MECHANIZATION AND THE MODERN FIELD AMBULANCE.

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When putting forward these ideas of what a field medical unit might look like in the future, I realized that it was easier for the Ancients to change a law of the Medes and Persians than it is to effect an alteration in the War establishments in our own times.

There are so many permutations and commutations in any change that one hesitates to suggest that alterations should be attempted. Whilst this is the case, it strikes the outside observer that very marked and radical alterations have been made in the War Establishments of other branches of the Service, in order that these arms might be able to compete with the different type of work that they have to perform in what the experts consider the most probable form of warfare in which our Army will have to take part when the next crisis descends upon us.

The changes in the fighting units have been so revolutionary, particularly as regards their transport, that one cannot but wonder whether the changes in the medical units have kept pace with those in the other branches of the Army.

It is with these thoughts in one's mind that this article is written, in the hope that when a time comes to revise the War Establishments it may be found that alterations are possible so that the field medical units may have a greater chance adequately to perform their duties than would appear possible with the present formation.

CAUSES FOR AN ALTERATION IN OUR ORGANIZATION.

The fighting units are all taking to wheels or tracks, many of them at any rate are being carried for a large portion of the distance that they must travel before they meet with the enemy. (I can, however, still see the winner of the next war marching to victory in the old ammunition boot should the horse and mule really be so moribund as they appear to be in the Army.)

The field medical units must of necessity take to wheels in a like manner; further, every man must have a seat in some kind of vehicle if efficiency is to be maintained. I am certain that this statement is essential to the formation of a useful field medical unit.

When a division moves into action in open warfare it is absolutely essential that the field ambulances should be able to move from point to point as complete units with that division.
The whole of a field ambulance is required for work, immediately, with the attacking troops, even if some part of the division may be following by line of march or is being embussed.

At present forty-eight of the small personnel of a field ambulance cannot be seated in the vehicles of the unit.

A field ambulance commander will be very seriously handicapped if he has to wait for even a small portion of his personnel to arrive by bus or on foot after the forward troops are in contact with the enemy. The suggestion that the field ambulance three-ton lorries can be sent back to collect the remainder of the personnel is not a practicable proposition; during the absence of these lorries the unit becomes completely immobile, and in any case, as things stand at the moment, would have to dump the water trailers that the lorries draw. The alternative suggestion that extra transport should be obtained when required is equally unsound as this transport will be necessary at all times; it is not likely that the bus companies will be able to ear-mark buses for this purpose as a permanent arrangement.

Our regulations state that "a field ambulance is essentially a mobile unit."

The watchword of the fighting forces is being embodied in the term mobility, the advanced medical units must be equally mobile.

**Duties of a Field Medical Unit.**

If the foregoing be accepted as reasonable premises for our argument, let us now consider the duties to be performed by a field medical unit.

I can see no change from the accepted principles, namely, "to collect the sick and wounded and to arrange for their proper disposal." I have put the word collect in capitals as that seems to me to be the important and, at the same time, the difficult part of our duty. The principles of collection and disposal of wounded have not altered through the ages, but the method must move with the times.

During the first stage in the presumptive modern war, the area over which we may expect to get casualties will be very much larger than in static warfare. The distances that wounded will have to be carried will be vast and quite beyond the capabilities of the two-legged stretcher bearer.

The line of evacuation from the R.A.P. via the A.D.S. to the M.D.S. may be anything from six to twenty miles. This combined with the constantly changing front will place a great strain on the resources of the Field Ambulance Commander to find a method of keeping in touch with his advanced posts and will almost certainly cause a breakdown in the medical arrangements. The present design of the field ambulance is most unsuitable for this type of work and the number of motor ambulance cars hopelessly inadequate in the forward area.
In order, therefore, that we may be able to adhere to our principles of clearing the battlefield and evacuating the casualties, it would seem to me that the old stereotyped method of moving the sick and wounded from the R.A.P. to the A.D.S., thence to the M.D.S. *en route* to the C.C.S. will have to go.

The cumbersome, over-equipped field ambulance will have to be modified and, in my opinion, modified to such an extent as to be scarcely recognized as such. Possibly the name might be changed to a "Field Evacuating Unit." This can only be done by remembering that the main duty of a field ambulance is to evacuate the casualties as rapidly and as comfortably as possible. A field ambulance is really performing its duty properly when it is empty.

My vision of the field ambulance of the future is a unit with the minimum of equipment and the maximum number of machines capable of carrying a wounded man. These may be either light, well-sprung motor ambulances and/or motor cycle stretcher carriers, driven by R.A.M.C. personnel, trained as drivers as the personnel in mechanized units are already trained. (Of this more anon.)

Our surgeons tell us that 99 per cent of wounded should be brought to them in the shortest possible time after the receipt of their wound, irrespective of the length (within limits) of the journey in the ambulance car. Why, therefore, delay the arrival of the wounded by admitting them to a main dressing station where little surgery can be or, in fact, is done, instead of evacuating them direct to the casualty clearing centre of a forward operating centre.

**RESULTS OF EVACUATING DIRECT TO THE C.C.S.**

If the main dressing station is done away with, a large portion of the present field ambulance equipment can be done away with in the same way, thereby reducing the number of vehicles and increasing the mobility of the forward medical units.

The General Staff, whilst insisting on the mobility of the fighting forces, is greatly exercised by the constant demand for more and more vehicles to carry the personnel and equipment. This may partially explain the fact that the present field ambulance cannot move as a complete unit on wheels. Many vehicles are filled with equipment, which, I submit, would not be required if the organization of the divisional medical units is modified on the lines that I am about to suggest.

It is obvious that if you do away with a central place from which casualties are collected, i.e. the M.D.S. and increase the distance that motor ambulance cars must travel to deliver their load of wounded, you must at the same time increase the number of motor ambulances working close to the line so that the even flow of cases...
may be maintained. Hence some of the cars of the M.A.C. will fuse into the forward evacuating unit as the M.D.S. will no longer require clearing.

This, at first sight, would seem to be defeating the very idea by which we are attempting to make the forward medical units more mobile and effect a reduction of the number of vehicles with the division. However, a reduction of the number of "non-essential" vehicles will have taken place by modifying the organization of the field ambulance, but from the nature of the work to be done there must be an increase in the number of "essential" vehicles, namely motor ambulance cars.

It is not likely, apart from exceptional circumstances, that all the motor ambulance cars will be required at the same time in the forward areas, so that a pool of cars can be held in reserve when the main body of the Division moves forward, therefore reducing the congestion in the more advanced areas of the front, in much the same way as the present M.A.C. is kept some distance behind the Division with which it operates until its services are required.

The A.D.S. will remain as the point or points from which casualties are collected and evacuated direct to the C.C.S. or Rest Station.

The amount of attention received in the forward area will be the minimum to ensure reasonably safe arrival at the C.C.S. with the minimum of distress to the patient.

Elaborate splintings and dressings will not be done; the surgeons tell us that much valuable time is wasted at the M.D.S. by attempting too extensive dressings, etc., all of which have to be re-done when the patient arrives at the C.C.S.

The C.C.S., from the nature of the work that it has to perform, is a unit that must remain in one position for a long time and cannot move rapidly from one place to another. When, therefore, the M.D.S. is short-circuited, a modification of the C.C.S. becomes necessary.

The C.C.S. proper can remain much the same unit as heretofore but a new unit must come into being or the light section of the C.C.S. must take on the duties of this unit. A forward operating centre or centres must be formed. One can see the C.C.S. anything from 50 to 100 miles behind the forward troops, too far to send the fractured femurs, etc.; the forward operating centre must be well up behind the battle front so that the surgeon can get his cases in good time. This situation appears to arise even now under our present organization and will have to be met should a war start in the near future.

Certain problems undoubtedly present themselves with regard to the reports and returns that are required by Division, 2nd Echelon and other formations, but it is quite easy to arrange that these returns are rendered to the correct department by the medical unit that finally receives the casualty. An increased clerical staff can be given to the C.C.S., or
Divisions can detach some of the field ambulance clerks to see that the necessary states are properly maintained.

Still keeping in mind the necessity of mobility in the forward medical units, some of the functions of a field ambulance during the late war, namely the formation of divisional rest stations and gas centres, would have to cease to be part of the responsibility of the divisional units.

Rest stations are still required for the reception and care of sick and wounded casualties that may be expected to be fit to return to their units in, say, one week's time. These rest stations could be modelled on the organization of the headquarters of a field ambulance and be capable of dealing with three or four hundred minor cases; they would be just behind, but not in or of the Division that they serve, semi-permanent in nature; they would not move when the Division in front of them moves, unless and until the whole force advances a considerable distance. In other words, the rest station would be a non-divisional unit administered by the D.M.S. of the Army or D.D.M.S. of the Corps.

In the same way gas centres would have to be formed as a branch of the C.C.S., or a rest station be specially equipped to deal with this type of case.

During the last war, when a Division left for another part of the line the field ambulance which was open as a rest station had to hand over to the incoming field ambulance, leaving its casualties behind and then catch up with its own Division. In the same way the M.D.S. had to be handed over, thus limiting the mobility of the outgoing units, a factor that is assuming more and more importance in the light of modern mobility. If there is no M.D.S. and the rest station is a permanent non-divisional fixture this handing over and taking over becomes unnecessary. The field medical units will be highly mobile, having evacuated their casualties to the C.C.S. or rest station nearest to their front.

THE ORGANIZATION OF THE MODERN FIELD AMBULANCE.

The old Cavalry Field Ambulance and its modern counterpart is on the road to becoming the ideal evacuating unit. In the past the M.D.S. of that unit really served as an A.D.S. from whence cases were sent direct to the C.C.S. or to the M.D.S. of the field ambulance in rear of the cavalry.

As constituted at present this mobile field ambulance falls far short of the ideal by reason of the fact that the sections are undermanned and lacking in motor ambulance cars. If these could be increased by the addition of light ambulance cars and motor cycle stretcher carriers together with extra R.A.M.C. bearers its efficiency would at once improve.

Once the idea is established that a field ambulance is to cease to carry equipment capable of giving elaborate medical attention to anything
from 150 to 2,500 patients in twenty-four hours, part of the problem of efficiency and mobility will have been solved.

It would seem to me that there is no necessity to make any distinction between the types of the future field ambulance (or evacuating unit) as a unit organized on the lines to be suggested would be equally at home whether working with a "cavalry" division or an infantry formation.

What then might the future field medical unit look like?

I can see a central headquarters which will correspond to the present-day field ambulance headquarters.

Here will be the officer commanding the divisional field medical unit. He will have enough equipment to set up a unit capable of rendering first aid to say 200 cases in an emergency, his staff might include three medical officers, a dental officer and a quartermaster with sixty other ranks R.A.M.C. It might be necessary to have a portion of the personnel of the transport wing of the M.A.C., mainly the repair section. The personnel would, of course, also include the R.A.S.C. drivers until such a time as the driving can be done by the personnel of the R.A.M.C.

The remainder of the unit would consist of three companies forming the forward evacuating or bearer companies. Each company would have a Major and four Captains or Lieutenants with 150 other ranks.

Each one of these companies will be able to form an A.D.S. The feature of the bearer company will be that they are very heavily equipped with motor ambulance cars of the light type, capable of carrying two stretcher cases, together with motor cycle stretcher carriers. Each company will be capable of dealing with the casualties of one Brigade. Being highly mobile they will be able to move over a wide area and collect casualties from an extended front by means of their motor vehicles.

The evacuation of the casualties will be direct to the C.C.S., Forward Operating Centre, Rest Station or Gas Centre as circumstances may direct. Casualties collected by the light cars from the outlying areas can be transferred to the heavier vehicles at the A.D.S.

The unit, therefore, has per division a headquarters and three companies. The motor ambulance transport of this unit would consist of the following cars:

With headquarters: 20 heavy cars. With each company: 5 heavy cars, 10 light cars, 10 motor cycle stretcher carriers or an additional 10 light cars. This gives a total of 95 motor ambulance vehicles for the Division.

When the type of work that has to be done is taken into consideration this number will not prove to be excessive. In addition, the fact that the M.A.C. has been absorbed into the actual divisional unit must be realized.

If our wounded are to be properly looked after and collected in a reasonably short time after they have had the misfortune to be wounded,
the medical services must be given an organization that can do the work. Sometimes it would appear that the time that it takes an ambulance car to collect a wounded man, transport the case for (say) ten miles, and then return to pick up the next load, is not fully realized. It is therefore essential that the number of the vehicles at the disposal of the medical units should be such that there is a chance of living up to the ideal of rapid evacuation of casualties. If this cannot be done then the standard expected of the medical services must be revised and allowances made for their inability to perform their allotted task in war.

The motor cycle stretcher carrier mentioned above is a controversial type of vehicle. The French have found that a wounded man was reasonably comfortable on a well-designed cycle carrier, and the mobility of these machines even over very poor country is well known. One of our officers has already written on this subject; the idea, as far as I know, has never been developed in this country, but it seems to come into the realm of practical usefulness.

The light motor ambulance requires a chassis engined by a motor of not less than 18 to 20 h.p. giving a high power to weight ratio, with a light body. The wheels should be sprung independently, the centre of gravity low, but with plenty of ground clearance. The ambulance car should carry two stretcher cases or the equivalent number of sitting cases.

**The Results of the Altered Organization.**

The main result will be increased mobility of the forward medical units brought about by the fact that the equipment of the suggested unit can be cut down by practically all the material that is now required to equip and run a main dressing station in two of the three present-day field ambulances. It is desirable that the headquarters of the unit should have the necessary medical equipment mentioned previously in this article.

There would, therefore, be a reduction of a considerable quantity of transport now required to carry equipment which could, perhaps, be employed in carrying the personnel. The organization of the companies will need to be of such a nature as to ensure that they can be self-contained when separated from their headquarters for any length of time, but in the normal course of events they would be rationed and administered from the headquarters of the unit.

The increase in the number of motor ambulance cars actually with the division will naturally have its repercussion in the other corps such as the R.A.S.C. and R.A.O.C., etc.

Finally the suggested modification in the field medical units would result in a unit so constituted that it would be of a universal type, equally effective with "cavalry" or infantry formations, bringing with the change simplification in maintenance of both equipment and personnel.
In the event of a brigade being detached on separate duty very little modification of the medical personnel would be required. The headquarters of a field ambulance might accompany the brigade with one company, possibly overloading the equipment side, but as the brigade might not be supplied with the necessary units behind it, such as rest station and gas centre, when on this detached duty, the extra personnel and equipment of the headquarters would supply this deficiency.

**METHOD OF COLLECTING AND DEALING WITH CASUALTIES.**

This problem seems to divide itself into two parts: first, the collection of casualties in open and moving front warfare; second, the arrangements for static or stationary warfare.

The first phase of the modern war may well be one of tremendous movement.

Two alternatives seem to me to stand out in regard to the Medical Services.

One means that with our present organization of the field medical units we must leave our casualties to their fate, in the hope that, sooner or later, we shall be able to evacuate them to the C.C.S. Casualties will be spread over a big area, but with the best intentions in the world the regimental medical officer can do no more than give his cases first aid, group them in some convenient place for collection, and then notify the field ambulance of the location of these groups. It will then be the responsibility of the field ambulance commander to collect and evacuate them. For this purpose he requires motor transport. The present allotment of ambulance cars will only permit him to collect from one or two points on his widely-spread front; the remaining "dumps" of wounded will have to wait till he can get to them, possibly after many hours delay.

On the other hand, if we organize ourselves on the lines suggested by establishing a much larger number of car-collecting posts and with our increased number of ambulance cars we can get the cases back very much more quickly.

The light vehicles can be used in the more advanced areas, cases being brought back to the A.D.S. and there changed over to the heavier vehicles for final disposal.

The main principle being the formation of numerous collecting posts on the line of advance, gradually converging towards the rear of the divisional front.

It is hard to foretell how long this first phase of movement will last, but sooner or later the fighting will become more stationary in character.

The work of the medical units will then lose many of its problems,
but the new organization will work equally well. The system of collecting posts will still function, the light motor vehicles will be as useful as ever: the Ford ambulance cars gave plenty of evidence of this fact in France and elsewhere. The A.D.S. might be a little further behind the line than was customary in France, so that the large cars could come to take the cases collected by the bearer company from the R.A.P.s and deposited at the A.D.S. by the light vehicles.

The advanced operating centre, rest stations and gas centres manned by non-divisional R.A.M.C. personnel would, of course, function in the same way as when the fighting was of the mobile type.

**Suggestions on Personnel.**

During the last war the shortage of medical officers for the forces in the field was giving the authorities considerable anxiety. There was a movement to supply the lack of officers for the forward field units by replacing them by selected N.C.O.s of the R.A.M.C. and promoting these N.C.O.s to commissioned rank. The intention was that the new grade of R.A.M.C. officer should be employed in the field ambulances as "bearer officers" and be in charge of the evacuation of the forward areas. This scheme appears to have a great deal to recommend it in war time. There is no doubt that every regiment requires a qualified medical man as its regimental medical officer, if for no other reason than to maintain the morale of the officers and men of the regiment, but there is reason to doubt that it requires a registered medical practitioner to perform the duties of a bearer officer in a field ambulance.

Our senior N.C.O.s have all the medical knowledge required to render first aid to the wounded and at the same time would make very excellent bearer officers, thereby releasing a doctor to make use of his knowledge where his experience is more definitely required.

When making the suggestion that our ambulance cars might be driven by our own personnel, I realize that the differences between the peace organization of the R.A.M.C. and the war time units of the Corps are so marked that such a suggestion seems to be rather optimistic, but in this mechanical age the number of youths who have some kind of experience in the actual driving of motor vehicles or can acquire that knowledge in a very short space of time is very large. Is it altogether too fantastic to imagine that we might be able to give some of our peace-time recruits enough preliminary training to make them become reasonably good drivers, so that they can be ear-marked for that type of duty in war?

**Conclusion.**

*These notes are written in no sense of carping criticism.* It is realized that they are open to the attack that the suggestions put forward depart
too greatly from the accepted standards. However, the standards that enabled us to be such an efficient service during the Great War, twenty years ago, will not serve us now any more than the standards that helped Wellington to win at Waterloo would enable our present commander-in-chief to win the next war, even though the main principles are the same.

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