NOTES ON MEDICAL SERVICES IN THE FIELD.

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The subject matter of these articles was originally compiled as notes for the instruction of a class of officers working for examination for promotion to Lieutenant-Colonel. No originality is claimed for them, as they were culled from various sources. Before the publication of the "Medical History of the War," the Journal of the Royal Army Medical Corps, together with articles from other journals and manuals and a certain amount of actual experience, supplied most of the material. This was greatly added to as the volumes of the "Medical History" appeared. It was intended to publish the results at an earlier date for the benefit of other toilers in the same field, but it was deemed advisable to await the publication of the long-expected new edition of the "R.A.M.C. Training." When this made its appearance it was found to contain much of the subject-matter in very concise form, with which it is therefore not necessary to deal fully in these notes, except so far as the upkeep of the narrative is concerned. There are, however, certain aspects with which the manual does not deal except in a general way, especially with regard to operations out of Europe, and reference to some of these, it is hoped, will be of interest and help to those whose fortune or misfortune it is to have to serve in foreign lands.

PART I.

The Regimental Aid Post.

It is better to consider the commencement of the activities of the medical services at the front line rather than work up from the base to the front. The regimental establishment of the infantry battalion to-day consists of the medical officer, his batman, medical orderly, and the driver of the Maltese cart. To these, when in action, are added the band-sergeant and twenty-one bandsmen trained as stretcher-bearers, that is, five stretcher squads of four men each supplied with stretchers by the unit. In addition to these, but not directly under the medical officer, are the sanitary personnel, two per company, and in the headquarters wing the pioneer serjeant and his eight men supply both sanitary and water duty personnel. The latter are no longer supplied by the R.A.M.C., so the necessity for training regimental men for these duties during peace time is obvious. The stretcher-bearers may be increased by the use of prisoners of war or by men supplied by the brigade or divisional commanders from the battalion or other troops in reserve.

It is necessary at all times for the medical officer to be in close touch
with Battalion Headquarters, and in static warfare the regimental aid post is sited in some suitable spot in its vicinity, so that he may keep himself informed of the happenings at the different portions of the battalion front. The regimental stretcher-bearers are distributed amongst the companies, and it is frequently found that each stretcher squad of four divides itself into two and forms two squads, utilizing additional stretchers obtained through the field ambulance of the brigade or direct from Ordnance.

When troops are advancing, casualties are attended to and collected into groups by these bearers, who should utilize shell holes, empty trenches, sunken roads, etc., for shelter; messages should be sent back if possible to Battalion Headquarters or to the regimental aid post, indicating the position of these groups, or flags should be fixed to show their locality. From here the casualties should be removed by the reserve additional bearers to the regimental aid post, near which the latter remain till required under the orders of the medical officer. The best time for collecting casualties is during the lull between attaining an objective and the enemy's counter attack.

The men should be impressed with the necessity of taking advantage of cover, even if by so doing the journey is made a little longer. The ground may be broken up by deep nullahs, and where possible these should be utilized, but it is very tempting to go over the top and take a short cut; and many casualties among stretcher-bearers occur in this way. In trenches the use of the trench stretcher is necessary, but ledges may be cut at the corners to enable the long stretcher to be lifted head high and the corner negotiated without exposing the casualties or bearers. Shelter and protection should always be arranged for waiting stretcher-bearers, both regimental and those attached from the field ambulance for communication purposes. The feeding of the latter will have to be arranged when the force is on the move.

As regards the construction of the R.A.P., in a rapid advance or a retreat nothing is usually possible beyond the utilization of existing buildings or natural shelters. Whenever possible shelter from rifle fire and shell splinters should be obtained. When the advance is sufficiently slow, or in position warfare, more efficient protection should be given, the O.C. unit being requested to carry out the work of construction. Protection from direct shell fire may be possible by excavating deep dug-outs, but two exits are advisable in case one becomes blocked. These entrances and exits must be made gas-proof by the requisite double blanket doors charged with a gas absorbent solution, and they must be of such a width and slope as to allow of loaded stretchers being brought in and out. Gas-proof construction work is preferably carried out with the help of the R.E. and gas officers.

Whatever form of protection is utilized, e.g., dug-out, sandbag shelter, cellar, cottage, etc., its capacity should be sufficient to accommodate twenty to thirty men. In dug-outs the walls may be ledged to allow lying cases to
be placed on them, or three-tier rabbit wire bunks may be made, thus saving space. Sufficient means of ventilation must be allowed for, though ventilators should be made gas-proof, and not brought into use during an actual gas attack, as gas is liable to be drawn in through the doorways with the air to replace that which has passed up the ventilators.

Clothing saturated with mustard gas should, if possible, be removed outside before entry and not taken into the R.A.P. If taken in it should be removed outside at once. At one time in the Great War a tray of bleaching powder was placed at the entrance of the room, for bearers and patients to tread in and so to nullify the effects of mustard gas on their boots; it was found that mud carried into the dug-out later gave up its mustard gas. A point to be remembered in connexion with gas casualties is the provision of gloves of oiled or gas-proof material for the use of bearers or orderlies who have to handle clothing sprinkled with mustard gas. Any gas-infected clothing removed should be soaked in soapy water, or placed in a gas-proof sack for removal to the A.D.S. for treatment, when this cannot be done at the R.A.P. As regards the equipment necessary, lack of transport usually forbids of more than the regulation amount being taken. But in position warfare, it is generally possible to arrange for additional articles when large numbers of casualties are expected. Amongst these may be numbered 10 to 50 additional stretchers, 20 trench stretchers (Rogers), additional directing flags for denoting groups of casualties, 100 blankets, 10 Thomas splints, shell dressings, ordinary dressings, transfusion apparatus, chloride of lime (oxygen administration apparatus, though desirable, may not be obtainable and in any case requires much transport), food and water heaters and fuel, e.g., Primus stoves, extra water containers, hot-water bottles, extra lights, e.g., hurricane or acetylene, and last but not least a number of empty sand-bags for packing dressings, etc., when it is necessary to make speedy advance to another R.A.P. If gas casualties are expected, a few suits of pyjamas are advisable.

Communication with the Advanced Dressing Station must be established at the earliest possible moment. It is the duty of the A.D.S. to get into touch with the R.A.P., but the Regimental Medical Officer should try and establish touch from his end and get a message back. The Battalion Commander has generally been notified of the position of the A.D.S., but the Officer i/c A.D.S. does not know that of the R.A.P.'s, especially in mobile warfare, and has to find them out. The method generally adopted is for the Field Ambulance Commander to attach two or four men of a stretcher squad to the M.O. of a unit preparatory to an attack for the purpose of sending back messages as soon as the R.A.P. is established, and of ascertaining the line of evacuation to the A.D.S. Other methods are the utilization of walking wounded for this purpose, and the sending of messages by unit telephone through brigade or divisional headquarters signals. In this connexion it should be noted that information of every change in location of the R.A.P. should be sent back to the A.D.S. or to the Bearer
Officer immediately. When possible, too, touch should be kept with the M.O.'s of units on either flank, as it may be possible to combine or site R.A.P.'s side by side, or to arrange mutual collecting areas with Battalion Headquarters, as, for example, when advancing along both sides of a river.

Replenishment of medical supplies is obtained by indent on the field ambulance serving in the brigade. Under normal conditions indents should be sent in at definite times under arrangements with the O.C. Field Ambulance, for whilst a certain reserve is always maintained at the A.D.S. for emergencies, larger supplies have to be obtained by him from the Advanced Depot Medical Stores, which should, but may not be, within easy reach of the Main Dressing Station. It should be remembered that the field ambulance has limited transport and cannot carry large stocks of reserve supplies.

Medical comforts should be obtained by direct indent on the R.A.S.C. or Supply Officer through the Battalion Quartermaster, though in some instances orders are issued for the supply of these by field ambulances. This last-named unit is frequently used as a channel for getting requirements sent up by M.O.'s i/c units, as supplies to field ambulances can often be sent up by returning medical transport and their delivery expedited. As in the case of Advanced and Main Dressing Stations, there are times when the supply of hot drinks to casualties is essential, and these should always be available when the unit is acting independently, or on an extreme flank, or in an isolated position, or when the advance has been too rapid for the field ambulance bearers to get up, or when evacuation is delayed for any reason or cannot be carried out, as for example at night in outpost positions.

Ammunition should be removed from men before evacuation. It is likely to be required in the front line, and it should be collected from the R.A.P. under unit arrangement. As regards arms and equipment, these formerly accompanied the man as far back as the C.C.S., where those of men evacuated to the L. of C. were collected and handed over to the Advanced Ordnance Depot. Under present arrangements the collection is made at the A.D.S. or some spot in advance, whence they are removed under divisional arrangement. In small forces they are taken over by the man's unit, which arranges their disposal.

The question is frequently asked to what extent should medical attendance on the wounded be carried out in the R.A.P.? This may be answered by saying that during active operations only those measures should be adopted that will allow the casualty to be transported with safety, comfort, and rapidity to the nearest medical unit which will be able to deal properly with his condition. Chief amongst these requirements are the stopping of hemorrhage by tourniquets, ligature (if necessary) and pressure bandaging, the protection of wounds from further contamination by the application of dressings, the immobilization of fractures for the journey, the use of suitable splinting, the combating of
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shock by warm drinks, stimulants, hot-water bottles, and occasionally by transfusion, the relief of pain by the judicious use of morphia, and in gassed cases the removal of clothing saturated with mustard gas, the washing of liquid from the skin and the use of oxygen, if available, for acute cases of irritant or suffocating gas poisoning.

As the aim is to get the casualties back to the C.C.S. as rapidly as possible, no time should be wasted on measures of doubtful immediate value, seeing that they will be repeated in the space of a very few hours when fuller and more beneficial attendance can be given to the wounds. If retention at the R.A.P. must necessarily occur, then more elaborate wound toilet must be performed. As regards the administration of anti-tetanic serum, this is, under present teaching, deferred until the arrival at the M.D.S., assuming that a rapid evacuation is possible, but always with the proviso that should delay in transportation from the R.A.P. be likely, it must be given there.

Field medical cards, A.F.W. 3118, should, if possible, be made out at the R.A.P., and entries of importance must be entered on them, e.g., the application of a tourniquet, administration of morphia, strychnine or anti-tetanic serum, and in the case of gas casualties any unusual symptoms. The adoption by arrangement of the more rapid method of indicating certain of these measures, e.g., a "T" on the forehead in indelible ink for anti-tetanic serum, or an "M" for morphia, should always be repeated by an entry on the card. The former may be washed off or the latter may be lost. For his own information and that of the Battalion Commander the M.O. should, as far as possible, record the names, nature of wounds and condition of all casualties sent back to the A.D.S. Formerly the counterfoil of the tally-book served this purpose, but this book is now obsolete, having been replaced by the field medical card.

_Triage._—Before passing on to the description of the next link in the chain of the Medical Services, it is desirable to speak of a term which is used by French writers, and on the intelligent understanding and interpretation of which depends to a large extent the proper treatment and distribution of casualties. The word "triage" is referred to, and it is applied to a section of the duties which have to be performed to a smaller or greater extent by every medical post or unit from the front line to the last convalescent depot. By it is meant the selection of the casualties and their division into different categories according to the manner in which they are to be dealt with for treatment and evacuation. These three categories are: (a) Curable in a short time, (b) non-evacuable, and (c) evacuable. The nearer to the fighting line the post or unit making the triage, the less complete is it possible to make it. But it is essential that it should be done at each stage through which the casualties pass, to prevent the rearward movement being greater than necessary and to divide it up into its proper channels.

In its "lay" form it really begins in the fighting line itself; the platoon
N.C.O.'s and company officers are frequently its exponents, retaining the slightly afflicted by encouragement or by the application of first field dressings, and sending back the wounded, though willing, fighter to get more skilled and necessary treatment than they have been able to give. At the R.A.P. the M.O. with his medical knowledge divides them up into (a) those for retention with the unit, and (b) those for evacuation. The former, (a), can be subdivided into such groups as malingerers, fugitives, slightly wounded or sick, temporarily unevacuable, the dying and the dead; the latter, (b), must be divided up for purposes of treatment into such divisions as (1) wounded, (2) sick, (3) gassed, and (4) shocked, the wounded being further selected according to the nature and urgency of their requirements, e.g., haemostasis, fracture immobilization, simple dressings, etc., and for purposes of transportation by field ambulance bearers they must be classified into (1) lying, (2) sitting (pick-a-back or hand carriage), and (3) walking. The proper triage of the gassed or possibly gassed cases is of especial importance.

At each new medical post or unit that they reach they are submitted to a fresh triage and dealt with according to the rôle ascribed to that unit. An experienced officer carrying out the triage will perform the work more rapidly, prevent congestion by determining those in which operation can safely be delayed, save lives by submitting others for immediate operation, and prevent loss to the fighting line by retaining those who are likely to recover in a short time. The characters of the triage are directly dependent on the state of activity of operations; for during a period of inactivity retention will assume preponderance over evacuation, at any rate in the bedded units, whereas in times of stress the latter must be very much in the ascendant.

The account of the field ambulance which follows deals with a purely British unit as manned and equipped in England for service in a civilized country under normal conditions, and is based on the experience gained in the recent Great War in Europe. But it is to be remembered that for service in other countries, where conditions differ from those obtaining in Europe, considerable modifications in formation, personnel, equipment and transport may be and are necessary, as, for example, in the present field ambulance in India, which is adapted to meet the requirements of a combined British and Indian force serving in hot climates and in less or uncivilized countries. But the principles on which the working of the unit is based are much the same for all modifications of it, though the elaboration may be too great in some cases; but even with a fully turned-out British unit it is more often than not impossible to carry into effect the full quota of the rules of procedure. The present tendency is to base the formation of all modifications of the British unit on that unit and to conform to it as much as possible, and so standardize personnel, equipment and methods of working. This, of course, is distinctly advantageous for purposes of training, as personnel may be called upon to serve in more
than one variety of the same unit; and again, units of different varieties may be called upon to work side by side in the same or combined formation. It therefore follows that a knowledge of the British unit is applicable to modified units, and is further of importance as being that on which examinations for promotion are based. In a later communication, if opportunity permits, it is proposed to give some account of an Indian field ambulance, but as at the present time there is the possibility of considerable modification of the existing one, the description is better deferred.

**THE FIELD AMBULANCE.**

This is the first medical unit to which the wounded man is taken after he has received regimental treatment. It is a unit of many parts, being adaptable to many uses and supplying offshoots which are applied to different purposes as occasion demands. It is essentially mobile, though some of its employments may render it more or less fixed temporarily; yet at very short notice it is usually able to assume its proper function of collection of casualties and their speedy transportation from the immediate front area towards the rear, whilst giving them any necessary treatment and shelter until they can be taken over by a motor ambulance convoy, and removed to a casualty clearing station. But the unit is not altogether by any means a transportation unit, as it is capable of retaining its sick and wounded for long periods, and acting as a hospital if occasion demands, which it frequently does; in ordinary times it acts as the front line hospital for cases which are likely to recover and to be returned to their units within a few days. Abroad, when an independent column moves out and lines of communication are only opened by the periodical despatch of armed convoys, medical units must be capable of holding their casualties for seven days.

The variety of the functions of this unit may be seen by a study of the following list of rôles which it has from time to time been called upon to undertake:

1. Field ambulance proper with the formation of: (a) main dressing station; (b) advanced dressing station; (c) bearer relay posts; (d) divisional collecting post; (e) advanced reserve bearer post; (f) rear reserve bearer post; (g) sick loading post (h) divisional motor ambulance convoy.
2. Walking wounded collecting post
3. Sick collecting post.
5. Resuscitation centre.
6. Rechauffement centre.
7. Massage posts.
8. Local sick rooms in back areas.
9. Rest station for Division or Corps.
10. Officers' hospital and rest station.
(11) Special hospital, e.g., for scabies cases, infectious diseases, etc.
(12) Mobile medical detachment.
(13) Reception station for casualty clearing station and surgical team provider.
(14) Medical staging posts.
(15) Laundry.
(16) Bathing establishment.
(17) Disinfesting and disinfecting unit.
(18) Water posts.
(19) Sanitary posts.

In fact, there is scarcely any duty of a medical (and sometimes non-medical) nature that it may not be called upon to perform at some time or another. It is its extreme adaptability, rendered possible by its composition as regards both personnel and equipment, which enables it to become a Jack-of-all-trades-medical, and to carry out any of those multifarious duties which the situation may demand of it. The variety of work makes it an extremely interesting unit to be serving with, and it sees a great deal of what is going on in its own area at the front, and it rarely stagnates; life with it is an extremely busy one, and demands activity of both body and mind.

The full details of its composition are to be found in War Establishments and War Equipment and Medical Mobilization Equipment Tables, in default of a Field Service Manual Medical of modern publication; but a brief summarized description may not be out of place. The unit consists of a Headquarters and two companies, each complete in itself but with different functions, equipment and personnel being furnished accordingly; though it is possible for one to assume the duties of the other with modification.

Its authorized accommodation is "for 150 patients," though War Establishments carefully adds further, "but not limited to this number." A limit must be made whereon the complement of personnel and equipment must be based. But in actual practice it has often to be exceeded considerably. In France, on many occasions a field ambulance was called on to deal with several hundreds of casualties daily for some few days.

The Headquarters acts as the hospital proper, store depot and unit, motor ambulance convoy, and in it the Officer Commanding has his office. It forms the Main Dressing Station, and on account of its accumulated additional stores and the nature of its work is less speedily got on the move than are its two companies. Its officer personnel consists of 3 M.O.'s (including the O.C.), a Dental Officer and Quartermaster with 1 to 4 attached Chaplains; its other ranks R.A.M.C. number 51, made up of all the usual classes required for field hospital work, and including now a barber and a carpenter but not a shoemaker. Nursing Orderlies and N.C.O.'s number 16, but there are no stretcher-bearers as such, their duties being performed by any of the personnel, and by wagon orderlies, of which there are 12, when these are not employed on the ambulances. In
addition, transport details of the R.A.S.C., H.T. and M.T. increase the numbers by 33.

The authorized medical equipment is much the same as in the companies, though reserves are greater. It consists of the usual field medical equipment with the addition, amongst other articles, of extra Thomas leg and arm splints and shell dressings, oxygen and ether administration apparatus, field dental outfit, etc. Tents are few, viz., eight circular double-fly and one operating tent, it being intended that buildings shall ordinarily be utilized. The companies have no tents, except when tents are required for accommodation of sick, and are issued under special instructions; in this case headquarters get an additional twelve tents and each company six with the necessary transport. Other equipment necessary for the running of dressing stations is supplied more liberally (and in some cases only) to Headquarters; amongst it are now to be found Soyer stoves, blacksmiths’, carpenters’, and masons’ tools, a Lelean sack disinfecter and one travelling kitchen. Motor ambulances consisting of 2 heavy and 6 light cars, 6 collapsible wheeled stretchers and 1 cycle, are collected in Headquarters, but the 3 motor cycles are equally divided, as heretofore. Four horsed ambulances are divided between the two companies only. The other Headquarters transport consists of 1 heavy motor lorry, 1 limbered wagon, 1 officers’ mess cart, 1 Maltese cart, 1 water tank cart and 1 travelling kitchen; in the new R.A.M.C. Manual 3 light lorries are shown instead of 1 heavy lorry. As regards stretchers, those supplied to each company, viz., 12 each, have no slings or cushions, being intended for shoulder carriage by the stretcher-bearers, whereas 20 of the 24 supplied to Headquarters have both. Of these 6 are required to complete the wheeled stretcher carriages, the remainder being utilized for other purposes, viz., extra dressing or operating tables, cots for serious cases, intra-unit carriage of patients, and replacements for ambulances when off-loading lying casualties. Motor ambulances have their own stretchers additional to the above, and so presumably have the four horsed ambulance wagons, Mark VI, though such are not shown in the tables.

The normal supply of blankets is sufficient to give one per authorized casualty in Headquarters, viz., 150, with an additional 50 with each company for use at Advanced Dressing Stations and in horsed ambulances, etc. Motor ambulances have their own additional ones, 8 per heavy and 4 per light car.

The rôle of each of the two companies is to form an advanced dressing station, and to collect and transport casualties from the regimental aid posts or from other collecting posts where they may have gathered or to which they may have been brought when the R.A.P.’s have moved on. Very frequently one company assists the Headquarters, or the other company, but it may act independently; or it may be split up into bearers or dressing station sections and be allotted tasks accordingly. The personnel of each company, including attached, numbers 66, there being
53 R.A.M.C. and 13 R.A.S.C. Of the former 3 are officers, 38 are stretcher-beares, 6 are nursing orderlies, and the remainder N.C.O.'s and men trained in the special duties necessary for making a small hospital unit complete in itself. The stretcher-carrying capacity per company is 9 squads of 4 bearers each, with 2 N.C.O.'s. The equipment has been referred to above. It is less in amount than that of Headquarters, and therefore more rapidly handled, in order to meet with requirements of mobility and speed. (It may be mentioned that the Thomas leg splints, when taken out by the bearers, are carried "threaded" on to the closed stretchers.) With the exception of a motor cycle the transport, both ambulance and baggage, is all horsed. It consists of 2 ambulance wagons, Mark VI, 3 limbered wagons and 1 tank water cart. It is thus possible for it to operate on tracks which are not feasible for motor transport, such as field roads, especially in wet weather, and across country, river fords, and roads torn up by shells and mines.

The total effective strength of the medical unit on authorized scale consists therefore of 11 officers and 196 other ranks; its transport consists of 15 riding and 46 draught animals, 3 motor cycles, 1 cycle, 8 motor ambulances, 4 horsed ambulances, 1 Maltese cart, 1 officers' mess cart, 3 water carts, 1 travelling kitchen, 1 3-ton lorry, and 7 limbered wagons, together with 1 light lorry for supplies attached to the divisional train.

DRESSING STATIONS.

So much valuable information as regards the siting, construction and function of these is now given in the R.A.M.C. Training Manual that it is unnecessary to deal with more than a few points of importance. As regards the M.D.S., the actual siting is made by Headquarters of the formation under which the unit is serving, on the recommendations of the A.D.M.S., whenever it is possible to select it beforehand. When available, schools usually make the most suitable buildings, but buildings, tents, or improvised shelters are made use of. The division into sections or rooms for a definite purpose should always be made as far as the accommodation permits. Briefly these are: (a) A large reception room, further subdivided into (i) recording, (ii) triage, (iii) waiting, (iv) rechauffement sections; (b) dressing and operating room; (c) evacuation room for (i) lying, and (ii) sitting cases; (d) retention room for those lying cases that cannot be moved at once; (e) separate accommodation for gassed cases, with arrangements for lavage and for dealing with impregnated clothing; (f) quartermaster and supply store; (g) pack stores for arms, equipment, boots, etc.; (h) cookhouse; (i) latrines; (j) mortuary; (k) water supply and bathing facilities; (l) quarters or lines for personnel; (m) ditto for transport, near or at a distance, depending on facilities of approach and the exposure to enemy fire; and (n) gas- and shell-proof accommodation to which to remove waiting casualties in case of attack from the air or heavy shelling.

The Main Dressing Station must be near the road leading from the
A.D.S., with good approach for motor ambulances, and if possible have a separate exit for them with good connection with the rearward roads, so as to avoid obstruction by cars of the M.A.C. when clearing casualties to the C.C.S. If the approach is bad some arrangement must be made to stop cars outside at some suitable spot where blockage will not be caused, and to direct the traffic in and out. If there is sufficient space in front of it to allow parking and turning of the cars, some overhead camouflaging is advisable to prevent detection by enemy planes; and this is especially necessary at the actual entrance into the reception room, where much movement takes place and where lights are ordinarily visible at night. The distance from the A.D.S. is usually given as two to five miles, though, if communications are good, this may sometimes be exceeded. The site will usually depend on the availability of suitable buildings, to meet requirements, and their accessibility. It should be out of range of field guns, but it will rarely be possible to give freedom from fire of heavy long-range artillery if brought up by the enemy. For protection from the air, too, it is better situated off the main road, away from military store dumps, railway stations, lorry parks, etc., where movements are continually taking place, and which are likely to attract the attention of the enemy and be bombed. Its locality must be indicated where necessary by directing flags and at night by protected lights. It is advisable, too, to have the “In” and “Out” gates so marked as to be distinguishable at night.

There are two procedures for the proper carrying out of which it is exceedingly important that a cut-and-dried and almost fool-proof system should be adopted in each case. These are: (1) The recording of all admissions and completion of field medical cards; and (2) the securing, and distinguishing, and reissue of arms and equipment. When casualties are being rapidly brought in car loads in speedy succession, it is often not possible to get the particulars of each man as he passes the door. His field medical card may or may not have been completed at the R.A.P. or A.D.S., through which he may not perhaps have passed. A system such as the following will reduce errors to a minimum: Tally-books of tickets containing foil and counterfoil, each bearing the same number, are prepared for each day’s casualties, the pages being numbered consecutively, and the series carried on in the next book, or, which is more economical, a letter indicating the book number, e.g., A1, A2, etc., B1, B2, etc., is marked on both foil and counterfoil. These books can be prepared from strips of foolscap secured together in books of twenty or fifty (or other number), and bent in half to indicate foil and counterfoil. As each man passes the doorway, a foil is torn out and rapidly and securely pinned to the clothing on the man’s chest; if time allows the man’s name is written on the counterfoil. As soon as possible the man’s full particulars are taken on the counterfoil and in a rough A and D book, each entry bearing the counterfoil number. If the man has a field medical card and envelope already attached, this should be left on him for the information of the surgeon and his
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remarks, but any omission of particulars should be completed. As soon as the particulars have been entered in the A and D book, this fact should be indicated on the counterfoil by one cross mark. Should a casualty pass into the dressing room without this mark on the ticket, attention is immediately drawn to the fact that his admission has not been recorded, and steps are taken to have this done. The ticket remains on the man until he is evacuated, when it is taken off him and filed as he is loaded into the ambulance of the M.A.C., the other limb of the "X" being at the same time completed to denote evacuation. Field medical cards and envelopes are in the meantime being prepared or completed and attached before the removal of the ticket. An official foil and counterfoil, W 3240, are now issued for the above, the foils being sent to the O.'s C. the men's units to give information as to their disposal.

This system also enables a speedy check to be made on the numbers admitted or evacuated. Books of different-coloured paper, or marked differently, can be used for distinguishing the admissions of consecutive days, or periods of a day. And further, this system can be worked in with the registration of arms and equipment, which frequently arrive in the ambulance car all mixed up and have to be sorted out in the reception room and each allotted to its owner. A series of blank tallies, each with stout twine attached, is made ready, and the number on the man's registered foil is written on the tallies which are now fastened on the man's arms and equipment; these are secured together in one bundle as far as possible, sandbags for loose articles being supplied. If there is time a check is made and registered in a pack store book. The man's haversack, containing his few personal belongings and with tally attached, is usually retained by and accompanies him. On evacuation the haversack tally is presented at the pack store and his own arms, equipment, etc., are handed out in return, cleaned if possible. In times of inactivity, in order to ensure a man retaining his own arms and equipment, these remain with him until he reaches the C.C.S.; if likely to recover in a few days and not evacuated on to the L. of C., the articles are still shown on the pack store records of the C.C.S. or rest station to which he may be transferred, and so he rejoins his unit fully equipped; but in times of stress, when practically all have to be evacuated, and at any time when it is certain that he will be evacuated out of his army or possibly corps area, instructions are issued as to the points at which arms and equipment are taken from men and for the disposal of the arms; such points may be at the A.D.S. or M.D.S., and arrangements are made divisionally for their collection and disposal. Ordinarily arms and equipment collected by medical units are handed into the nearest Advanced Ordnance Depot, from whence they are reissued. Ammunition is retained as far forward as possible for return direct to units through the R.A.P.'s, or for collection and disposal by the A.P.M. under divisional arrangements.

The checking, recording, and securing of the kit of officer casualties at
the very first opportunity by the first responsible party taking it over is of vital importance to the O.C. unit, in order to safeguard the kit whilst in his unit and to protect him from charges of loss of articles during the period the officer is under his charge. All such records (including the officer's signature, if possible) should be safely preserved, receipts being obtained from the unit to which they are handed over by an accompanying orderly. Charges of this nature give rise to a considerable amount of ill-feeling between units and individuals, whether there be cause for them or not; and unless it is possible to preserve records of the event, it is practically impossible to refute the charges, as they usually come after some time has elapsed and memory of a single incident has been lost in the multitude of others that have since occurred.

In arranging accommodation, provision should be made for 100 severely wounded in addition to the walking and sitting wounded, and separate accommodation and arrangements for gassed cases, including 30 severely gassed. If trestles or stretchers are available to make beds for these severe cases, so much the better. When, as frequently happens, a two-storied building is being used, much labour and time are saved by sending the walking and sitting cases upstairs. Chair carriers are readily constructed and very necessary for the last-named class. Stretcher cases are much more easily and quickly manhandled on the ground floor.

Additional stores, in addition to those sent up to the A.D.S., should include small dumps of stretchers and blankets, not too big, as replacements are readily obtained from the C.C.S. These, together with an ample supply of petrol, should be suitably placed so as to be readily picked up by motor ambulances returning to the A.D.S. In times of stress a buffet, supplying hot drinks and food, should be arranged close to the petrol dump for the use of the drivers of the ambulance cars, who make journey after journey without being able to get their proper meals. Reserves of dressings, splints, hot-water bottles, boots, clothes, and pyjamas should be obtained beforehand, to enable the demands of A.D.S. and R.A.P.'s to be speedily met. Casualties in France were frequently brought in minus boots, coat and cap, and sometimes even without trousers. Trench boots were frequently worn, though they were not supposed to be brought from the front; a supply of repaired boots obtained from the Advanced Ordnance Depot enabled these to be removed and sent back to the A.D.S. for return to the unit whence they had come and on whose charge they were.

The motor ambulances are kept parked in some open space or adjoining or adjacent yard, if possible with cover from the air, and with quarters for the drivers; one or two cars are kept at the Advanced Dressing Station for a definite period of duty in position warfare, one is kept on duty for despatch at a moment's notice, and one in waiting at the M.D.S.

Communications are maintained with the A.D.M.S. by means of the cyclist and motor cyclist orderlies, and with the A.D.S. by means of the returning ambulance cars; but whenever possible an endeavour should be made to get field telephonic connexion.
Notes on Medical Services in the Field

Advanced Dressing Station.

The exact site is usually left to the selection of the O.C. Field Ambulance or the Officer i/c the Company forming the A.D.S., though when possible the locality is fixed beforehand by Divisional Headquarters and published in orders for the information of front-line troops; if not so published the information must be sent forward to Brigade and Battalion Headquarters as soon as the A.D.S. is established and backward to the A.D.M.S. It should be situated as far forward as possible, allowing for reasonable protection from rifle fire and shell splinters, in houses, cellars, dug-outs, ravines and nullahs, remembering that any obvious natural protection is very likely to be searched out by artillery shell fire. For this reason cellars and dug-outs are necessary for periods of heavy bombardment and also for anti-gas protection. It is essential for the A.D.S. to have a good road approach or short access to a good road to enable the motor ambulances from the M.D.S. to come up and clear it. Whet it is not possible to site the A.D.S. on a motor road, then measures must be adopted to enable the casualties to be removed to a road, e.g., the construction of a short connecting link of road with the help of the R.E. for bridging, or the establishing of an intervening service of horsed ambulances, wheeled stretchers, hand carriage or light tram or trolley way to and from a car-loading post situated on the road. The aim in the forward situation is to shorten the journey as much as possible for the stretcher-bearers from the R.A.P., and to save time in evacuation by an early transfer to the more speedy motor transport. When it is possible to establish a loading post, whether for light cars or horsed ambulances, ahead of the A.D.S., which is often necessary in an advance, there is less necessity for the A.D.S. to be pushed to its extreme forward limits, whence, in the event of a speedy retirement, there is much less chance of being able to get away casualties that may have accumulated there.

Remembering the primary functions of the A.D.S. are to collect and transport casualties from the R.A.P. to the M.D.S., the aim should be to keep it mobile and not to make elaborate preparations which will render it slow in getting off the mark, except in position warfare. But, at the same time, a somewhat greater degree of comfort for casualties is expected than can be obtained in the R.A.P.; so though mobility must be ever kept foremost in mind, yet the modus operandi should be based on that applicable to a more firmly established unit, and the details of the recognized system of reception, dressing, and evacuation carried out as completely as is possible under the particular conditions prevailing. The organization should be on these lines, therefore, though the nature of the quarters or position occupied may necessitate considerable modification in the mode of application. It happens occasionally, especially in position warfare, that a building well adapted for the purpose is available, and of this there is no better example than the A.D.S. at Chateau Vermelles, during the battle of Loos in September, October, 1916, of which a diagram
A.D.S. AT CHATEAU VERMELLES.

(Loos);

L = Stretcher cases.
E = Evacuation.
W = Waiting-room.
Off = Officers.

WW = Walking cases.
O = Operating.
K = Kitchen.
R.A.M.C. = Staff.

R D = Reception and Dressing.
Disp = Dispensary.
R.A.M.O. = Staff.
S S = Stewards' stores.
a = Stretcher racks.

Ground Floor.

R = Reception.
D = Dressing.
S = Stores (cellar).
Off = Officers.
K = Kitchen.
R.A.M.C. = Staff.

M = Mortuary.
B = Baths.
S = Sanitary.
G = Graves.
a = Drivers' shelter.
b = Patients' dug-out.
c = Sniper's hole in wall.

Basement.

R = Reception.
D = Dressing.
S = Stores (cellar).
M = Mortuary.
B = Baths.
S = Sanitary.
G = Graves.

Trench to Main Road.

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is given in the "General History of the War," and which, for instructional purposes, is reproduced here. A less well adapted building was that of "Harley Street," on the Bethune-La Bassée Road, of which a self-explanatory rough sketch is given also.

Amongst the main measures should be the provision of accommodation for 100 casualties, at any rate in position warfare, with, if possible, separate accommodation for gassed cases or arrangements for their immediate transfer to an adjoining unit dealing with gassed cases alone. The reception room should be capacious to facilitate the making of the triage or classification, and the separation out of the urgent cases requiring immediate attention. The supply of hot drinks, warmth and cigarettes should be immediate and plenteous, and facilities for lying down should be arranged for, though care must be taken that men have their wounds attended to as early as possible. The evacuation system must be a rapid one to prevent congestion, and kept separate from the admission system. It is better to get cases through at once to the M.D.S., if their dressings applied at the R.A.P. appear satisfactory. But if men have to be retained for several hours, either on account of night or economy, insufficient transport, or for any other reason, then an efficient and thorough wound toilet is essential. It is to be remembered that a single lengthy dressing or operation prevents the early treatment of a number of slighter cases and leads to retention and congestion. The frequent replacement of dressings is in many cases unnecessary and wasteful both of time and dressings, as in all cases, except in the heaviest engagements, wounds are thoroughly exposed and dealt with at the C.C.S. The main surgical work will be in the direction of arresting hemorrhage, application, securing and fixing splints, removal of tissues obviously only "hanging on," combating of shock, and in general in rendering the transport through the M.D.S. to the C.C.S. as little injurious and painful as possible. It has been found that severe casualties should remain as far as possible where they are operated upon, and that such cases will bear transportation before operation considerably better than after it. This with the need for early attendance is one of the main reasons for getting casualties to the C.C.S. as early as possible, and at any rate within six hours of being wounded. Anti-tetanic serum should be given if the casualty is likely to be retained before evacuation, or is not likely to be taken into the M.D.S.

An abundant supply of dressings is of course essential, as demands from the R.A.P. 's must be complied with at all costs; but judgment and good sense must be displayed in maintaining stocks of supplies so as not to have more than can be transported in case of a speedy move. A small reserve of rations is necessary in these days of long-drawn-out battles, for the stretcher-bearer personnel dependent on it, and also for casualties who come in ravenous through inability to obtain cooked meals in the front line. The proximity of a prolonged fixed engagement will be the signal for collection of other articles too, amongst which are blankets, 500 to 600; stretchers, 300 to 400; trench stretchers, 40 to 50; pyjama suits, 100;
T. S. Dudding

serge clothing for the gassed; hot-water bottles, 60; Thomas and plain splints, oxygen cylinders, blood transfusion apparatus, oil or other warming stoves, oil, calcium carbide and lamps, and sandbags; the last-named may be necessary for filling with earth for protection purposes, but are also useful for filling with dressings for sending to R.A.P.'s, and in case of having to send forward an advanced A.D.S. at short notice; in this event empty petrol tins for carrying forward water may be required. The extra blankets and stretchers are best distributed and located in small dumps at important relay posts, such as advanced and reserved bearer posts, so that in case of fire all will not be destroyed.

As regards clerical work, field medical cards should be made out and completed as far as time will allow, and a rough record of particulars of casualties passing through maintained together with their disposal. Men get lost from their units, and if early news of them can be given to unit commanders by the A.D.S. which is in touch with units, it is of great help to them. It is, further, a check on the numbers passing through the M.D.S., and helps to prevent a practice not unknown amongst light casualties of avoiding the A.D.S., whence they might be sent straight back to their unit, and getting picked up on the road by motor ambulances proceeding to the M.D.S.

Pack-store work is at a minimum, each casualty when possible retaining his own arms and equipment. If instructions have been issued for the withdrawal of these before evacuation, arrangements must be made for this, and a record of each man's belongings kept. In the case of officers no exception is made to the rule that an inventory must be taken at the earliest possible moment, and signed by the officer if capable of doing so. The kit, being private property, is secured and accompanies the officer on his rearward journey.

Periods for rest and food must be arranged for the personnel. Many of the bearers are out at the relay posts and have to be periodically relieved, or supplied with rations when the numbers are insufficient to supply reliefs. The Officer i/c Company should in periods of lull visit all his posts, though he has probably detailed an officer as bearer officer who will be supervising all details of their work. This officer acts too as liaison officer with the Headquarters of the brigade which the field ambulance is serving, but if with more than one brigade it may be necessary to appoint an officer for each brigade area. The principle of having brigade liaison officers is a good one, but the difficulty is usually a shortage of officers, necessitating the employment of the officer so detailed on other duties in addition. However, if the officer in charge of the bearers is energetic he can gain considerable valuable information by paying frequent visits to Brigade Headquarters, which will enable him to anticipate the course of events and to make his plans accordingly. In position warfare he may succeed in getting field telephonic communication set up between Divisional and Brigade Headquarters and the A.D.S.

(To be continued.)