AN ASSISTANT DIRECTOR OF MEDICAL SERVICES OF AN ARMY IN WAR TIME.

By Lieutenant-Colonel W. F. TYNDALE, C.M.G.
Royal Army Medical Corps.

(*Continued from p.* 416, *vol. xxxvi.*)

A memo, "Instructions to Entraining Medical Officers" should be drawn up in quiet periods and issued to acting entraining officers, keeping spare copies for future use. I again regret that I have no copy of this available, and my memory fails me as to details. Officers in command of casualty clearing stations should be asked for a return of their entraining medical officer, and the names of those who could act, if necessary, as assistants. A list of these should be kept in the office for reference and future use, and the Assistant Director of Medical Services should make himself acquainted with the comparative merits of the officers. If necessary, before a "strafe" he can move these officers about, but should do so sufficiently soon to allow them to "settle in." The most expert should go where the work is heaviest. Where the casualty clearing stations are grouped, *one* officer must be in supreme control, and, in order to get a backing, he should be attached to the casualty clearing station of the senior officer of the group. Officers in command of casualty clearing stations may be inclined to interfere on behalf of their own hospital, and he may be torn by contradictory orders. Sometimes the officer in command of a casualty clearing station arranges for the entraining, etc., and the entraining medical officer carries out the actual supervision. If this works well in a group without friction, it should not be interfered with. It is most important both in peaceful periods and during operations for either the Director of Medical Services or the Assistant Director of Medical Services to be present occasionally (unexpectedly) at the loading of an ambulance train. It may be an eye-opener either of the efficiency of the arrangements or the reverse. No less important are effective arrangements for clearing loaded motor ambulances on arrival at a casualty clearing station (single or grouped). If badly managed, a line of waiting ambulances half a mile long or more may be seen. Corps begin to complain that their cars go off to casualty clearing stations and are not seen again for the day. Complaints may even arrive from the General Staff who have noticed the block. Corps evacuations and army evacuations are greatly delayed, and much additional suffering evolves on the wounded. In respect of this I might mention here that motor ambulance convoy officers and non-commissioned officers on motor cycles should be told off to supervise the running of cars along the various main routes.

Cases occur in which a car having unloaded and being due to return to its corps turns off instead into a side road out of sight, and the driver either eats or sleeps as long as he feels inclined. The officer in charge of all army cars and attached cars, buses, etc., should be seen by the Assistant Director of Medical Services in his office before a "strafe," and amongst other things the Assistant Director of Medical Services should instruct him if he has not already made such arrangements to issue definite orders as far as possible for drivers as to feeding rations to be carried, meals to be served at headquarters, periodical assignment of cars to the reserve to rest the drivers, and so on. I remember one instance, in particular, which emphasizes the necessity both of these definite orders and the need of watchful motor ambulance convoy officers. In the advance at one time, owing to breakage of the railway line by delayed railway mines, it was necessary to evacuate the front line casualty clearing station by car, bus, and lorry fifteen to twenty miles to casualty clearing stations in the rear; for this purpose with difficulty we had obtained the use of about eighty cars, forty buses, and a few lorries. If the cars could make daily two to three journeys and the buses two, we could keep the front casualty clearing station fairly clear; but we found that many of them going to a certain group of casualty clearing stations were not making anything like this number of journeys. On inquiry it was found that one of the officers in command, in the kindness of his heart, was allowing each driver, on unloading, to go off and have a meal, and that there was practically no check on their time of leaving the casualty clearing station. It was discovered that meals were arranged at the other end by the motor ambulance convoy officer, so that this additional meal was unnecessary; but one could hardly expect a tired cold driver to forgo the extra meal and rest of his own accord.

The majority of entraining officers were found until late in the war from among the dental officers and chaplains. Dental work in a "strafe" was at a standstill usually and hence these officers were usefully employed. Very good some of them were. The same remark applies to some of the chaplains. The duty needed much energy, organizing power, and skill in handling men who often were tired from overwork and want of sleep. It was rarely possible to get as many bearers as one would like and therefore they were generally heavily worked day and night. Objections were made later on in the war to the employment of chaplains as entraining medical officers and deservedly so. Although it was a loss to the medical arrangements one could not reasonably complain. At the busy groups of casualty clearing stations an assistant entraining medical officer must be appointed as well, possibly two assistant surgeons. Rest must be obtained and loading and unloading of cars or trains often continued day and night. It is also essential that the entraining medical officer should have a clerk who should be given every facility for telephoning and who should always be within reach of the 'phone in case he is called up by the Director of

Medical Services' office. The Assistant Director of Medical Services should see that all this is arranged carefully beforehand if he wishes to avoid trouble. The Assistant Director of Medical Services should always have in full view in his office a blackboard showing the exact state of each casualty clearing station as regards available accommodation, numbers in hospital, numbers for evacuation, etc. These should be kept up to time as far as the facilities of communication (often bad) allow. On another board or on a paper on the table should be a list of the ambulance trains in the area, giving their official number, and their latest situation on the railway line as obtained from the railway authorities. The accommodation in these as regards sitting and lying is shown on the official list issued. These trains will be directed to the groups where most urgently required, or where pressure of railway traffic allows. Judgment is required in this allotment as for example, it may be wiser to send a train to a less crowded group of casualty clearing stations because the line to it is less heavily engaged.

Although I am diverging somewhat from the discussion of entraining officers, it is not inopportune here to give the Assistant Director of Medical Services' duties before and during an operation as regards the supply and working of ambulance trains.

The number of ambulance trains that it is possible to work in during a "strafe" depends on many factors and not the least on the Deputy Assistant Director of Regimental Transport of the army and officer of the same department who runs the ambulance trains. Like all the other branches these officers vary in ability, and given the ability whether they appreciate to the full the urgent needs of the medical department when thrown in the balance against ammunition trains, supply trains, etc., not only have they to work in with the medical department of the army but they must be able to demonstrate to the authorities allotting ambulance trains at General Headquarters their exact needs and get their demands complied with.

There was one court of appeal open to the Director of Medical Services if the need was extremely urgent and trains were coming very slowly or not at all into the army area. That was to telephone to the Director-General of Medical Services' office or to the Assistant Director of Medical Services of ambulance trains direct. Such an appeal was seldom made or necessary. It was always realized that ambulance trains were being distributed amongst armies as fairly as possible, still in some cases the immediate urgency could only be estimated by the Director of Medical Services on the spot.

Difficulties in obtaining ambulance trains in the army area became much accentuated during the final advance when all the armies were involved, and where it must have been an extremely difficult matter to judge the requirements of each army, particularly as armies were likely to over-estimate rather than under-estimate their probable requirements.

Where military operations partook of the nature of a set-piece, the Assistant Director of Medical Services had to calculate his requirements beforehand as regards (1) the daily number of ambulance trains and temporary ambulance trains required for the army area; this we calculated roughly for twenty-four hours, commencing from zero hours plus about eight hours. It was estimated that probably no casualty clearing station would require an ambulance train until eight hours after the action had begun, except such trains as were required to finally clear out all the sick occurring before operations.

These sick were usually gradually and unobtrusively being cleared out two or three days before the event, with a final train-load or two in the last twenty-four hours.

(2) The number of these required in the same time to each group of casualty clearing stations. It was of course difficult to make an accurate forecast but it served as a sort of basis on which the army could submit its demands. It was necessary to be careful however as in the moderation of the demands depended a good deal the confidence of the railway authorities. It was foolish to ask for five trains in twenty-four hours on a single line also heavily engaged in running up troops or urgently needed supplies. Few single lines in general use could ever manage more than three ambulance trains a day during operations. As regards (1) a better method than asking for so many trains a day was to try and arrange for so many to be put up in the army area garaged conveniently at zero hour. This was a much more comfortable arrangement and saved much anxiety for the first thirty-six hours which were usually the period of heaviest casualties. Taking an example, it generally happened that there were about three different groups of casualty clearing stations which were so situated that they would take all or the majority of the first day's casualties; one of these was probably so situated that it took the greatest part of the first rush, the other two being switched over to somewhat later; more casualty clearing stations existed in the second line, but except for special cases would not be used unless ambulance trains would not meet the demands, when motor ambulances could be directed to them, not a desirable procedure unless compulsory. In such a case a good arrangement would be as follows: have an ambulance train ready garaged at each siding for a group of casualty clearing stations within four or five hours of zero, possibly two in one group of casualty clearing stations which had extra sidings. Three ambulance trains held in railway sidings, one on the line to each group but about four hours' journey or less away (four hours on these occasions may be about ten miles away or less), two at a large junction in the back area from which they can be sent to any one of the groups which might particularly require it, and one temporary ambulance train accommodated somewhere in the army area. This temporary ambulance train was a great stand by, it took over 1,000 sitting cases, and could be put into the group where the strain was greatest; usually the

most desirable time was between zero eighteen and twenty-four hours when the walking wounded have arrived and may be blocking up a very busy group of casualty clearing stations. The Assistant Director of Medical Services is very well off if he can get all these trains and he can view the future without much anxiety. He has roughly the means of evacuating 4,500 cases for a period of twelve hours after they begin to pour in, he has his second line of casualty clearing stations to fall back on and can therefore deal with casualties up to 12,000 or more in twelve hours without being blocked,[1] as soon as the extent of the casualties begins to be apparent, there is sufficient time for fresh trains to be ordered into the army area.

The above may be considered a happy position, but it may not after all "pan out", well, the ambulance trains garaged at the most busy group of casualty clearing stations will be almost certain to get away, but it by no means follows that the next one will arrive four hours later, it may take twelve hours; even if it takes eight it upsets calculations and the Assistant Director of Medical Services will get off lightly if the worst that happens is that valuable cars have to switch off other work, or be diverted to casualty clearing stations farther to the rear, thus causing delay in clearing the wounded from field ambulances.

Other factors that have to be considered in asking for and also in estimating the probabilities of getting a certain number of ambulance trains at a certain group of casualty clearing stations are the total number of trains under best conditions that a line can take. Sometimes the number will be very few owing to heavy gradients, poor condition of permanent way, lack of sufficient sidings, etc., it will depend also on the period which has elapsed after operations have begun; usually good stocks of ammunition, etc., are already at and beyond rail head at the commencement of operations, also relief troops have not yet begun to be rushed up, so although the wounded may be in large numbers the position may be better than it will be three days later when the numbers of wounded may not be so great, yet the traffic on the line may be much increased. In fact, I have known ambulance trains held up for long periods in order to push up a large number of troop trains. This is the fortune of war.

In siting casualty clearing stations it is no good policy to locate them strung out on one railway line unless it can deal with more than five ambulance trains a day. For example, two groups of three casualty clearing stations with one group five miles in rear of the other, under the above conditions is a most undesirable arrangement. The forward casualty clearing stations with good entraining arrangements could take on all the five trains in twenty-four hours, and the strain on cars (affecting the rapidity of evacuation) would be much less than by sharing trains between the two

[1] This is of course largely theoretical; road transport to deal with such large numbers would probably not be available in that period, still the *actual accommodations* would exist.

groups. The distance of five miles is of no tactical value in case of a retreat, for if the first group were lost, the second would be in such jeopardy as to be unsafe to use; ten miles is the least distance that should be fixed between lines of casualty clearing stations when locating them with a view to a retreat. However good policy and necessity do not agree always, unfortunately.

Finally, there is the question of utilizing returning empty trains for wounded. I am thankful to say that as far as my memory serves me these were not used in our army except for very short journeys for a limited period following the retreat and in the early stages of the final advance, and then only to a very limited extent, so I cannot speak from much experience, although I saw some in use in the early period of the war. The objections to them are very great indeed, and they should only be resorted to as a last resource. Preparations to utilize them were made before the battle of Arras; fortunately there was no need for them.

The use of light railways already existing and primarily in use for carrying ammunitions and other supplies to the front for the conveyance of wounded was more the concern of the Deputy Directors of Medical Services of Corps. The Director of Medical Services took much interest in it, and very good types of converted trucks for the conveyance of wounded were evolved. On some occasions evacuation from the corps areas to one or more of our casualty clearing station groups was carried out by this means. If the course taken by the line was fairly direct they were very useful, but often it was very round about and the time involved in the journey very long. The whole business took a good deal of organization, and doubtless a Deputy Director of Medical Services, or a Deputy Assistant Director of Medical Services of a Corps could furnish much more useful information than I am able to give.

We now come to the second important subject, viz., additional transport to active operations. The usual allotment of motor ambulances convoys in the army was one for the army and one for each corps. These convoys were administered by the Director of Medical Services, and convoys were lent to the corps by him. This was an important point, as it meant that once lent by the Director of Medical Services they were under the control of the Deputy Director of Medical Services and could not be interfered with by the corps staff. This was a matter that had to be emphasized on one or two occasions. Needless to say that in active operations on a big scale, the number of cars available was inadequate unless there were one or more corps marking time on the flanks of the attack in which case it was usual to draw in fifty per cent or more of each convoy for army uses; this addition, however, was seldom sufficient. Normally about thirty per cent of the headquarter cars were on command chiefly distributed singly to casualty clearing stations or to medical officers of prisoners of war camps, etc. Wherever possible these were called in, but roughly ten per cent could not be made available. Although before a

"strafe" every effort was made to get all cars out of workshops and fit for the road, one had to allow within a very short period after operations for ten per cent being in workshops, consequently forty cars per convoy was the maximum number likely to be available, and that was a sanguine estimate. Consequently the Director-General of Medical Services generally had to be asked to provide a certain number. Thirty cars was about the maximum that could be obtained from this source, until towards the end of the war when a whole convoy was possibly obtainable except when all armies were attacking at once.

Eighty working cars was about the least number with which one could carry on, and with this number we also required additional help in the way of motor buses. These we invariably obtained, but the number varied; we had as few as three and as many as forty (not all fit for the road unfortunately). Their usefulness cannot be overestimated; generally we had at least eight, and as they hold about twenty-four sitting cases each, they could deal with large numbers. On some occasions we made up a small convoy of four or five casualty clearing station lorries for the transport of lightly wounded. As regards the allotment of duties of all these, the general arrangement was to keep fifteen to twenty cars in reserve to rest drivers and be available as a last resort, twenty cars with possibly two to eight buses loaned to corps heavily engaged, the remainder for army evacuation and isolated duties, e.g., bringing up sisters, removing infectious cases, etc. One tried to retain five buses if possible for army use. Nevertheless it may be impossible to maintain the above distribution, and I have had the headquarters cars reduced to one or two on occasions, and no further reserve to fall back on.

There are one or two points worth remembering; one is that fifteen or more cars will be employed for forty-eight hours before operations in bringing up sisters and surgical teams, etc., from all over the army area and perhaps beyond it, and so it is wise to get some additional cars in soon; another is not to forget to arrange for blankets for the wounded for each bus, to be in charge of the conductor; also as previously mentioned, interview the officer in command of the headquarters of the motor ambulance convoy and arrange in good time for him to accommodate all the extra cars and buses; if possible keep them altogether under the officer in command; it makes a great difference in the smooth running of this branch. Needless to say the officer in command must be a capable officer with good organizing powers. If the repairing outfit and personnel of another motor ambulance convoy can be obtained it is advantageous. Although it may be a good deal against the grain in view of the pressure on cars, each group of casualty clearing stations must be allotted a car during a "strafe"; in fact, if it is possible each casualty clearing station should have one. The reasons for this are fairly obvious, there are possibly local casualties to be brought in, medical stores urgently required, the officer in command may have to visit the ordnance or supply depot in a hurry, and must have means of

transport, and infectious cases have to be moved. It is best to post three cars in the group under the senior officer in command.

Extra Labour for Casualty Clearing Stations.—What one may call casual labour had to be provided for casualty clearing stations even at ordinary times, and this was met in various ways in our army throughout the war. Thanks to the amenability of "A" who always willingly assisted when the necessity was demonstrated, when casual labour became properly organized, we had allottted to us an Area Employment Company of about 400 men who were distributed among the casualty clearing stations. These were employed in stretcher-bearing duties, sanitary work, cook houses, etc. In active operations not less than forty over and above these would have to be obtained for each casualty clearing station likely to be heavily engaged. Most of these would have to be employed in stretcher-bearer duties in day and night shifts. The necessity of obtaining them should not be overlooked, otherwise the rate of unloading cars and loading trains would be so slow that the departure of ambulance trains would be seriously delayed (a state of affairs which would give rise to much trouble) and blocking of cars at casualty clearing stations would soon occur. Labour companies whose employment ceased temporarily when actual operations commenced were most usually supplied. Some of these, especially the road repairing companies, worked with extraordinary devotion to duty, others were rather "tired."

A certain number of wounded could also be employed.

Royal Army Medical Corps Personnel.—Here again increases were required in active operations but seldom as many men were available as we should have liked. These were obtained, some (not many) through the Director-General of Medical Services, others by calling on corps to provide from field ambulances of their divisions. An increase of thirty to forty to each casualty clearing station, not counting the orderlies accompanying surgical teams, was generally the most that could be managed.

There were also generally obtainable through the Director-General of Medical Services a certain number of men from the stretcher-bearer companies at the base who could be distributed to casualty clearing stations. I do not remember these at the latest period of the war, possibly they were not available owing to base requirements.

If my memory serves me right this generally brought the total personnel to between 180 and 200—exclusive of officers and sisters and local temporary men slightly wounded—for each casualty clearing station really heavily engaged.

As to the actual number required, opinions of commanding officers varied, and naturally would depend on the amount of work, its continuous nature and duration. This was not easy to estimate beforehand. Two hundred and forty was the figure given by an expert commanding officer as sufficient for all emergencies. It was not possible to supply all casualty

clearing stations equally, and in some operations the numbers per casualty clearing station were very much less, also one had sometimes to rob casualty clearing stations outside the sphere of operations in order to meet the requirements of more important ones.

Cemeteries and Burial Parties.—Arrangements for both of these may be forgotten before a "strafe." When a casualty clearing station moves to a new spot application had to be made to the Graves Registration department, either for a cemetery site to be allotted, a separate one or one for a whole group, or for permission to utilize an existing cemetery as the case might be. Usually the Graves Registration department also supplied in existing cemeteries one or two men to keep the ground tidy and in order.

Correctly speaking, burial parties should be provided by "A" branch on its own initiative and of course as regards burials in the field this was done. In the case of casualty clearing stations in active operations the Assistant Director of Medical Services had usually to take the matter in hand with "A." It is important, for if neglected a very disagreeable position arises. To dispose of an accumulation of eighty or ninety bodies or more takes a long time and a very large number of men; a group of casualty clearing stations easily gets this accumulation in thirty-six hours.

Consequently, the Assistant Director of Medical Services should see that in peaceful times a reserve of 20 or 30 graves for each casualty clearing station is kept, and get these increased by extra labour shortly before the onset of operations, so that there are at least 40 to 50 graves per casualty clearing station available at zero hour; if more all the better.

During operations a minimum of thirty men per group of three casualty clearing stations should be continually employed digging and filling in graves. "A" should furnish these men. It will thus be seen that the amount of extra labour required is considerable, and the Assistant Director of Medical Services amongst his multitudinous duties has to give time and thought to obtaining, allotting and transporting the men.

Extra Sisters and Medical Officers—For a heavily engaged casualty clearing station we trust to obtain twenty-five to thirty-nine sisters exclusive of surgical teams sisters: not that we should not have liked more but experience showed that as a rule more were not obtainable. We did not always get twenty-five especially at the end of the war. Naturally also the normal number of medical officers in a casualty clearing station did not suffice, especially as each casualty clearing station contained two surgical teams at least, which left very few medical officers for ordinary duties. Extra medical officers were obtained by drawing three from each division of a corps and from any reserve divisions coming up or waiting to be put in the line, calling in odd medical officers of units where they could be spared temporarily, such as medical officers of prisoners of war camps, labour companies, etc., and denuding hospitals in the army area outside the sphere of action.

Surgical Teams.—There was a constant flow of these from army to army and bases to army and back again according to the exigencies of the situation.

We represented our requirements to the Director-General of Medical Services and he allotted us as many as could be spared. Of course the more one could obtain the better. Obviously, however, it was not common sense to ask for say ten to each casualty clearing station engaged which was a futile demand, and would give the Director-General no accurate idea of our minimum requirements which was what he desired. Usually one asked for about three per casualty clearing station engaged. These were augmented by teams from hospital and casualty clearing stations in the army not engaged plus one or two obtained from divisions. Seven teams per casualty clearing station, with 9 or 10 to one or two especially heavily involved, was a good number to start with. Readjustments could be made later, as fluctuations in the flow of wounded to casualty clearing station occurred. The greatest number of teams ever allotted in our army to a single casualty clearing station was, to the best of my recollection, thirteen; this was of course only for a short period. If other armies were fighting we never attained such numbers as the above.

It became a standing arrangement that teams should bring a certain fixed number of instruments with them; spare operating tables may also be required and may be brought by teams; also one servant with each team should be brought as this helps the messing arrangements which are heavily strained by the sudden expansion in numbers.

Advanced Operating Centres.—These came into existence on one or two occasions in our army. There are undoubted drawbacks to them. Their utility is a matter for consulting surgeons to decide, and I do not propose to enter into an argument about them. The Assistant Director of Medical Services would have to arrange for their equipment and personnel if the Director of Medical Services decided to establish them. We had the staff and equipment of a mobile operating centre in our army for some time, but it was not used by us and was ultimately withdrawn to another army.

Walking Wounded Stations attached to Groups of Casualty Clearing Stations particularly heavily engaged.—These if well run were a very successful institution. We began them only in the last period of the war, and I am not aware if other armies used them.

This station was not a part of a casualty clearing station although it was supervised by the officer in command of one and for official purposes the wounded were shown as admissions to one of the group. The staff was made up of 1 medical officer in charge and 2 assistants, 3 nurses (or more) and roughly about 10 orderlies. The accommodation should consist mainly of 3 ordnance marquees (these are much larger than hospital marquees), 1 used as a waiting room with benches and chairs, 1 for surgery (duly equipped), 1 as a buffet fitted with chairs, tables, etc., at

which tea, soup, bread and butter, cigarettes were served out, beyond this several marquees with stretchers, etc., where men could lie down and sleep, if they wished. The station was best worked as follows, after having had their particulars taken at the casualty clearing station which was admitting at the time, the walking wounded were sent to the station, where they passed first into the waiting room, then into the dressing-room, and from there to the buffet where they were fed and then passed on to wait their turn for ambulance trains, or buses as the case might be. This wait was usually only a few hours, as the station was only in use when the work was heavy and large numbers were being admitted and evacuated. It was a particularly useful arrangement where evacuation from front casualty clearing station to rear casualty clearing station was being carried on by cars and buses, either alone, or with ambulance train evacuations as well. It required capable management, otherwise the place was soon dirty, strewn with soiled bandages, etc. If well run it was a pleasure to visit it.

Assistant Director of Medical Services' duties as regards the Provost Marshal.—Arrangements had to be made with the Deputy Provost Marshal for supplying medical officers to camps in the army area for freshly captured prisoners of war and to carry out vaccination of these prisoners. In addition traffic maps had to be obtained when issued for the operations. These maps had to be carefully considered to see that the best routes to and from casualty clearing stations were open for ambulances, and in some cases roads closed to motor traffic had to be opened to meet casualty clearing station requirements.

Arrangements also had to be made for policing special points where congestion of ambulances was likely to occur. Traffic maps also had to be issued to officers in command of motor ambulance convoys, freshly arrived motor ambulance convoys, motor buses, etc., and others concerned.

General Staff Intelligence.—Arrangements to allow them to post their own men to groups of casualty clearing stations to obtain information from enemy wounded.

Arrangements with casualty clearing stations, etc., for daily wire of number of prisoners admitted and evacuated in previous twenty-four hours (for General Headquarters' information).

Army Medical Dumps.—In active operations this was a most important matter, and had to be carefully arranged. Ordnance arrangements were such that no storing of equipment was undertaken by them in army area. The result of this was that supplies urgently required had to be obtained by the Ordnance from the base depots with the result that great delay might occur before delivery, chiefly owing to railway difficulties, also the dumping of these when they did arrive might not suit the medical arrangements. Consequently it was essential that the Director of Medical Services should arrange dumps under his own control before operations and restock them as they became depleted. These dumps as regards all articles except

stretchers and blankets were not authorized but necessity rendered the formation of them compulsory. The three chief items in the dumps were tents, marquees and bell tents, stretchers and blankets, but waterproof sheets, mattresses, eating utensils and other material *essential* to the rapid expansion of a casualty clearing station or the formation of a fresh hospital, were also maintained in some of the operations. The marquees were usually obtained from casualty clearing stations or stationary hospitals where the need for them no longer existed owing to the substitution of buildings or huts. Later on in the war, dumps of stretchers and blankets were authorized to be maintained as follows: One large dump with the Director-General of Medical Services (several thousands of both) with the Director of Medical Services (3,000 blankets, 1,500 stretchers) with the Corps (2,000 blankets and 1,000 stretchers) (this is only roughly correct, I forget the precise numbers). Corps restocked from the Director of Medical Services' dump, the Director of Medical Services from the Director-General of Medical Services' dump. The wastage of stretchers and blankets during operations was very great and largely out of control, many were abandoned, many taken and no doubt utilized by unauthorized persons. If was impossible to gather these in during operations, although steps were taken afterwards to recover as many as possible.

Casualty clearing stations running short of blankets and stretchers had another source of supply, viz., the ambulance trains. The number that could be drawn at one time from these was not great.

The main dump of the army was maintained at some central spot, usually a casualty clearing station well behind the front line of casualty clearing stations (a very necessary precaution in case of retreat, as the loss of this dump in a retreat would have been an irreparable misfortune). Shortly before operations commenced small dumps (e.g., 300 stretchers and 600 blankets) were placed at one or more of the grouped casualty clearing stations where likely to be most required and placed in charge of the senior medical officer of the group. It was advisable to maintain the army dump of blankets and stretchers well up to the authorized number, in fact, over it if possible, as the demands were very great, especially for blankets. If the operations were in winter the stock of army blankets had to be at least 5,000, especially if new divisions were being continually put into the line.

We had to lay down a rule that not more than a certain number of stretchers or blankets could be issued from any army dump without special authority from the Director of Medical Services' office. If this had not been done a Field Artillery or other unit might have cleared out the whole stock. The different uses to which the army dump was put would make interesting reading in itself. I need only say that its existence with a large amount of equipment greatly contributed in saving the medical situation in the retreat of March, 1918.

Advanced Depots of Medical Stores.—The Director of Medical Services usually inspects these before operations and ascertains generally how they stand as regards surgical material, etc.

The duties of the Assistant Director of Medical Services before and during operations regarding these were to ascertain the requirements of the officer in command (with due regard to maintaining secrecy), obtaining the stores required in the best way possible at the time (see remarks earlier in the paper), bringing up the stock of anti-tetanic serum to meet eventualities, checking the indents for these and other stores, and cutting down demands which were sometimes excessive or even preposterous, warning officers in command to be careful how indents of certain units were met during operations (some commanding officers put in demands for bandages, etc., which would have sufficed for 30,000 wounded or more), allotting areas and units which the different depots were to supply in active operations. During operations it was sometimes necessary owing to railway delays to send lorries all the way to the base to obtain surgical supplies.

The Duties of the Assistant Director of Medical Services regarding the British Red Cross Depots.—If Red Cross stores were maintained in the army area it was advisable to see the Manager regarding the position of his store from a tactical point of view. On one occasion in our area the whole of one depot, valued at many thousands of pounds, was saved from the enemy by timely warning to the Manager. Advice for the most convenient place for the depot to be situated, and assistance in obtaining site and buildings or huts. Advice as to which casualty clearing station it was particularly desired should receive Red Cross stores. Arrangements for an embargo to be placed on certain articles in general demand so that they were only available on special authority of the Director of Medical Services. For example, in one operation we arranged to reserve a number of oil stoves for Director of Medical Services' use only. We were thus able to get them issued to casualty clearing stations heavily engaged in suitable numbers. This was in the Cambrai battle which took place in late autumn. If such arrangements were not made important articles might go to the most importunate not to the most deserving.

Switching.—This term was used in reference to the system of diverting wounded and sick either: (1) from one group of casualty clearing stations to another group; (2) from one casualty clearing station to another within a group. The first was arranged in the Director of Medical Services' office, the second was a matter of arrangement between the casualty clearing station concerned; (2) was not, as a rule, interfered with by the Director of Medical Services unless confusion was occurring and upsettig admissions or evacuations. In active operations it was based on numbers, i.e., a fixed number of wounded, lying or sitting, or possibly without this differentiation, were admitted in turn by each casualty clearing station. According as the accommodation of the casualty clearing station varied, so the number fixed would differ.

From time to time during operations the number might have to be re-arranged either on account of differences in vacant beds or even on

account of the relative proportion of patients awaiting operation, or other reasons. The effective working of the switching depended greatly on the good sense and accord of the officers in command.

In quiet times casualty clearing stations generally admitted for a certain number of hours, and then cases were switched to the next casualty clearing station on the roster: (1) could not be arranged beforehand in the same way as (2). Switching depended on the "bed" situation of a group of casualty clearing stations at a particular time. If from reports of the entraining medical officer it was found that a group of casualty clearing stations was filling rapidly, and that cars full of wounded were coming up fast and beginning to accumulate—the question of switching to another group had to be considered. It was wise to act in good time, for there might already be large numbers of cars actually on the way, and wounded would have to be admitted and would overcrowd the casualty clearing station group, or they would have to be diverted on their arrival, which would entail a long journey—extra suffering to the wounded and possibly confusion at the casualty clearing stations concerned. As a rule, much saving of time and length of journey resulted if the diversion of cars took place in the corps area, that is direct from the units (field ambulances). One had to allow about two hours to get the orders for a diversion into actual operation; hence the need for timely action on the part of the Director of Medical Services. The orders on the subject to the corps concerned would vary considerably; sometimes only a partial diversion was necessary, that is, one corps area, or part of a corps area, would be involved either because these only were concerned or because it was only desired to *slow down* the rate of admissions to this particular group of casualty clearing stations.

Sometimes, depending on the situation of casualty clearing station groups as regards the routes of evacuation, the diversion could be worked in the army area by posting a man at forked roads past which the majority of cars were proceeding. He would be instructed to send so many cars in succession to one group and then switch off so many to the next group and so on. This man had to be communicated with through the senior medical officer of the nearest group as a rule. It is advisable for many reasons besides this one to have a dispatch rider attached to each important group of casualty clearing stations during active operations.

I do not propose to enter into the details of procedure with regard to N.Y.D. shell-shock cases or self-inflicted wounds. Special hospitals were selected to take these cases in the army areas. Such cases gave rise to much troublesome correspondence in the Director of Medical Services' office.

N.Y.D. shell-shock cases were very difficult to clear from our special hospital owing to the form of procedure in respect to them and to other causes. Their conveyance during active operations to the special hospital was often a strain on our ambulance resources. Field medical cards, too,

were often badly made out and gave rise to additional correspondence. After and even during operations life in the Director of Medical Services' office was made a burden by hundreds of field medical cards (A.F.W. 3118) being returned from the bases because they were incorrectly filled up.

Loss of officers' and men's kits gave rise to troublesome correspondence. Some soldiers appeared only too ready to make charges of theft against hospitals on very slender grounds. Usually the loss was found to have occurred in the field. In all cases when adverse reports were made by individuals on hospitals, etc., the matter was thoroughly investigated. In such cases it was sometimes found that the behaviour of the officer or man whilst in hospital had been bad. The Assistant Director of Medical Services, when drawing up the report for the Director of Medical Services' approval, should counter attack in these cases with all the vigour possible as one of the means of preventing officers in command of units forwarding without due consideration complaints based on extremely slender grounds. Obviously when hundreds may pass through a casualty clearing station in twelve hours evidence to confute such charges is difficult to obtain, as it is unlikely that the actions and movements of a single individual will be remembered.

The Division of Labour between the Director of Medical Services and Assistant Director of Medical Services during active operations.—There are only two alternative methods of dividing the work so as to get the most effective results. Either the Director of Medical Services must remain in the office during operations and leave the inspection of the working units to the Assistant Director of Medical Services, who reports to him, not always an expeditious or satisfactory way of getting defects remedied, or he must make the inspections himself, and leave the conducting of the office to the Assistant Director of Medical Services, outlining his policy before he leaves for his inspections and receiving and considering the Assistant Director of Medical Services' report on his return. Owing to the long distances involved and the number of units that it is essential that he should closely supervise, to try and do both would be most unsatisfactory and he would inevitably get out of touch with one or the other, most probably both. Inspections during operations are absolutely essential, it is the way in which bad organization of units, the inefficiency of officers, defective working of units and the causes, the need for alteration of procedure, can be promptly recognized and remedied. Over and above this his presence and words of encouragement to harried and overworked officers and men improve the morale all round, and instils zeal and energy into the units.

It will be seen that the second alternative which, in my opinion is the better and the one I think most usually practised, will throw in really active operations—especially in advance or retreat—a great weight of responsibility on the Assistant Director of Medical Services, and he must be prepared "to stand on his own bottom." If he has no instructions,

as may often happen when unexpected events occur, he must make his decisions promptly and carry them through. Delay or a half-hearted policy may be fatal and he will get no thanks from his Director of Medical Services for producing muddle and confusion owing to diffidence or hesitation.

I have by no means exhausted the duties of an Assistant Director of Medical Services even immediately before or during a "strafe." It has been impossible to avoid mixing up to some extent matters of procedure which the Director of Medical Services decides and the execution of the same which is more or less the Assistant Director of Medical Services' duty. Therefore it should be understood when in the above certain procedure is described it is that laid down by the Director of Medical Services and that the Assistant Director of Medical Services has the carrying out of its details.

I feel that I have written enough to give a general idea of an Assistant Director of Medical Services' duties, mixed, I fear, with a good deal of personal opinions and some irrelevances. There is much to be written about medical strategy and tactics as carried out in armies. Almost better one might call it various medical policies that can or should be adopted by a Director of Medical Services in advance, retreat, etc. Many of these are open to argument, and opinions may vary widely about them. I would mention attachment of casualty clearing stations to corps, siting of casualty clearing stations in advance and retreat, the transport of casualty clearing stations, etc. These concern casualty clearing stations alone—there are many other questions. Again there is medical policy in future wars; for example, combatant policy tends to the quickening of movement, everything and everybody will have to move more rapidly in future wars, it appears to me that we should be careful that there should be facilities for medical units to move fast or at any rate fast enough; if we cannot do so, some day we shall go back to the "newspapers' delight"—a medical scandal. With terrific efforts we moved medical units backwards and then forwards in the last year of the war. No one can maintain that the facilities for moving as regards casualty clearing stations were good enough; good fortune helped us considerably. We have much to thank the Armistice for; I have grave doubts if we could have kept in proper touch with the troops much longer. On the other hand there may be doubts how much longer the troops could have gone on at any rate at the original rate of progress.

The history of the retreat of March, 1918, as "seen" from the Director of Medical Services' office, would be a subject of considerable interest. Tragedies and comedies, successes and failures, hope and despair, captures and escapes, all mixed up together and piling up. I do not think it can be written in all its details. The personnel equation comes in so strongly. Some officers built up a reputation, some lost it. It was not always clear why an officer failed in a certain matter, he may not have been well

served, he may have been mis-directed. Some made mistakes and only their successes came to light, some the reverse. One could hardly write the account without criticizing, and blame might easily go where it was not deserved. Often one only knew that such and such a thing was not done which ought to have been, but in the turmoil one did not learn always exactly *why*. Hence until we are, all dead silence is the best thing. This sounds rather "Irish," but expresses my meaning. I should not like my own mistakes shown up. One could not write this history correctly without exposing mistakes of one's own and others, and it would be a poor history that showed successes only. It would be like the biography of a General in a newspaper.