit will be accorded for a sincere desire on my part to assist, to the extent of my humble powers, in the solution of one of the most complicated and difficult problems of modern times, and one in which civilians have as great an interest as soldiers.

Although I am not in a position to treat this subject in the full and exhaustive manner which you have a right to expect from this place, I think I can understand why a layman should be invited to express an opinion on matters which are daily, and deservedly, engaging more public attention. Is it not because the subject is one which appeals to humanity, and in which every man, be he soldier or civilian, and,

indeed, every woman, claims to have a share? But I need your fullest indulgence, as the difficulties of my position are increased by the fact that for more than a quarter of a century I have been closely identified with practical ambulance work in well-nigh every part of Europe, both in peace and war, and the point of view from which I regard it is, in many respects, entirely different from that which the military administrator occupies. Whilst he is more or less bound by the rules and regulations of the Service to which he belongs, he probably looks upon me in the same light as did Dr. William Howard Russell, when, in a friendly spirit, he characterized me as a chartered libertine of philanthropy.

I need hardly assure members of the military profession that I have no intention to trespass on ground which properly belongs to them, but I am bold enough to think it quite possible that, whilst confining myself to limits within which I have had some experience, I may be able to show how, in some degree, the Army Medical Service can be supplemented in time of war, and how something may be gained by co-operation between military and civil organizations. If I appear somewhat egotistical, this must be attributed to the fact that, not being entitled to act as a critic of military institutions, I am obliged to bring forward the results of experiences shared with others, and of experiments due to my own initiative. The principal object in view, then, will be to indicate the points where civil and military systems touch.

And first I shall say a few words with regard to ambulance transport matériel. In this the stretcher is the most important element, and the essential features of its construction should be simplicity, strength, and lightness. As a modest inventor, I have also persistently striven to attain uniformity in size, if in no other respect. This uniformity is almost as necessary in peace as in war. How much suffering might be saved if all European Governments would adopt a uniform measurement for stretchers, that is, as far as the length and breadth are concerned. What gratuitous suffering is caused when a wounded man has to be moved from one stretcher to another, because one is made to fit a particular ambulance carriage and the other is not! If all stretchers were uniform in size, ambulance wagons would be, of necessity, constructed to take any of them, to whatever army such vehicles might belong. At the International Conference of Red Cross Societies, held at Geneva in 1884, Sir Thomas Longmore, M. Ellissen, of the Société Française de Secours aux Blessés Militaires, and I brought forward a proposition with this object, but without much success.

In peace this uniformity is equally advantageous, if not essential. When acting as the Director of the Ambulance Department of the Order of St. John, I endeavoured, and with some success, to obtain it. The work of the Invalid Transport Corps was thus very much assisted, and, as an interesting example, it may be mentioned that one of the first invalids, for whom arrangements had to be made for a long journey, was the late Lord Cardwell, who was brought from the Mediterranean to Eaton Square without a change, his lordship

remaining during the whole journey in a bed made upon one of the ordinary stretchers of the St. John's Ambulance Association. This could not have been accomplished without the knowledge that the stretcher would fit into all the carriages which were used.

It is true that a Minister of War, with the fear of a House of Commons ever before him, is in a very different position with regard to stores of matériel than is a civil association. The latter can make experiments and issue matériel by slow degrees on trial, but the War Department of a Government, having had stores manufactured on a large scale, cannot sacrifice these in order to adopt subsequent improvements, without a very considerable loss of time and money, a loss which might be sanctioned for weapons of offence and defence, but which, unfortunately, would not, under present circumstances, be allowed for ambulance purposes.

There are in the room, for the inspection and comparison of those who may be interested in such matters, two or three stretchers of different patterns. One is the present Army regulation stretcher, Mark V, the invention of Surgeon-Major Faris. No. 2 is known as the "Furley" military stretcher; this is, in its dimensions, quite uniform with the "Faris" stretcher, but it differs from it in certain important details. For instance, the Army stretcher has an independent pillow which is, I believe, never used at drill or taken out on field days; and on active service it is sure to become separated from the stretcher. Now, in the second pattern I have mentioned, it will be seen that the pillow is formed by doubling the canvas at the head and closing it with a lace; into this straw, hay, a coat, rug, or other soft material can be put when required. There are also two other stretchers which have been largely used by the St. John's Ambulance Association. No. 3 differs in few respects from No. 2, but it has an automatic pillow; and No. 4, to which attention may be particularly invited, differs from all the others, in that the handles are telescopic. Now, had it not been for fear that by asking too much I should lose all chance of gaining a hearing for other proposals, I should long ago have advocated the use of stretchers with telescopic handles in the Army; but such a change would involve many considerations which do not affect the civilian. It would mean some sacrifice of the existing Army stretchers, a change in the ambulance wagons, and also some alteration in the drill of bearer companies. Imagine the effect of such a suggestion at the War Office! Great advantage would, however, be derived if the proposal could be adopted. The stretcher might be reduced in length from 7 ft. 9 ins. to 6 ft. or 6 ft. 6 ins., and thus every ambulance wagon might also be made 1 ft. 9 ins. or 1 ft. 3 ins. less in length: besides this, the transport of sick and wounded by rail would be much facilitated, and in tents and temporary hospitals the passages could be kept clear of stretcher handles, which are so often knocked against, to the great discomfort of those lying on the stretchers.

The authorities who order wagons to be built to receive the long stretchers do not have the inconveniences brought home to them so strongly as they are impressed on civilian ambulancers, who are daily

occupied in endeavouring to adapt their stretchers to vehicles of ordinary length. In the Mark V Service wagon, which is a combination of Mark IV, the American wagon, and the South African trek-wagen, the disadvantage of long stretchers is very evident to anyone who will give the least thought to the matter, as holes are made in the tailboard in order to allow room for the handles. The exposure of the poles of a stretcher to rough contact is a very serious matter to a badly-injured man lying upon it, for in such a case occasional shock cannot be avoided. Besides, the holes admit a draught of air from end to end of the stretcher. Putting on one side all the difficulties in the way of a change, telescopic handles have everything in their favour from the stand-point of the patient, the medical Officer, and, I may add, the carriage builder.

It may also be remarked that stretchers with telescopic handles, the beds of which are generally made about 6 ft. or 6 ft. 6 ins. in length, are not only to be recommended because their adoption would allow ambulance wagons to be made of less length than at present, but also because they are more easily adapted to ordinary carts, wagons, and trains.

Military stretchers with telescopic handles can, certainly, be made to combine simplicity of construction and reliability as regards strength and endurance, whilst the increase of cost (if any) would scarcely be appreciable.

Those who have had to deal with the subject of mule pack-transport may be interested to examine a jointed stretcher which is shown here to-day. This stretcher, when opened for use, is very similar to the military stretcher of the St. John's Ambulance Association, which has already been mentioned; but the shafts are made of wood, jointed in two places, with telescopic handles. The stretcher can thus be formed into a compact parcel, 37 ins. in length, and $6\frac{1}{2}$ ins. in width and height, and the weight being 29 lbs., six of them can easily be carried by a mule. This is a special military stretcher, not often likely to be required for civil purposes.

The next point to be noticed is that of two-wheeled litters. The policy of using such vehicles on active service will not, I think, be advocated in the present day by any military man; but in base hospitals and at home stations they are of the greatest use, and in Indian cantonments, or even during a prolonged siege, they might be found very useful. The "Ashford" litter was designed to meet the requirements of the St. John's Ambulance Association, and it has been adapted to the Service regulation stretcher, and is in use at some of the home stations. Here again, the advantage of uniformity is once more demonstrated. Let us suppose that a railway company has a stretcher at each of its stations, and an under-carriage at such of the stations as are within one mile of a hospital; in case of accident or illness on such a line, a patient arriving on one of the stretchers can be placed on any one of the under-carriages and wheeled without delay to a hospital. So, if ten or more stretchers are distributed over a town of a few thousand inhabitants, if one or two under-carriages are placed at convenient points, such as a townhall, a police office, or

a fire-brigade station, the bearers, if they have to take the stretcher any distance over a quarter of a mile, find relief for themselves and greater comfort for the patient by sending for an under-carriage to meet them on the road. Such under-carriages adapted to the regulation stretcher might often be conveniently used in the Army for short distances in preference to the ambulance wagons, which cannot be so speedily equipped.

The under-carriage of the "Ashford" litter has also been adapted to the Navy cot. Formerly, on the arrival of a ship in port, it was necessary to take an invalid out of his cot and place him on a stretcher, whilst by using this under-carriage he can remain in the cot until he reaches the hospital or shore.

And this brings us to the subject of ambulance wagons—a very difficult problem. If I were asked what army in my opinion possesses the best and strongest built wagons, I should unhesitatingly reply that it is the British Army, and I am afraid the answer would be the same if it were left to me to decide which army has ambulance carriages the least fitted for the conveyance of the sick and wounded. The reasons for this latter unfavourable comparison are chiefly due to two causes. In the first place, owing to the extent of this Empire and the variety of countries and races of which it is formed, Army ambulance wagons are made so that they can be rapidly taken to pieces and shipped to any part of the world; secondly, they are intended for a double purpose, namely, for the transport of stores as well as of invalids. I have no hesitation in asserting that no vehicle can properly meet these two requirements, as the springs which will bear a heavy load of stores are obviously unsuited when only three or four men and their kits are upon them. I am speaking from personal knowledge of these vehicles, in which I have made journeys of considerable length, and on those occasions I could but congratulate myself that it was not as a wounded man I was travelling.

Although a certain number of wagons specially intended for the carriage of the sick and wounded are absolutely necessary for every army, more attention should be devoted to the adaptation of means for making an ambulance carriage out of any country cart.

The expression "improvised methods of ambulance transport" is a very favourite one, but these improvisations are generally the result of much thought and of many experiments. We also know that in actual war they signally fail for want of the very simple material, without which the arrangements cannot be completed. "Improvised means of ambulance transport" is a phrase which ought not to be allowed in the Service, because it implies the postponement of preparation until a time when the greatest strain is put upon all resources, and it may not be possible even to extemporize. It is different in civil life, when we have only to deal with individual cases, and when those who have thought out the matter beforehand can generally find what they want.

The nearest approach to a real improvisation of ambulance material that I ever saw was the use which the late Surgeon-Major

Porter made of telegraph wire, which he found torn from the posts and scattered about the country in 1870 during the Franco-German War. Doubtless he had already decided what use he could make of wire, and fortunately he found a supply at hand, and of this he manufactured splints on the spot.

Both for civil and military purposes, too much time cannot be devoted to this subject of extemporized means, but as it is acknowledged how much can be done with the simplest things, such as rope, wire, canvas, iron staples, &c., I would strongly recommend that the employment of these be not neglected in favour of more costly and complicated appliances.

It appears to be the impression in some quarters that wherever a gun can be driven there also an ambulance carriage can be taken, and that for this reason such vehicles should be of the strongest description. I have seen empty ambulance wagons driven over broken country and the attempt made to bring them back again with wounded men in them; but it is doubtful if any Officer who had tried this once would repeat the experiment. Confining myself to Europe, I am inclined to believe that it is scarcely ever necessary for ambulance wagons to be taken off the roads, except when they can be driven over comparatively smooth ground, or it may be necessary to move them out of the way of a marching column. I have never known an instance in which the removal of wounded to ambulance wagons was not more speedily performed by leaving the wagons on the roads or on ground not intersected by ditches or other obstacles, and carrying them on stretchers to the wagon stations, even if the distance were 300 or 400 yards, and this plan certainly saves an agony of suffering to the patients.

All this, and if I am wrong there are those present who can put me right, tends to show that there need not be that great difference of construction between such ambulance carriages as can be used for civil purposes and those which have to accompany armies in the field. Absolute similarity is, for many reasons, impossible, but military ambulance wagons might be much better adapted than they are to the purpose for which they are intended.

Whatever opinions may exist as to wagons for use during a campaign, is there any reason for maintaining one type of ambulance wagon for all circumstances and all countries? The *sine quâ non* of Army ambulance wagons is that they should be able to take two regulation stretchers: but is it necessary that they should all be alike for peace or war, winter or summer? Is there a single one of these vehicles in the Home District at the present time in which one of us would care to be moved, say, from Woolwich to London? Had these wagons ever been tried by English Officers as, in common with many distinguished Officers, I have tried various patterns in use on the Continent, at the trot and the gallop, over smooth and rough ground, I am quite sure that some of the vehicles now in use would long ago have been condemned as lumber. It is only by trials such as these to which I have just referred that a right estimate can be formed, and even then every allowance must be made for the different

circumstances of the men who in a state of vigorous health submit, by way of experiment, to be carried on stretchers and then placed in these wagons, and those who, mangled by shot and weakened by loss of blood, have no choice left to them. No doubt apologists can be found for the wagons which for use in active service I have so unhesitatingly ventured to denounce; but will anyone defend their use in time of peace in our towns and on macadamized roads?

With the proviso I have mentioned that each wagon should be of a standard length and breadth, there is no reason why for home service our soldiers, when invalided, should not be carried from one place to another as comfortably as the civilian, or why they should not have as good springs to the carriages and as much protection from exposure to draughts of cold air. I never see one of our Army wagons with the red cross painted on it passing through the streets or along the country roads, but I invariably groan at the suffering entailed on those who are compelled to use them. I trust the time is not far distant when, at any rate for home service, all invalids, whether soldiers or civilians when they have to be moved, will be conveyed in carriages with comfortable springs and so covered as to exclude cold draughts.

I should not speak as I have been doing if this subject were new to me. In other countries I have travelled with wounded men in carriages which left little to be desired, and these vehicles stood the test of war. As an amateur I have also superintended the manufacture of a large number of carriages which have been built on my own patterns. I do not pretend to say that these are perfect, but I think, without undue vanity, I may assert that they tend in the right direction. I have made mistakes, but these very mistakes have been of some assistance to others. One of the first vehicles I had built was partly designed, though for civil use, on a military pattern, and the body was formed of a strong frame with canvas curtains, but I soon found that in this climate curtains were not proper for such a purpose, and therefore I never again used them except in an ambulance carriage designed for Cairo. These two carriages, one for Yorkshire and the other for Egypt, illustrate my argument that the British Army, though requiring carriages with an interior measurement of one uniform size, must alter the actual construction of them to meet the great variety of circumstances with which it has to contend.

Of the seventy civil ambulance carriages to which I have referred as having been built under my direction, all those of most recent construction have been made not only to take stretchers with telescopic handles, but also the Army regulation stretcher, so that they can be utilized for districts where they happen to be, and these might be usefully registered at the War Office. The plan for adapting a carriage of ordinary length to the Army stretcher is so simple that, I think, there is more probability of its adoption than that the pattern of the stretcher will be changed.

For many years I have strenuously opposed the use of horse ambulance vehicles on two wheels, but the altered conditions of war,

to which I shall presently refer, have compelled me to modify my opinions. The distinguished Austrian surgeon, Professor Billroth, states that in future it will be necessary to place a great number of light carriages even close behind the line of battle, for the purpose not only of transporting the wounded to the field hospitals, but also to remove them from the battle-field itself, provided that the ground allows it. Although I do not like to use carts with two wheels if it is possible to have them with four wheels, I must admit that they are occasionally very useful, especially on ground where a heavy wagon would probably become bogged.

The two-wheeled cart designed by Colonel Close, R.A., is very ingenious, and there is much in it to admire; but it is very heavy and expensive, it requires two horses, and altogether involves a waste of power. If a two-wheeled vehicle must be used, I prefer the little French ambulance cart, which can be drawn by a single horse or a mule. I have used such carts, each carrying a stretcher and one or two men seated, on ground where heavier carriages could not have been employed.

There is on the wall the drawing of a cart which, I think, might prove very useful; it will carry two men on stretchers and two seated, or six slightly wounded men seated. There are also racks for the rifles and kits. When wounded men are conveyed in a two-wheeled cart, the animal in the shafts should always be led, and not driven.

Mule cacolets still have their advocates, but for European warfare, except in the Alps, I am not disposed to give them any consideration. Even in the Pyrenees, during the last Carlist war, it was very seldom that wheeled transport could not be employed. The cacolet is practically an instrument of torture, and it should never be used if any other means of conveyance be possible.

As might be expected, more attention has been devoted to the subject of railway ambulance trains on the Continent of Europe than in this country. Here the distances are so much shorter than on the Continent, especially as such trains may be utilized from one country to another, as was done in 1870-71, when admirably arranged ambulance trains ran between the army before Paris and Metz and different parts of Germany. The most complete trains of this kind are to be found in France and Austria; these are chiefly due to the initiative of Baron Mundy, and in the latter country they are provided at the expense of the Order of Malta. In Germany special attention has been paid to the conversion of luggage vans for this purpose; and this system has also been adopted in Italy, where I recently had an opportunity of seeing a complete train so arranged, and of appreciating its merits in the course of a journey between Rome and Tivoli. In England, as far as I am aware, only two railway ambulance carriages exist, and these are intended chiefly for use between Southampton and Netley; but there is good authority for believing that, if ever the occasion should arise, the railway companies would be quite equal to it, and ambulance trains could be made up and run at short notice.

I must repeat that I have not much faith in "extemporized" methods, unless they have been carefully thought out and the necessary material prepared beforehand. With very simple means, ambulance trains can be readily arranged, but the first point is to select the vehicles which can be most readily adapted for the conveyance of seriously ill or wounded patients; the ordinary carriages will answer the purpose for cases of less gravity. Roughly speaking, it has been found that the luggage vans used on express trains are the best for such use, as they are well built, and the springs are superior to those on the vans of ordinary passenger or luggage trains, being longer and more elastic.

If Great Britain were engaged in a war on the Continent of Europe, or in Canada, it would be absolutely and immediately necessary to bestow more attention on this subject than has hitherto been done, and we could not do better than be guided by the experience of those States in which sanitary trains have already been largely used.

In arrangements for invalids on board ship, our experience is probably superior to that of any other country, but more attention might perhaps be bestowed on river and canal transport, for which the last Egyptian campaign has prepared the way in a very practical, though costly, manner.

Even such a brief allusion to ambulance matériel as I am able to make in this paper cannot omit some reference to the subject of portable hospitals, to which much attention has been devoted during the last few years. It was the late Empress Augusta of Germany who first gave a practical impetus to the consideration of this important question, and I may add that her name will ever be associated with the Red Cross and gratefully remembered by those who work under its flag. The patronage of the Empress Augusta was not merely nominal, but it was practical and intelligent, and she took an active part in everything which could tend to the development of Red Cross Societies, an interest which was not confined to Germany, but was extended to every country in which these and kindred societies exist.

In 1885 Her Majesty gave valuable prizes for the best portable barrack hospitals, and the competition took place at Antwerp. Three years later she gave other prizes on an equally liberal scale for the best equipment of such hospitals. As I had the honour to be a member of each of the international juries to which the decision was entrusted, I naturally feel more than ordinary interest in this matter. The result of these trials has been most practical and satisfactory, but we have not yet seen the whole of it. The first prize for the best portable hospital was given in 1885 to Messrs. Christoph and Unmach, of Copenhagen, for their hospital built on the system of the Danish Captain von Doecker: this is admirably adapted to meet the requirements of European countries the most widely different with regard to climate.

Recent experiments have, however, shown that, whilst under certain circumstances these portable houses may be of the greatest advantage, we cannot altogether dispense with the use of tents.

The most exhaustive trials that have yet been made of the two systems were carried out at the express desire of the Empress of Germany, who, in this respect, is following in the footsteps of the Empress Augusta. These experiments were made at Tempelhof, in the vicinity of Berlin, and the temporary hospitals were ready for use by invalids on the 1st July last, and continued to be thus occupied for six months, so that the extremes of temperature were experienced. Though it would take too much time to enter into all the details of these trials, it may be briefly stated that in some respects, especially for durability, the preference was given to the more permanent barrack, but for portability and rapidity of construction and installation the decision was in favour of the tents. The report admits that each system possesses special advantages: the Doecker barrack is more portable than any hut yet invented; it can be easily disinfected, requires to be painted only at intervals of two or three years, and it is particularly well adapted to retain a warm temperature in the autumn and winter; but, on the other hand, its construction occupies more time than could be allowed in case of the rapid mobilization of an army.

The double canvas tent can be manufactured in a few days, and put up and furnished ready for use in the course of an hour by three or four men; it is more airy than the portable hut, and is thus better adapted for the summer. It bore the test of very severe cold; it is, however, less easy to disinfect than the former, and is certainly less durable, but it is cheaper.

The final decision arrived at was that neither system could in every respect be absolutely preferred to the other, but that the advantages of both should be utilized. In time of peace, and when remote from the field of active operations in war, the Doecker huts can be recommended, but during war and in the second line the double tents have many advantages.

I may supplement these remarks on portable hospitals by inviting your attention to the ingenious invention of Captain Tomkins, which gained one of the Empress Augusta's gold medals, and of which there is a model in this hall, for the inspection of those who are not already acquainted with it. The "Tortoise" tent is a most useful addition to ambulance matériel, both for peace and war. For peace a movable hospital has long been wanted, not only for great casualties in which there are many sufferers, but also in epidemics. It would be better in such cases, especially in the provinces, to take a hospital to the spot where it is required than to remove the sick and suffering to town hospitals, which perhaps may be already full. The pioneer in this matter was, I think, Mr. Albert Napper, of Cranleigh, to whom we owe the origin of cottage hospitals. I endeavoured to assist in the same direction, but, until the competition for the prizes offered by the Empress Augusta, in 1885, no actual progress was made; we are now, however, within measurable distance of such a hospital as that advocated by Mr. Napper. Many occasions arise in time of peace when the "Tortoise" tent might be used with most beneficial results, such as great colliery accidents or shipping disasters

on the coast. I have had personal opportunities of estimating the value of these tents, once during great heat in Germany, and, for a longer period, during very cold and damp weather in South London, where for a month a number of invalids occupied one of them as a hospital.

This tent can be used without the wagon in which it is usually carried, and it is arranged to be borne by horses, mules, or even by men; but the wagon gives a greater value to the tent, as with it there is a hospital complete with beds, furniture, &c., for twelve or twenty beds with cooking apparatus and stores, and this can be extended in proportion to the number of "Tortoise" wagons available.

The "Tortoise" tent has been tried at great military manœuvres in France, Russia, Finland, Denmark, and Austria; it has been adapted to the ambulance wagons of these countries, as well as to those of Germany and Turkey, and it is well known at Aldershot and Bisley. One of its great merits is, as has been recognized on the Continent, that it can readily be adapted to existing military wagons, and this forms a strong recommendation to War Ministers who are dependent on Chancellors of the Exchequer.

I am glad to have this opportunity to congratulate Captain Tomkins on the ingenuity, energy, and pluck he has for many years displayed. Old Volunteers, like myself, can recollect his cooking stoves in the Victoria Camp at Wimbledon, and the hospitality these camp kitchens encouraged. By steady stages he has persevered until his modest stove has developed into a complete portable barrack, which is useful for a variety of purposes: for ambulance work in peace or war, for soldiers on the march, and also for sporting and exploring expeditions. The "Tortoise" has already made the tour of Europe, and it is not too bold a prediction to assert that, give it time, it will make the tour of the world.

Thus far my remarks have been confined to ambulance material. I now propose briefly to indicate how the Army Medical Corps might in time of war be supplemented by civilian aid. It would be an impertinence on my part to attempt to describe, much more so to criticize, the Medical Department of the British Army. There are gentlemen present who know far more about it and its resources than I can pretend to do. Nor do I intend to express any new ideas with regard to the Volunteer Medical Staff Corps, a valuable body which is capable of great development; or as to the latest organization sanctioned by the Secretary of State for War and the Commander-in-Chief on the recommendation of the Director-General, which will provide a Militia battalion for the Medical Staff Corps. I shall limit myself to that which is more within my own personal experience, and to the consideration of the assistance which might be rendered by a purely civilian element, especially in relation to home service.

The work of the Red Cross Societies may be compared to our Volunteer Army as some of us remember it during the first years of its existence. It sprang into being with such rapidity that it quite astonished the military authorities when they suddenly found them-

selves in charge of a supplemental Army. The control of this body was divided between the Lord-Lieutenants of Counties and the military chiefs, and the eccentricities of men who exhibited so much patriotism and who so freely gave not only their time but also their money towards the national movement were not too severely regarded. Gradually the character of the force was changed, and brought into harmony with the existing military institutions of the country, and much as the present Volunteer Army differs from what it was during its earlier years, there can be no doubt that it is now a most efficient and valuable addition to the Regular Army.

So it is with the Red Cross Societies. The Convention of Geneva was signed on the 22nd August, 1864, and the first war in which any of these societies took part, though to a comparatively small extent, was the Bohemian Campaign of 1866. Most of the European Aid Societies put forth their full strength during the Franco-German War in 1870-71, and we know what was done by the British National Aid Society, under the able direction of Lord Wantage; and, as women had a large share in this, may I also be permitted to name Lady Wantage, who assisted so materially towards the good results. But time has shown that such freedom and latitude as was then allowed, under the press of new and abnormal conditions, will never again be permitted to Aid Societies, nor do I think they should be. No doubt, in a Continental war, there will always be considerable irregularity in the way that neutral States in the neighbourhood of the belligerents will afford aid to the sick and wounded, should a great battle occur in close proximity to the frontier. No regulation will, under such circumstances, be quite effectual in stemming the current of philanthropy which will inevitably be let loose regardless of Conventions. We witnessed this in 1870 on the frontiers of Belgium, Luxemburg, and Switzerland. But such occasions are exceptional and no more affect the broad principles of the Convention of Geneva than do the kindly acts of people whose neighbours' house is on fire affect the law of trespass. The great and terrible experience of the Franco-German War and of subsequent campaigns has considerably modified such opinions as were previously held with regard to the Convention of Geneva, and although very liberal notions are still entertained, especially in this country, as to the right of benevolent neutrals, these will, I think, have received a severe shock on the outbreak of the next European war. The fact is, to follow out the comparison I have already made, the Red Cross Society of a nation will henceforth bear the same relation to the Medical Department of its Army as the Volunteers in this country maintain towards the British Army. The great military Powers of Europe have recognized their necessity, and the philanthropic ardour of the Red Cross Societies has not in any way been diminished by the efforts which have been very successfully made to bring them under strict military administration in time of war. The great secret is to allow to each society the fullest liberty to manage its own affairs during peace on lines agreed upon between the War Minister and the official representative of the Society, then when war is imminent the whole of

this Volunteer supplement can be readily mobilized and it becomes virtually a part of the national Army.

I have more than once described the plan adopted by Continental States in order to produce this result. On the present occasion it will, perhaps, be sufficient if I take France and Germany as the best illustrations. It would afford me infinite satisfaction, if in a humble measure my words could have some effect in this country, and if, learning from the dearly-bought experience of others, we might be induced to adopt a somewhat parallel system. The first step in this direction should be the appointment of an Officer (of high military rank if possible) to represent the civil Aid Societies at the headquarters of the Army.

In France the Red Cross Society holds a very prominent position. The Central Committee of Paris has, since its formation, maintained intimate relation with the military authorities, and it corresponds directly with the Minister of War through the medium of its President and with the Generals Commanding Army Corps, by means of delegates officially appointed. On the 3rd July, 1884, a Decree was passed with the object of bringing the Society into conformity with the changes that had taken place in the Army since the war of 1870-71, authorizing the *Société de Secours aux Blessés des Armées de Terre et de Mer* (the official name for the Red Cross Society of France) to supplement in time of war the military sanitary service, to distribute gifts offered by public generosity, to establish hospitals in places that may be indicated as requiring them, to render assistance in the transport by railway of sick and wounded soldiers and sailors, in the railway station infirmaries, and in all the auxiliary hospitals at the seat of war. Since this Decree, two others have been passed, dated respectively 16th November, 1886, and 21st December of the same year. The first recognizes *l'Association des Dames Françaises*, and the second, *l'Union des Femmes de France*. These Decrees limit the co-operation of the Aid Societies with the military medical services to the rear of actual hostilities and to the national territory.

Independently of this assistance the societies are authorized to distribute to the sick and wounded the gifts they have collected. The relations of the societies with each other and with the Official Director of the Military Service are defined by the above-mentioned Decrees. Every establishment of the aid societies is under the surveillance of the Principal Medical Officer of the district in which it is situated, who also superintends all the documents and registers prescribed.

The personnel of the three societies I have named is authorized to wear the uniform and badges prescribed by the Minister of War. All associations in France which, more or less, pursue the same object and which cannot be recognized as independent societies, are required in time of war to become merged in the Central Society, that is the *Société de Secours aux Blessés des Armées de Terre et de Mer*; there is only one exception to this rule, and that is in favour of those strictly local ambulances whose action does not extend beyond the communes where they are established.

At many of the most important railway junctions on the principal lines between Paris and the frontier of France, not only have certain rooms been apportioned for the use of the *Société de Secours*, but a large personnel and all other requisites for hospital use have been allotted for the same purpose. On the outbreak of a war, each of these temporary hospitals can be established and placed on an active footing as rapidly as the mobilization of the army can be effected; and, besides this, the delegates of the society are charged with the useful duty of bringing back invalids from the front and accompanying the railway ambulance trains. These movable and stationary hospitals form the special work of the *Société de Secours aux Blessés Militaires* in time of war, and they offer a large scope for the exercise of national philanthropy without the danger and inconvenience to which reference has already been made.

Great attention is also paid by this French society to the constant improvement of ambulance material; dépôts have been formed in thirty-nine towns corresponding with thirty-nine territorial divisions of the Army, and trials of this material are annually made at the periods of the great military manœuvres. Moreover, schools of instruction for ambulancers and nurses have been established in Paris, and also at Marseilles, Lille, and Nancy.

In Germany, in time of peace, the fullest independence is allowed to the various aid societies which exist in all the States of the Empire, but on the outbreak of war the direction of all the different branches falls to the Central Committee of German Associations of the Red Cross, a body composed of delegates from the societies of all the States, acting under the control of a Commissary Inspector on behalf of the Imperial Government. Many hundreds of committees working in correspondence with the Central Committee of Berlin are scattered over Germany, and the result of this system is evident in the many admirable institutions which do so much good during peace whilst preparing for possible war.

One very important branch in Germany, as in France, has been the formation of dépôts of ambulance material, divided into four distinct categories and placed under the management of a Commission of Surgeons and lay delegates of the Central and Ladies' Committees. The articles contained in these dépôts are again subdivided into such as are absolutely necessary and those which may be useful. Models and patterns are from time to time issued for the use of all the affiliated societies, and in the same manner instructions are given as to the changes and improvements to be made.

The two examples I have chosen as illustrations of Red Cross work, as it is understood in France and Germany, are sufficient to show the manner in which the objects of the Convention of Geneva have been developed in most of the European States. The results have been so satisfactory, and of such wide-reaching importance, that criticism has been silenced. At any rate, when mistakes have been made, they have been of such a character that here in England they would be condoned, even if they did not receive full absolution. We in England have no sympathy for any scheme which locks up great

moral and material resources for a time of trouble which it is hoped may never occur. We, therefore, would allow the fullest indulgence to those who, whilst preparing for war, utilize to the uttermost the generosity of their subscribers and the energies of their personnel in meeting the calls of charity and philanthropy on the vast battle-field of daily life. This is no exaggerated expression, as those will admit who have studied the question in this large Metropolis, or amidst the teeming population of our great industrial and manufacturing centres.

I apprehend that there is no one who believes that the medical department of an army can ever be made fully adequate to the emergencies of great and frequent battles. It was the general recognition of this which gave birth to the Convention of Geneva, and the numerous volunteer societies which subsequently came into existence; and it is this knowledge which will continue to enrol men and women under the emblem of the Red Cross. In 1871 I first publicly advocated the desirability of organizing an ambulance system in peace for the requirements of civil life that might also furnish, if needed, a valuable supplement to the Army Medical Department in time of war; and during all the years I have been connected with the St. John's Ambulance Association I have never lost sight of this object. I was in good company: from the very first I was guided by the advice and experience of Sir Thomas Longmore, who is regarded throughout Europe as one of the greatest authorities on this subject; and more recently we had the valuable co-operation of the late Colonel Duncan, whose eloquent and powerful advocacy of first aid to the injured is still fresh in the memory of those whose privilege it was to be associated with him.

Aid to the sick and injured is quite as necessary in time of peace as in time of war; but whilst preparation is possible in peaceful circumstances, no satisfactory system can be hurriedly organized amidst the turmoil and excitement of war. The examples which I have already drawn from France and Germany show the manner in which volunteer ambulance assistance is understood in these two countries. The distinctive character and institutions of each nation prevent anything like a uniform plan being adopted in all countries, but I venture to submit that, with the machinery we already possess in England, we are in a position to place ourselves, in respect to the administration of aid to the sick and injured, both in peace and war, on a level with any of our neighbours. There is much which we can learn from them; but there is also much we have taught, and are still able to teach them. And having been permitted to take part in the first establishment in Germany of the Samariterverein, it is a satisfaction to me to think that this flourishing institution owes its origin, in a great measure, as its founder Baron von Esmarch admits, to the example of the St. John's Ambulance Association, and that it is now extending its influence through neighbouring States. The field of humanity is a large one, and, fortunately, it is one from which national distinctions promptly vanish. We can realize this when we see wounded enemies lying side by side under the same roof and receiving

equal attention from doctors and nurses, regardless of nationality; but it is well to realize at once that, however admirably a plan may be adapted to peace purposes, it cannot be extended to meet the demands of war unless it be incorporated as a part of the general military system, and this during a period of peace.

It is unnecessary to occupy your time in describing the work of the St. John's Ambulance Association, as this is so fully understood and appreciated throughout the British Empire; but it may be well to explain what has been done towards making this civil institution of great value to the British Army in case of war. It is quite true that at present this does not amount to much, but a very little encouragement on the part of the War Office might lead to a development that would have the most beneficial results for our soldiers and sailors.

A few years ago, in order to increase the usefulness of, and maintain an interest in, the work of the Association, small ambulance corps were organized, and these have since been formed into the St. John's Ambulance Brigade. The object was at first limited to local needs, but with the desire that war should be taken into consideration as well as peace, I was fortunate in finding a corps which had no hesitation in venturing on an experiment which may perhaps help to solve a problem.

Amongst the colliers of Derbyshire, one of the earliest ambulance centres was formed at Tibshelf in 1878, and this has not only been steadily maintained there ever since, but the results it has shown have encouraged other mining establishments to follow the example thus set, and which is due in a very large measure to Captain Stuart Wardell. The Birchwood pits, which are under the same management, also formed a centre in 1882, and the Medical Officers warmly testify to the good that has been done by these two bodies in minimizing the effects of the accidents, which are unfortunately of frequent occurrence. In each of these centres a corps of the St. John's Ambulance Brigade was formed in 1889.

Having been elected an honorary member of the Tibshelf Corps, a position of which I am very proud, I suggested that the members should submit to a similar drill to that given to the bearer companies of the Army, and in a very short time, under the instruction of Captain Wardell, assisted by competent Army sergeants, my wish was realized. The next step was to obtain permission for an official inspection. With the sanction of the Secretary of State for War, the Director-General of the Army Medical Department, Sir William Mackinnon, K.C.B., and Surgeon-Major Allin, A.M.S., inspected the Tibshelf and Birchwood Corps of the St. John Ambulance Brigade on the 28th July last. The field state showed that there were on the ground 180 Officers and men, all of them clothed in a neat and serviceable uniform, and they had with them two horse ambulance wagons.

Probably it may be permissible, without indiscretion, to give the reports of the Inspecting Officers *verbatim*:—

From Surgeon-Major Allin, M.D.

*To the Director-General Medical Division,
Horse Guards, London, S.W.*

*Rawal Pindi, Punjab, India,
December 7, 1891.*

SIR,—

I have the honour to make the following report on an inspection of Captain Wardell's ambulance corps on July 28th, 1891, at Tibshelf. The parade consisted of an inspection of the general turn-out and equipment of the corps, the application of the triangular bandage; the formation of two-, three-, and four-handed seats; stretcher drill; the application of first-aid dressings; the lifting and lowering of the wounded on to stretchers; carrying to a collecting station and loading ambulance wagons.

I was much impressed with the turn-out and clean appearance of the whole of the members of the corps; the application of the triangular bandage and the formation of the handed seats were most creditably done.

Nothing could be better than the way in which first aid to the wounded was rendered and the dressings applied. The men had been thoroughly trained, both in the application and uses of the various appliances, and seemed to have a very intelligent comprehension of the subjects in which they have been trained. Great credit is due to Captain Wardell and his Officers for the thorough way in which the members of this corps have been equipped, trained, and taught, and the greatest praise to the non-commissioned officers and men for the very evident interest taken, and appreciation shown in the work.

I have the honour to be, Sir,

Your most obedient servant,

(Signed) W. B. ALLIN,
Surgeon-Major, M.D.

To this the Director-General of the Army Medical Department, Sir William Mackinnon, K.C.B., added the following remarks:—

I was present at this inspection and was very much pleased with the highly creditable manner in which the men went through their drill, as well as the proficiency they displayed in the different methods of dressing and bandaging, and placing and moving men on the stretchers.

The training of these men has evidently been carried out with much care, and reflects great credit on Captain Wardell.

In case of war, this body of well-trained men would form a valuable addition to our resources for sick and wounded in the district, and in the event of their services being required, it would be a wise step to attach them for duty to the military district, if they so desired.

(Signed) W. A. MACKINNON, D.G.

January 16, 1892.

It is an unpopular thing to admit that it is possible for a foreign foe to land on our shores; but is it not worse than folly to refuse to face such a possibility, great as our faith may be in the strength and ubiquity of our Navy? This being the case, nothing should be neglected that might help to diminish panic if the landing of a hostile force were threatened or effected. And not the least important step in this respect would be an arrangement for the care of the sick and wounded of the contending forces, without making too great a call on, or dislocating the ordinary work of the civil hospitals of the country. To meet this essential part of a complete military organization, my belief is that, at the present time, such an ambulance corps

as I have described might be formed in every one of the military territorial divisions into which England is divided.

But it is not only in the event of a hostile invasion of our shores that such a body of ambulancers would be of great value. If this country were engaged in a war abroad which should necessitate the putting out of the whole available strength of the nation, what an incalculable advantage it would be if the Army Medical Corps could be left free for foreign service! and I am sure this could be done. We have now in England the means on which the Government might rely in case of either emergency, and to utilize these it is only necessary that we should break away from some of our ideas as to insular impregnability and not a few notions as to bureaucratic infallibility, and improve on the example that has been set by some of the great Continental Powers of Europe. I will go even further, and assert that, late as we are in following examples to which we have long accorded a Platonic admiration, we are in actual possession of the personal and material means, which only require to be organized in harmony with our national character and institutions. As ambulance corps have proved of the greatest use in time of peace, and many already exist, each territorial district would soon have a body of men, with its proper complement of Medical Officers, and this at very small expense. The military training should be made as little irksome as possible to the men, and periodical inspections should take place on their own ground, for those who are the best ambulancers in the country are generally industrious workmen in the receipt of good wages, which they could not afford to sacrifice. Besides, the practice in first aid to the sick and injured, which is almost within their daily experience, renders it quite superfluous that they should be compelled to waste time in exercising on imaginary wounds, and there is no doubt that within one month in their own locality they gain, in daily experience, more knowledge in the dressing of wounds and the handling of injured men than they could acquire in a year spent at Aldershot.

In our comparatively small Army men cannot be spared from the combatant ranks; and now that the height and chest measurement of the men recruited for the Army Medical Corps have been reduced, the majority of the bearers are not equal to that work which the changed circumstances of modern warfare demand. No opportunity, therefore, must be neglected for supplementing this service with capable men, and we have at hand a field from which men of good character and admirable physique may be drawn for home service, and many of whom would volunteer for foreign service in case of emergency.

It would also be in many ways a great advantage if such a corps as this could be formed in each of the principal ports of the kingdom, officered by their own local doctors. In the event of a foreign war in which our own Army and Navy might be engaged, the sick and wounded, on being landed, could be treated on the spot. Under official control and inspection I believe that this plan would be found to work admirably well, whilst it would set free a large number of

Officers and men of the Regular Army whose services might be needed elsewhere. The philanthropy and patriotism of the country may be fully relied on, and, if necessary, not only the personnel but the hospital matériel also would be forthcoming. The whole of this might be done at a pecuniary cost so insignificant that it is scarcely worth consideration.

It would be well for the military authorities not to allow themselves, in this matter, to be trammelled by old traditions, but to meet one of the great difficulties with which they are now confronted in a bold and statesmanlike manner. Germany can produce corps of ambulancers who have served their time in the ranks, and, judging from what I have seen, these volunteers are a valuable addition to the Army Medical Corps; but the men whose employment is here advocated afford a far better guarantee that the sick and wounded would be well and conscientiously treated, although, from the point of view of a drill sergeant, they may not be so well set up and their appearance on parade may lack some of that smartness which is expected from soldiers.

I have already described the systems adopted in France and Germany, under which the Aid Societies are now organized, and some months ago I publicly stated my conviction that in future Red Cross Societies would not be allowed to act as they have done in late campaigns, but their services would probably be confined to the lines of communication from the second line of medical assistance to the base. But these are days in which we move very fast, and in no respect is this more evident than in the art of war. Within the short period that has elapsed since I ventured to print an opinion that volunteer aid would not be permitted in the first line, a great change has taken place. No official sanitary corps in any army has ever been adequate to the requirements of a great battle; it was this fact which compelled the adoption of volunteer aid by every civilized State. Under the conditions which existed previously to the introduction of the latest form of offensive weapons, it was naturally thought that this volunteer supplement of aid might be kept in rear, on the lines of communication, where, with proper organization, it would leave the Army Hospital Corps entirely free for service at the front: but, under the altered circumstances, it may be confidently predicted that an army which shall enter on the next war without a strong reserve of volunteer bearers, within easy distance of the front, will soon find itself in a terrible dilemma. The only alternative to such a difficulty would be in the event of a battle being fought, like that of Sedan, close to the frontiers of States, whose whole populations were ready to give all the assistance in their power for the relief of the wounded. It must not, however, be forgotten that this was a very exceptional case: the battle was a most decisive one, and the victors, being complete masters of the situation, were not inclined to criticize too closely the acts of those who relieved them of an enormous responsibility. In a word, in the next war, regimental bearers will not be able to act as such whilst the fighting is going on, but at the close of a great battle an immense work will devolve on the Army

Hospital Corps, which it cannot effectively meet unless assisted by a strong reserve of trained bearers.

In all grades of society we find a disposition to ignore the value of the medical profession until sickness or accident brings us into close and necessary contact with its members: we then are compelled to appreciate their value. If this be true in civil life, how much more so is it in the Army! Whilst no means are neglected which can bring the personnel and matériel of an army to the highest state of perfection, and field days and autumn manoeuvres are regarded as the precursors of battles in which Officers and men will continue to add glory to the national flag, we are too much inclined to disregard the reverse of the medal, often as it has been presented to our notice. Undoubtedly the first object of a Commander is to win battles; but in what a position is a General placed, if, having won a battle, he is unable to advance owing to the multitude of wounded who impede his progress, and whom he cannot leave behind him without proper care! Whilst, on the other hand, if he move forward he requires his full complement of surgical and medical aid. It is, therefore, of the utmost importance that nothing should be left to chance; and if our Army is to be complete in all its parts, it is absolutely necessary that the ambulance arrangements for taking the field should be on an equal footing of excellence with the offensive means at its disposal; and, more than this, volunteer and supplementary aid should at all times be kept in touch with the official sanitary service, and there must be such an organization of the former in time of peace as will enable our Army, on the outbreak of war, to avail itself of this help, thus adding to its own strength and completeness without throwing out of gear or dislocating any part of the Civil Service of the country.

An important speech was recently delivered in the Austrian Delegations by Professor Billroth, on "Medical Services in the Field," of which a translation was published in the March number of the Journal of this Institution. In the same month an article on "The New Military Weapons and Explosives," by Sir Thomas Longmore, appeared in the "British Medical Journal;" and, still more recently, there was published in the same Journal an abstract from an address delivered at the Friedrich Wilhelm Institute in Berlin, "On the Surgical Relations of the New Projectile," by Professor von Bardeleben. These three documents, which have attracted much attention and have given rise to very serious thoughts, must surely lead those who are occupied with military subjects to ask themselves the question put by Dr. Billroth, "Are steps taken to improve the means of aid to the wounded in proportion to the increasing development of destructive agents?" One thing is evident, namely, that the system of collecting the wounded during an engagement will have to be completely changed. No bearer detachment could live for two minutes within the fighting line under the hail of projectiles which the new magazine rifles would now pour upon them, and this without the curtain of smoke which has hitherto, to some extent, veiled the movements of contending armies. The danger for the medical staff and bearer companies will

be far greater than that of the-combatants, for whilst it is the duty of the latter to avail themselves of all the cover that can be obtained, the bearers have to move slowly and carefully with their burdens, and this generally in the open. My own impression is, though it is a thought one scarcely likes to utter, that in the next war the medical corps must leave the wounded where they fall, preparing meanwhile for the moment when the contour of the ground or the ebbing tide of battle may allow them to act. Under such circumstances, a wounded man would probably be safer whilst lying on the ground than if he were being carried off on a stretcher.

Sir Thomas Longmore tells us that "everything tends to show that, while the number of sufferers urgently requiring help will be vastly increased in future wars, the means of affording them shelter and surgical attention will be pushed back to a greater distance than has ever before been necessary." This compels us to consider how the present system of collecting wounded can be altered to meet the changed conditions. Professor Billroth puts the matter very forcibly as follows: "Now as to the greater length of trajectory of the new projectiles, you may say, What does that matter?—put the dressing stations a few hundred paces further back. If they were, say, 500 paces to the rear before, then they will be 700 or 800 paces to the rear now. Quite so. But for the bearers, who have to carry a heavy man weighing 18 or 19 stone with his kit, upon a stretcher, this increased distance means not only an immense increase of labour, but also makes the journeys much longer in point of time; consequently far fewer wounded can be transported from the battle-field to the dressing station in a given time. Just try this carrying for 500 paces or even 700 or 800 paces! It is no joke, and for any length of time absolutely impossible. Now you cannot set up a dressing station at the regulation distance from the corresponding army corps, &c., in the glare of the sun or in the rain. You must have some sort of cover for it, a house, a ditch, a patch of wood. Not that the surgeons are wanting in devotion in the enemy's presence, but what is to become of the wounded if the surgeons get shot? You may say that they are protected from this by the Geneva Convention. Yes, but what use is the Geneva Convention if your own side retreats towards the dressing station, or the enemy advances, and you find your dressing station in the firing line? This means shifting and hunting up a new place. No one can form a true idea of these difficulties who has not been through them himself."

The increased number of wounded, therefore, must entail a great increase in the number of bearers, which in our Service (the Austrian) is at present very small and insufficient. Yes, we must even come to the conclusion that, in future, it will no longer be possible to remove the wounded from the field by means of bearers, unless it is to go on for days together. Hence it will be necessary to place a great number of light carriages, even close behind the line of battle, for the purpose not only of transporting the wounded to the field hospitals, but also to get them away from the battle-field itself, provided that the ground admits of it."

Surgeon-General von Bardeleben, viewing the matter from a German point of view, says:—

"The first and most difficult task will be to remove without delay the enormous number of wounded out of the fire line. Who will be able to tell beforehand where bandaging places will be out of reach of the enemy's fire? Some urge an increase of sick-bearers and wagons for the removal of the wounded. This sounds very humane, but we must not forget that sick-bearers have to advance into the fire line and to expose themselves to the bullets. If we go on increasing their number shall we not also increase the number of wounded, not to mention other risks? Already the number of men provided for the transport of the wounded exceeds a battalion (1,000 men) for each army corps (24,000 men). Such demands are often inconsiderate and exaggerated. War is no humane institution. We surgeons are fully prepared to practise humanity as much as possible in war, but it must not be in such a manner that in order to effect an uncertain saving of one human life a larger number of lives of other men should be risked. The administration of the German Army has made great advances in increasing the number of men and wagons for the transport of the wounded since the experience of the wars of 1866 and 1870, and seems to have reached the limit to which, under existing conditions, it is possible to attain."

The questions I have thus briefly considered, as to the altered conditions of war which the progress of science has developed, have been so ably treated by the unimpeachable authorities to which I have just referred, that it would be presumptuous on my part to attempt to amplify the important statements they have made. But as one who has served as a volunteer ambulaner in more than one campaign, I would strongly insist on the advisability of giving every encouragement to those civilians who having been enrolled for ambulance purposes in time of peace are able and willing to supplement the Army Medical Service in time of war. Such assistance, to be of any value, must be prepared beforehand, or it will only lead to confusion at the critical moment, when responsible Officers will have little time at their disposal for the organization of a new system. The most recent European wars astonished the world by the magnitude of the battles, and the enormous proportion of wounded men who, in the course of a few hours, and sometimes in a few minutes, strained and overtaxed the resources of the medical staff. Knowing this, and knowing also what men like Longmore, Billroth, and Bardeleben have foreshadowed, and looking forward to the future, it would be a criminal act were we to ignore the teaching of experience, and refuse to make a practical endeavour to keep the means of alleviating the horrors of war in some degree near the level of the art of destruction. There are men who bear honoured names, and for whom personally I have the greatest respect, who in regard to all changes connected with the Army bring everything to the touchstone of the Crimean War or even the Peninsular Campaign. I will not venture to question their opinion, except on the one point of ambulance work and matériel. If they still believe that it is

unnecessary the medical corps of an army should be kept up to the exigencies of what is euphemistically called scientific warfare, then I am afraid I shall be charged with offences which are generally attributed to ignorance. There are others who think, and with whom I am much more inclined to agree, that the progress of science is tending to render war almost impossible, and that the engines of war having been made so terribly destructive, and fair fighting being a thing of the past, we shall have no more war, as no Government will dare to incur the responsibility of beginning one. Be this as it may, surely no nation could patiently accept such a conclusion as a certainty, or sit down with the reflection that "sufficient for the day is the evil thereof." War is not like an earthquake or other unforeseen natural phenomenon; it is a calamity which we are daily anticipating by striving to make ourselves stronger than our neighbours. *Si vis pacem para bellum*. Recognizing this, is it not an absolute duty to do our utmost to lessen the gravity of consequences which are inseparable from war, and to inculcate the exercise of such work as a civic virtue of the highest importance?

The conclusions to be deduced are as follows:—

1. That the possibility of war and even of a foreign invasion must be admitted, and it is the patriotic duty of civilians as well as soldiers to be duly prepared for it.

2. That behind the Army Medical Staff Corps and the Volunteer Medical Staff Corps there should be a reserve to meet eventualities which have been already foreseen by some of the Red Cross Societies of European States, with the sanction and encouragement of their respective Governments.

3. That no Medical Department of an army can be maintained during peace in a state fully equal to the demand which will be made upon it by a war of any magnitude. Were it otherwise, a vast expenditure of money would be required, and a large personnel must be kept in comparative idleness, in order to meet possible contingencies that the heads of armies do not in peace-time consider of the first importance.

4. That the requirements of peace need a large body of ambulancers to be always ready to deal with injuries caused by the accidents of civil life, and the sickness which is never absent from dense populations. That such a body of trained men and women exists, and it is only necessary they should be organized, and kept in touch with the Army, to prove themselves a valuable supplement to the Army Hospital Corps.

5. That in each of the military territorial divisions of Great Britain a corps of civilians trained to administer first aid by the St. John's Ambulance Association, and drilled sufficiently to enable them, if necessary, to be attached to an army, should be formed. That except in case of absolute necessity, such a corps should not be removed from its own district, but that it should be periodically inspected on its own ground by an Officer appointed by the War Office.

(Such a corps, in case of foreign war, might be relied on to take over all the Army hospital duties of its own district, and thus set

free for service abroad almost the whole strength of the Army Hospital Corps. Many of these civilians would also enrol themselves for ambulance service abroad if such help were needed.)

6. That the ambulance matériel used in civil life, and especially the wheeled transport matériel, should be made in such a pattern as to be equally useful for the necessities of war as well as of peace, and that all horse ambulance carriages, now or in future used throughout the country, which will take the Army Regulation stretcher, should be registered at the War Office as capable of employment for Army purposes at home.

7. That a local Ambulance Corps, under its own Medical Officers, should be formed at the principal ports of the kingdom, and that, in case of war abroad in which our own Army may be engaged, these corps should be ready to undertake the care of such sick and wounded men, when landed, as it might not be expedient or possible to remove to the military hospitals inland.

8. That such a scheme as is involved in the above conclusions would, if adopted, in no degree lessen the responsibility of the military authorities to maintain the Army Medical Staff and Medical Staff Corps on the same footing of efficiency and completeness as every other branch of the Service; and that the proposed personal and material reserve would greatly strengthen the Army Medical Department in time of war, and that at a comparatively small annual cost, provided the Government would guarantee that in case of the mobilization of any or the whole of the Corps, those enrolled should receive the same pay and reward as men serving in the Regular Army.

Sir VINCENT KENNETT BARRINGTON: I need hardly say that I agree in the main with Mr. Furley, but there are two or three points on which I disagree. The first is about improvised means of transport. Mr. Furley states that improvised means of ambulance transport is an expression which ought not to be allowed in the Service. But I consider it a subject of very great importance, and one which should be carefully studied both by the Army Medical Staff and all those engaged in Red Cross work. I have had about five years' service in war, including several European campaigns and a revolution or two in South America, and my experience has been that nine out of ten wounded men never see the inside of an ambulance wagon, properly so-called. The great mass of the wounded after a battle are conveyed to the hospital in the rear in the empty wagons that have brought up provisions and shot and shell. I think, therefore, there ought to be a great deal of attention devoted towards improving these improvised means of transport. In the Servian and Russo-Turkish wars most of the wounded men were brought back in country carts. Happily many of the Surgeons were acquainted with the system introduced, I believe, by some Swedish Surgeons, of preparing country wagons by first placing a layer of fresh cut branches, and then above this one of smaller twigs, and upon these to place a mattress. An ox-wagon, with large wheels fitting the ruts in the road, can thus be converted into a fairly good conveyance for wounded, infinitely better than the most costly ambulance wagon, should the gauge of the latter's wheels not fit the ruts. In such a case, even with the most elaborate system of suspended stretchers and springs, the wounded men are liable to be shaken most fearfully. I have removed wounded from modern ambulance wagons, and placed them by preference in the bullock wagons furnished in the way mentioned. In the last Turco-Russian war two of our own English Army ambulance wagons were sent out, and ultimately handed over to the Egyptian Contingent; but they could

not use them, as they were too heavy, and the wheels did not fit the roads. They gave them to me, as I happened to be Chief Commissioner of the Stafford House Committee; but the only way we could utilize them was for bringing wounded men along a hard road from the Varna Railway Station to the town hospital. With regard to the necessity of different kinds of wagons for different circumstances which Mr. Furley has recommended, he is a great authority, and I accept his judgment, subject to the above remarks. In the Carlist War special ambulance wagons for smooth roads were constructed, drawn by five mules. Each wagon could contain twelve men lying down. I saw them working satisfactorily for two years. They were built in two stories, taking six men on each story. During hard frosts the best ambulance conveyances I have ever known were the sledges used in the Serro-Bulgarian War. With regard to cacolets, Mr. Furley does not seem to believe in them as much as I do. Mr. Furley was in the Carlist War for some time, but, if he had been there during the latter part of it, he would have seen splendid work done by cacolets. The great mass of wounded men requiring conveyance are wounded in the hand, and for such cacolet transport is a very good way of conveyance in a rough or mountainous country. I cannot speak as a Surgeon, but I am supported by Surgeons who had a long experience of gunshot wounds in the Carlist War. On one occasion I conveyed eight wounded men a distance of 12 miles in cacolets, on three mules, without any other assistance. The men did not suffer at all during the journey, nor was any injury done to their wounds. I admire these stretchers very much that Mr. Furley has shown us to-day, but I dislike a doubling up jointed stretcher in war, as any joint may get out of order. I should, as far as possible, avoid all such complications, and would rather have the simplest form possible. With regard to the effect of repeating rifles and smokeless powder on war, I remember a discussion which took place at Woolwich when the late Major Duncan and several Army Surgeons spoke on that subject. Opinions differed immensely as to what that effect would be. I believe that the total proportion of wounded men to combatants will not materially vary from now, because if you refer to the proportion of the number of wounded in war after the adoption of breech-loading instead of muzzle-loading rifles, you will find that the proportion has not become greater. In fact, they say that in the old days of the *arme blanche* a greater proportion of men were killed and wounded than is the case even now with the breech-loading rifle. There is one general question I should like to touch on, that is, the position of Red Cross Societies in relation to armies in the field. I do not think a Red Cross Society, especially in England, ought to bear the relation to the Army Medical Staff that the Volunteers do to the Army, as suggested by Mr. Furley. The Volunteer Medical Staff is a very efficient body, growing every day: that is the body to stand in the relation of Volunteers, supplemented, we all agree, by funds from the Red Cross Society. But I think the Red Cross Society in the field ought to have an organization far more elastic than the Army or Volunteer Medical Staff. I think their Commissioner ought to be in a position to move rapidly, to fill up gaps, and to do many things which cannot be so conveniently carried out by the Army Medical Staff. I have the honour of being a member of the Council of the National Aid Society, and I know by our constitution that our first object is for the aid of British sick and wounded soldiers in war; but, as a matter of fact, our society is called upon generally, I may say nearly always, for foreign wars, and although I quite acknowledge that our organization should enable us to assist in any war in which Englishmen are engaged, yet happily our English wars are generally small wars, and our Army Medical Staff are perfectly capable of doing everything that science, art, and experience can accomplish. I had the honour of being out in the second Suakin expedition, and saw the good work done by the Army Medical Staff. I consider that Red Cross Societies should largely avail themselves of the assistance of distinguished civilian Surgeons. In many foreign wars they came gratuitously, or only for their expenses, and brought with them young surgeons and nurses belonging to their respective hospitals. I do not believe myself that the tendency of Governments to delegate Red Cross operations to the rear is as strong as Mr. Furley pointed out. In recent wars our Red Cross Surgeons were largely engaged in the front. I do not like the system adopted by many foreign Red Cross Societies,

of forming large dépôts of ambulance wagons and other matériel, much of which is sure to spoil or become obsolete, while a part of the Societies' income has to be devoted to maintaining such matériel. I think the Army Medical Department ought to supply all ambulance wagons required for our Army. I cannot sit down without expressing my great admiration of Mr. Furley's paper.

Inspector-General of Hospitals R. LAWSON: Mr. Furley is, I believe, quite aware that I differ from him in his opinion on several points, and I hope we shall agree to differ. With regard to his stretchers, the question of having telescopic handles was a subject that was frequently before us at the meetings of the Committee on ambulance equipment, but we could not find a handle of that description that would stand the work. Whether his stretcher that he has exhibited will, upon full experience, be found able to stand the work, I do not know. I like the look of it, but, like himself, I strongly object to adopt anything without having tested it fully. If his stretcher will stand the work, it will, no doubt, be a great improvement, because, as he has pointed out, in some of the present ambulance wagons the ends of the poles pass through the partition which separates the body from the *coupé*, and they are bound to be struck by people on the *coupé* to the inconvenience of the persons lying on them. Another inconvenience is that the handles projecting into the bottom *coupé*, which is supposed to contain three men, generally speaking, with wounds of the upper extremities, and those men passing out would have those poles, some 3 or 4 inches above their feet, to step over, with the risk of tripping and sustaining a severe fall. Another point with regard to the stretcher is this. We had a stretcher with a canvas bottom 6 feet 3 inches with a pillow at one end. With a stretcher of that length you will be able to accommodate most men with fractures of the thigh, lying upon them, without the foot touching against the partition at the end of the stretcher; but if you shorten it, you will, with a long man, render it absolutely impossible to carry him upon a stretcher with a fractured thigh or leg without taking out the partition and leaving part of the space unoccupied. There was another point that we recommended strongly with regard to the carriage of the stretcher, a most important point which seems to be systematically overlooked. In former days, when Sedan chairs were in use—I do not know that there are many persons except myself who really ever saw them—the carriers always had what they called "yoke slings," a sling with two straps passing one over each shoulder and united behind the back of the neck to a cross-piece, to prevent their coming off the shoulder. That is by far the easiest way of carrying weight. Instead of that, we now have the regulation sling with a broad leather strap attached to the stretcher, brought up in front of the shoulder and passed round the neck, so that the man has not only to carry the weight, but he has to make use of strong effort of the muscles in the back to prevent his falling forward. The substitution of the "yoke sling" for the one at present in use would cost very little. It would be a great advantage and much safer and easier for the men to carry. Mr. Furley has entered a special plea in favour of having wagons of different kinds for use in this country on smooth roads. That of course he is quite right to do, and so long as they are used for that purpose, well and good; but the moment you go into the field, you cannot depend upon having smooth roads, or indeed any roads at all, and then you must be prepared with something that will stand rough usage. He has alluded to the possibility of bearers being able to carry the sick from the field up to where the wagons are waiting, without taking the wagon off the main road. I have not had an opportunity of looking into that in the open country, but I have examined the plan of a piece of country on a very large scale—about 10 feet to the mile—round the model of Waterloo up-stairs. I examined the field of action there to see whether there were any roads that could have been used. There were some, but very few would have met his views; so that upon that point we must depend more upon wagons and less upon bearers. With regard to wagons, the question is, how many people they could carry. There were the two prize wagons at Paris in 1867 brought before the Committee. Those wagons were adapted to carry six persons only, and we were told that they were lighter and far superior to ours in every respect. When they came over, I weighed them to see what they were, and I found of the three English wagons that had been described as totally unfit for service, clumsy,

heavy wagons, the heaviest was a hundredweight lighter than the lightest of these prize wagons. When I asked the person who came with them what weight the wagon was, he said, "1,300 lbs." I said at once, "Much closer upon 2,000 lbs."—that was the fact. They carried six persons in them, whereas our wagon was adapted for eight persons, two recumbent in the centre, and six sitting. Of course they might not be able to carry the total number; they might be sometimes obliged to take one more, but the important question arises here, to which Mr. Furley has alluded, that is, that if you had a wagon adapted with springs to carry eight people, that wagon, unless it had the full weight of persons or material in it, would be most uncomfortable to ride in, supposing there were only two or three people. I myself rode in such a wagon at the Cape, going through the country upon what was called smooth ground. I was sometimes obliged to sit in the wagon and hold on to the sides with each hand to prevent my head being knocked to pieces against the bars of the roof. That is going over smooth roads. Had there been the full weight in the wagon, it would have been very different. You cannot get a wagon that will carry ten persons, having springs adapted to that number, that will carry two persons only without making it very uncomfortable for the latter. On the contrary, if you put ten persons in a wagon with lighter springs, they would be so heavy that the springs would be no use at all. They meet that practically in this way, that while the spring is so arranged as to carry four or five persons without difficulty, they have what they call a check spring, a strong spring which only comes into operation when the wagon is coming down upon it. That is an expedient, and so far it is a useful expedient without which you could not get on. There are several other points I should have desired to notice, but, the ten minutes allowed each member for discussion having elapsed, I must make way for others.

Surgeon-Major W. S. PRATT: As a humble member of the War Office Medical Staff I should like, with your permission, to say a few words. And, first, with regard to the alterations and improvements that Mr. Furley suggests in ambulance wagons and stretchers. The great thing that we have to contend with is the Treasury. As long as we have a large stock of serviceable equipment in hand they naturally will not sanction anything further. At the same time I must say I will stick up for our own stretcher, and a good deal for our own ambulance wagon. You have to look at the men who handle these things. The skilled civilian bearer is careful enough, but Tommy Atkins and the young recruit do not understand these ingenious and complicated matters. And as to this beautiful stretcher that we see in front of us, if it only jams, he is apt to kick it into shape and to put it out of gear altogether. I think that thing would break down. With regard to the ambulance, Mr. Furley says he would like to see it carrying only sick and wounded, no goods nor gear of any kind. All our ambulance wagons are calculated for fighting in foreign countries, mostly savage countries. There are no railroads, and the best wagon we have now, devised by General Buller, weighs 18 cwt.; tonnage 11·08 tons. I do not think any General Officer going through a savage country would like to have a lot of light ambulance wagons taking up the horses and carrying only wounded men, and to give up those wagons that might be utilized for carrying heavy stores when they are not required for carrying the sick. I do not think he would be content to exchange those for very light ambulance wagons carrying nothing but wounded men. With regard to home defence and the elaborate arrangements as to railways and so on, it must be remembered that we are not like foreign countries with hostile foes on our frontiers, who are liable to cross the frontier at any moment and be in our country. We have the sea all round us, and before an army could invade England it would require that our Fleet should be swept off the seas. You can hardly imagine 150,000 men landing in England whilst our Fleet is in existence. If our Fleet is destroyed, there is only three or four months' food in England, and therefore it would become a question of surrender or starvation. If the enemy did land, the only thing they could do would be to make a dash on London. If that were to fail, hardly a man of them would get away. In such a case the whole resources of the country would be at our disposal—ambulances, hospitals, and everything else, and the whole fighting must be over in a brief period. With regard to arrangements made for it, there are at

present drawn up and in the possession of the authorities elaborate schemes for the reception of a very large number of wounded in London as a base hospital. Those wounded men could be cared for and nursed at once; but I do not think that all the elaborate arrangements of hospital trains, field hospitals, &c., suggested by Mr. Furley would be necessary, because if an invasion of England did take place, and if anything did occur, it must necessarily be decided in a very few days. With regard to the tents and these very elaborate and beautiful bar arrangements, they are capital things for civilians to use, but I do not think they would do, as far as I can make out, for very rough work in the hands of young soldiers. We have learnt by experience the evils of over-elaboration in our pharmacy wagons, which have been marvels of packing, but I do not think they could ever be used on active service. They are so beautifully packed that, when they are unpacked, I do not think there are four men in England who could put them together again. With regard to civilian Aid Societies, I had very good experience of them in the Franco-German War. I was present at Gravelotte and at the fighting round Metz, and I am more than ever of opinion that isolated bodies of Aid Societies are practically useless and should not be allowed. Whatever material and assistance could be given should be under the control of the Army Medical Department, and should not be allowed independent action. With regard to carrying the wounded from the fighting line to the rear, some years ago our men were finer men than they are now, as their height has been reduced to 5 feet 3 inches to 5 feet 5 inches. The new rifle has rendered necessary an increase of the distance from the fighting line to the dressing station, which will now be about 2,000 yards in the rear. Now I think it will be impossible for men of such slight physique to carry wounded men such a distance steadily and comfortably for even one journey, and they will be required to make several journeys, and I am afraid much suffering may be entailed upon sick and wounded by this decrease in the physique and bodily strength of the Army Medical Staff.

Mr. ARCHIBALD FORBES: Like my friend Mr. Furley, I am here as a layman, but he and I have had a good deal of service together among wounded men on battle-fields from time to time. My own experience covers the battle-fields of three continents, and some ten years of my life were spent mostly in caring for wounded men, either in relieving them as they lay, or in helping to carry them from under fire. It is because of this experience that I have ventured to intrude into this discussion with a few remarks. I was much amused by the observations made by Sir Vincent Barrington, when he spoke of the Egyptian Division in the Russo-Turkish War as rather scorning the ambulance wagons which he offered it. I can easily understand this, because I do not think that during that war any member of the Egyptian Division ever had any need for an ambulance wagon (except indeed, possibly, because of syncope from fright), since no man of that force ever waited to be wounded, having run away in advance of that period of a fight when wounds are being served out. He spoke also of cacolets having been of service during the Servian War, for the conveyance of men who were wounded in the hand. The usual treatment of Servians wounded in the hand in that war was to kick them into space with all possible energy, because of the certainty that the wound to the hand was invariably inflicted intentionally by the man himself, and, therefore, he was not entitled to a cacolet or any other conveyance.

Sir VINCENT BARRINGTON: I mentioned the Carlist War, not the Servian War.

Mr. ARCHIBALD FORBES: I also listened to Mr. Furley with a certain sentiment of pathos, because it seemed to me that whilst he was talking, and talking very nicely, about stretchers with telescopic handles, and drawing fine distinctions between patterns of ambulances of infinitesimal shades of difference, he did not in the least give indication that he realized the probability of what it seems to me will be a likely occurrence in the next war—which I hope he will not live to see, for surely none of us want to see another war—namely, that, probably, about the second evening after the battle, if he should be on the field, he will probably find a wounded Brigadier-General competing eagerly for the ninth share of a country dung cart for his conveyance to the field hospital. I regard that as no strained illustration of the state of things that will exist in the future after a great battle, in

consequence of the immense number of wounded which the altered conditions of military armament will bring about. It may be, however, that Surgeon-General Bardeleben, of the German Army, is right, when he anticipates that there will be no wounded any more, and in his cheerful conviction that the new missiles will kill everybody outright. In that case, *cadet questio*, there is no more to be said; Mr. Furley himself will be disestablished; there will be no more occasion for any Medical Staff Corps, and the stretcher companies will find their occupation gone, and will have to content themselves with serving as burial parties. Personally, I venture to think that the battle of the future will not be so thorough in its destructiveness. My own idea is that, while the mortality will undoubtedly be greatly heavier, the number of wounded, both actually and proportionately, will be increased to an unprecedented and most ghastly and overwhelming extent; and that there will be no possibility of overtaking the work of prompt attention to them by any method or methods whatsoever. Since the attempt to remove wounded men from and behind the fighting line within range of fire would result in the wreck of the bearer organization in the first battle of the campaign of the future, no alternative can be hoped for, but that the wounded of both sides will have to lie where they are struck down till the battle is over. What will be the result of that? The vanquished will depart. He must leave his wounded on the field, for the simple reason that he cannot take them away. They will pass then into the possession of the victor. He will have his own wounded on his hands, and he will have also on his hands the wounded of the vanquished who has gone away. This, in itself, is no new thing; it has, indeed, been a practice of war ever since the beginning of that strange anomaly and contradiction in terms which we choose to call "civilized warfare." But the conqueror of the future, if he accepts the conventional burden, will become its victim. He will not accept it. He is in the field not to be a hospital nurse, but to follow up his advantage by hammering on the enemy, who has walked away jauntily, leaving his wounded behind him, and who may come back again to-morrow to strike him while clogged in the live and dead *débris* of the yesterday's battle. Do you imagine for one moment that the victor, in such circumstances, will think twice even about his own wounded, let alone the wounded on the other side? No; he will march away to overtake the vanquished, and will leave the wounded of both sides to the ministrations of Mr. Furley and his fellow-philanthropists of all countries, to whom it is hoped—although the hope is chequered by misgiving—that facilities for being available, in such an emergency, will be afforded by the belligerents. That is what, as regards the wounded, I believe will be the future of the next great campaign. It seems a very disheartening prospect: yet there may be features of it tending to mitigate its gloom. I venture to think, for instance, that the enforced remaining of the wounded on the battle-field until the battle is over, and for hours, and even for a subsequent indefinite period, notwithstanding the sufferings such delays must inevitably entail, will not produce consequences so calamitous as may be not unnaturally apprehended by those who "sit at home at ease." I believe, and I speak out of my own personal experience, that the severely wounded man, under the existing system of prompt removal to the dressing station, does not uniformly benefit by the hustling his removal inevitably entails, while he is suffering from the first shock of being wounded. I think that, in many cases, it would be wiser and better to leave him to "stew in his own juice" on the field, for a few hours, until he congeals—till he ceases to bleed. Of course he may have bled to death in the interim, if no ministration has been afforded him where he lies; but if he has got plugged up, and is in fairly good case, I think that he can lie without serious detriment—perhaps, indeed, with actual advantage, even for so long a period as twenty-four hours. Most all men conversant with war know instances of extraordinary tenacity of life in wounded men who had received no attention. Segur's story of the man wounded at Borodino having been found alive by the army retreating from Moscow has been somewhat discredited. But my comrade and myself found, on the fifth day after the battle of Sedan, a wounded man walking about in a sequestered part of the field, not, indeed, with uprightness, but without evidencing great debility. His lower jaw had been shot away, yet he was still alive, in spite of this ghastly wound untended for five days—a wound, too, which precluded him from eating solid food.

I found also, on the third day after the battle of the 30th November, on the east side of Paris, in weather so bitter that sentries were actually frozen to death at their posts, a little nest of three wounded men lying, fairly snug, in a little hollow, not starved to death, not frozen to death, pretty hungry, but quite alive, and, as far as I know, they are alive still. And I make bold to aver that such men as Mr. Furley, and I should even say the President of this meeting, as a type of the military branch of the medical profession, are responsible, to my thinking, for doing the wounded soldier of the period—the contemporary soldier of all nationalities—a considerable deal of harm. He is coddled, now-a-days, to the extent that he really is deteriorated by over-tenderness of treatment. He has an anæsthetic administered when the top joint of his little finger is being taken off; he has hypodermic injections when he has a twitch of pain; he is treated with champagne, with all sorts of delicate extras, and everything that can make a man reluctant to own to convalescence. In the old days of the Peninsula and the Crimea, men had natures of more pith, and yet did not seem to die in much greater proportion than now-a-days, although they were entire strangers to all this demoralizing excess of dry-nursing. It is probably in the memory of most of you, that the late Sir George Napier was shot down in the breach at Ciudad Rodrigo while heading the storming party. He was made a football of for about a quarter of an hour, while the column passed over him as he lay. He was picked up with his arm smashed. Lord March tied a sash round it, and bade him go and find the amputating place. He spent about an hour in the search, and then sat down at the end of a *queue* of men to wait for his turn, which came two hours later. Then there was a dispute between the surgeons on a point of etiquette. Napier had asked his own regimental surgeon if he was wounded to do the needful; but there was a superior surgeon present, in the well-known Guthrie, who asserted his right to amputate Napier's arm, and the regimental surgeon had to give way. The operation took twenty-five minutes, Guthrie's instruments being blunted by much use. During that period Napier cursed Guthrie by all his gods. The arm was bandaged up, and he was told to go away and find quarters. He walked about in this quest for a great part of the night, when he found a house at last, in which a considerable number of other wounded Officers had gathered, and he remained there, sitting by the fireside, with his stump taking its chance, for a considerable time longer, until the death of the Chairman's namesake—the gallant General Crawford, of the Light Division—left a bed vacant for Napier. At Redintra, Napier, then a Captain, was again wounded—all the Napiers were always getting wounded—and he was carried back 7 miles to the rear. In the evening there arrived a soldier of his company, who had been searching for his Officer for several hours. Napier said to him: "I am very glad to see you; but, John, you are wounded yourself; your arm is in a sling." "Arrah, your honour," replied the stout soldier; "sure its nothing to spake about—only me arrum cut off below the elbow, just before I started to look for your honour!" There is the kind of man for you, if you like; not the shambling creature, of whom you have too much now, whom you dose with cocaine and chloroform, and pamper with port wine and preserved delicacies. I think, perhaps, that even under the future conditions of the fighting, even when the field is being swept by fire, so that bearers could not live, it may be possible to do something for the worst wounded as they lie—I mean those who are lapsing into syncope, either from loss of blood or from shock. Doctors are too precious for such a service; but there might be attached to every company a couple of specially trained Medical Staff men—a sergeant and corporal—supplied with simple things in a wallet, who should move about among the wounded as they go down. They would be no more exposed in this service than if they were in the ranks, and their duties would be, of necessity, uncomplicated—simply to take concern with the gravely wounded—administering here a tot of brandy, there applying a bandage. It is astonishing what simple appliances are often effectual. In the Kyber Pass I once adjusted a tight bandage on the wound of a man shot through the thigh, obtaining the compression by clapping a round stone in each orifice under the bandage, and at the end of a 20 miles rough journey in a dhooly, he had not lost a drop of blood. I think the next campaign will see the last of the existing bearer organization, now in the German Army amounting to 1,000 men to each army corps. An army of six

corps would then receive an accession of a brigade of fighting men, and what a comfort that will be to the General instead of 6,000 bearers, whose organization would be wrecked in the first battle. It seems to me that, apart from their inevitable destruction, bearers can the more easily be dispensed with in the future, since the battles will probably be shorter than in the past; and that immediately a battle is ended, reserves, which will not have been engaged, will generally be available for the mere mechanical duty of picking up the wounded and conveying them to the dressing stations.

The CHAIRMAN: I would ask you to let me say two or three words. In the first place, with regard to the paper generally, I think we are very much indebted to Mr. Furley for the extreme pains he has taken to put on record his views, many of which are not only practical, but very important. It is also very satisfactory, I think, to this Institution to be able to command the services of such a gentleman as Mr. Furley, who writes papers that are worthy of its Journal, and those papers go out to the Services generally, and from them we derive great advantage. I beg to propose that you thank Mr. Furley for the great pains he has taken in drawing up this paper, and reading it to us; and in doing so to thank those gentlemen who, like Mr. Forbes, have given us reasons for supposing that in future wars we shall not have, perhaps, so many wounded, but a great many more killed, and therefore doctors will have less to do. My own impression is that in future you will find public opinion so strong that unless the medical department, and the other departments entrusted with the charge of sick and wounded, are quite capable of taking care of them, and of bringing them early under treatment, the public will be down pretty heavily upon that department. I know in the late Egyptian campaign, a quarter of an hour was held to be the extreme length of time for the wounded man to be on the field without getting relieved. What will it be when you have thousands, instead of a few hundred soldiers to deal with? I will ask you to thank Mr. Furley for the very able paper that he has read to us, and in giving this vote of thanks, I will also give him an opportunity of replying to anything that has been said during the discussion.

Mr. FURLEY: The hour is so late that I do not propose to make any detailed reply. I can only congratulate myself that my paper has led to such a very interesting discussion. I think I have been misunderstood on two or three points. My friend Sir Vincent Barrington referred to the cacolet, and the use it is in the Alps. If he looks at my paper he will find that in my objections to it I particularly excepted mountains. Cacolets are, unfortunately, still necessary in mountainous countries. Then, again, with regard to the folding stretcher. I do not myself approve of such stretchers if the ordinary stretcher can be used, but when distinguished Officers at the War Office say they must have such things, it is a pleasure to me to try and meet the want, and therefore I have tried for a long time to produce a good folding stretcher. If Sir Vincent will refer to my paper, I think he will admit that he also quite misunderstood my remarks on improvised matériel.