THE DIVISIONAL FIELD AMBULANCE IN MOBILE WARFARE

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INTRODUCTION.

This article is submitted in the hope that it will be of assistance to such medical units as have not yet had the advantage of actual participation in active mobile warfare as it is felt that the experience gained and many of the lessons learnt in the Western Desert will apply whenever and wherever swift-moving warfare is the order of the day.

The old organization of a Field Ambulance—the heavy type as distinct from the Light Field Ambulance—does not lend itself to the present-day highly mobile mechanized operations and constantly changing tactical situations which are characteristic of the more active phases of desert warfare.

An endeavour has been made, therefore, to reorganize the ordinary Field Ambulance so that it embodies what are considered, in the light of two years' experience in the desert, the better points of the Light Field Ambulance while retaining the more desirable of its infantry counterpart.

The result, it is submitted, produces a medical unit which has the tactical manoeuvrability and operational adaptability of the Light, allied to the medical efficiency and capacity for treatment and care of casualties which are the main advantages of the Heavy Field Ambulance.

It is further submitted that this compromise would be equally efficient working with Infantry Divisions or Mechanized Divisions or even, should it be called upon to do so, with Armoured Divisions.

ADMINISTRATIVE.

A.—Organization.

1. THE COMPANIES.

Considerations.—Firstly, constant calls are made on a Field Ambulance for "detachments" of less than a Company in strength. Secondly, owing to the distances involved, medical posts working in echelon are often necessary under battle conditions. Thirdly, there is no role for the number of stretcher bearers allowed by War Establishment in Western Desert warfare. They are never used behind the R.A.P.

Solutions.—The two Companies, therefore, are sub-divided into three Sections each, viz.:

Nos. 1 and 2, Light Sections.

(a) Personnel:

1 Medical Officer, R.A.M.C.
1 Serjeant, R.A.M.C.
1 Driver, R.A.S.C.
9 Other Ranks, R.A.M.C. (including men trained as Cook, Clerk and N.O.s).

(b) Transport:

1 three-ton vehicle.
2 ambulance cars.
1 light vehicle for Medical Officer.

(c) Accommodation:

1 40 by 20 feet penthouse.

It will be appreciated that many of the principles suggested in this article have already been embodied in the new organization. It should be borne in mind, however, that tactical dispositions must vary with the nature of the terrain encountered. Shelters, similar in type to those referred to as penthouses in page 170 of the article, are shortly to be added to the equipment of Field Ambulances and Field Dressing Stations.
(d) Equipment:

(1) Drugs—Morphia—Chloroform (including small amounts of frequently used drugs and medicines).
(2) Surgical and Shell Dressing Haversacks—General Dressings—plus.
(3) Monkey Box—Plasma—Splints (Thomas, Cramer Wire, &c.)—Pannier, G.S.—Bed Pans—Urine Bottles—Hot Water Bottles.
(4) Cooking Equipment—Lamp—Stretchers—Trestle Tables—Blankets.
(5) Medical Comforts Pannier—Primus Stove—Hot Box—1 gallon Thermos Containers.

The H.Q.s of the Companies form Light A.D.S.s and consist of:

No. 3 (A.D.S.) Section.

(a) Personnel:
1 Medical Officer, R.A.M.C.
1 Staff Serjeant, R.A.M.C.
3 Corporals, R.A.M.C. (Cook, Clerk and N.O.).
14 Other Ranks, R.A.M.C.

(b) Transport:
2 three-ton vehicles.
1 15-cwt. or Jeep (Company Commander).
2 or 3 ambulance cars.
1 water cart.

(c) Accommodation:
1 40 by 40 feet penthouse.

(d) Equipment:
The major part of a normal A.D.S. equipment, as laid down in G. 1098 and I. 1248 scales.

The Companies have thus been lightened and reduced to a total of thirty-eight O.R.s, R.A.M.C., and these figures are as low as they can reasonably be brought, while sixteen stretcher bearers are withdrawn from each Company on to H.Q.

This reorganization of the two Companies into four Light Sections and two A.D.S.s enables them to be used singly or collectively, as the tactical situation demands, whilst still retaining their operational independence.

(2) THE M.D.S.

Considerations.—The H.Q. Company forming the M.D.S., in mobile warfare, must be capable of: Firstly, rapid movement. Secondly, giving treatment, shelter from the elements and food for from 100 to 200 patients at any one time. Thirdly, moving complete in one bound—the question of sending back for remaining personnel does not arise in the desert.

Solutions.—The H.Q. load-carrying transport has been allotted to various operational duties and the functioning of the M.D.S. is probably best described by the table below which demonstrates how this has been done. Personnel must, as far as possible, always travel in the same lorries and must know which one it is and where to find it, either in Camp, in Column or in Desert Formation.

<table>
<thead>
<tr>
<th>Vehicle No.</th>
<th>Load Carried</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Company office.</td>
</tr>
<tr>
<td>2</td>
<td>Cooks' wagon.</td>
</tr>
<tr>
<td>3</td>
<td>Dental and officers' mess.</td>
</tr>
<tr>
<td>4</td>
<td>M.I. and reception (40 by 40 feet penthouse).</td>
</tr>
<tr>
<td>5</td>
<td>Surgical, operational theatre and resuscitation (40 by 40 feet penthouse).</td>
</tr>
<tr>
<td>6</td>
<td>General ward (40 by 40 feet penthouse).</td>
</tr>
<tr>
<td>7</td>
<td>Medical stores (I.1248). (Reserve penthouse.)</td>
</tr>
<tr>
<td>8</td>
<td>Q.M.—Miscellaneous stores, clothing, G.1098, &amp;c.</td>
</tr>
<tr>
<td>9</td>
<td>Q.M.—Reserve rations and men's canteen.</td>
</tr>
<tr>
<td>10</td>
<td>General utility—personnel.</td>
</tr>
<tr>
<td>11</td>
<td>Workshops.</td>
</tr>
</tbody>
</table>
The Divisional Field Ambulance in Mobile Warfare

(a) Personnel.

(i) Stretcher Bearers.—The Companies have been lightened by thirty-two stretcher bearers and these are now on the strength of H.Q. In the desert, under mobile conditions, Field Ambulances often run far ahead of their source of supply of medical and ordnance equipment, &c., and, because of the "time lag" involved in replenishment, larger stocks of these have to be carried, not to mention very considerable quantities of all other stores (additional food, water, &c.). It will be seen, therefore, that the unit transport moves loaded to capacity. This raises the question of the carriage of S.B. personnel.

In practice, it is found that there is a considerable saving in manpower, and the efficiency of the unit is increased, if the unit works approximately 30 O.Rs, R.A.M.C. (S.B. personnel) understrength. This is arranged by sending men to the L.O.B. Camp or noting on A.F. W. 3009a (Field Return—Other Ranks) that reinforcements for the deficiencies stated are not required. Thus, the number of "bodies" and their kits which the unit has to move and maintain is temporarily reduced.

It is realized, nevertheless, that one cannot dispense with the services of stretcher bearers in warfare in mountainous or over difficult country, when the R.A.P. may have to be cleared by R.A.M.C. S.B.s. When carried, however, they are on the strength of H.Q. Company and can be rushed when and where they are needed in H.Q. transport.

(ii) Officers.—Rarely, during battle, are all the Company Sections engaged, and Medical Officers of those in reserve are available for work in the M.D.S. In practice, it is found that it is essential for the second in command to be on the strength of H.Q. Company in order that the C.O. may visit forward units while leaving a responsible officer in charge during his absence. Alternatively, he may depute a similar important task to his second in command with full confidence in his tactical judgment, &c., rather than employ as Adjutant a junior inexperienced officer. In addition, a potential Field Ambulance Commander is being trained. This policy is prompted by the fact that such journeys of liaison with one's own unit and, at times even with Brigade and Division, may require an absence from unit H.Q. of over twenty-four hours. One Company, therefore, is commanded by a Major and the other by a senior Captain.

(iii) Surgical Teams.—The presence of a Mobile Surgical Team with a Field Ambulance is an enormous asset. They are now completely mobile and self-contained and work in the closest liaison with the Field Ambulance, selecting cases for operation, while the Field Ambulance is responsible for after-treatment, evacuation, &c.

B. Accommodation.

(1) Tents.

The G. 1098 scale of tentage has proved to be unsuitable and inadequate for the task which it is called upon to perform. Their only use is found to be in the more static phases, when two per Company and three or four R.D. tents on H.Q. are an advantage. E.P.I.P. tents make excellent operation theatres in these circumstances.

During the active phases tents are not used at all and small "lean-to" penthouses, which roll up along the sides of vehicles when travelling, are a tremendous asset in dispensing with them.

(2) Penthouses.—

(a) 40 by 40 feet Canvas Penthouses.—These are found to be the complete answer when mobility and extensive accommodation, combined with ease and rapidity of erection, are required. The 40 by 40 feet canvas is "roomy," easily erected and capable of holding 30 to 40 lying patients. The fact that these "wards" are erected over the vehicle in which they travel is a great advantage as the latter thus becomes a storeroom and is unloaded only to the extent of laying out essential dressings, drugs, equipment, &c. (figs. 1 and 2).

Normally, the M.D.S. consists of four operational 40 by 40 feet penthouses while the accommodation of Sections in reserve can also be utilized where necessary.
(b) 40 by 20 feet Canvas Penthouses.—These are designed for use by Light Sections and are half a 40 by 40 feet canvas. They are extremely quick to erect and dismantle. They give cover to approximately 20 to 25 stretcher cases and almost completely obviate the unloading of the Section vehicle.

Fig. 1.—Rear sectional view, 40' x 20'. Company penthouse.

Fig. 2.—40' x 40' Canvas penthouse. Sectional view, 40' x 40' penthouse, showing operating theatre.

For 40' x 40' penthouse: Goalposts, sets 6; tarpaulin 40' x 40' 1; odd canvas for blackout; sandbags 70; rope 1" (main guys) 70'; rope ½" (small guys) 120'; pegs 18. For 40' x 20' penthouse: Goalposts, sets 3; tarpaulin 40' x 20' 1; odd canvas for blackout; sandbags 40; rope 1" (main guys) 50'; rope ½" (small guys) 60'; pegs 12; clip-hooks 5.
The diagrams and sketches of these penthouse structures will give much more information concerning them than the written word.

(c) General.—Personnel become very expert in the erection of the penthouse, both by day and night, and it is possible for the Light Sections to have accommodation ready to take patients within five to ten minutes of arrival; while the large 40 by 40 feet "wards" require about ten to fifteen minutes to put up. These times do not include the complete sand-bagging of the walls, but do enable casualties to be treated while this work is being carried out. The times taken to dismantle them are rather less than half those of erection.

They are extremely weatherproof and, although inclined to be hot under desert conditions during the summer months, are comfortably warm in winter. Blackout curtains are permanently fitted to the canvasses while odd canvas is used to surround the open space under the vehicle.

In the surgical penthouse, when no surgical team is available, an area can be "walled off" and turned into an efficient operating theatre for life-saving or minor operations (fig. 2).

It is submitted that these structures may well have a very definite place in any theatre of mobile operations while, in Continental warfare, when suitable housing accommodation is not available and towns are liable to be shelled or bombed, they can be used in the open countryside.

C.—TRANSPORT.

In the desert this is of paramount importance and a Field Ambulance is only as good as its transport. Every vehicle has to be self-supporting.

(1) Reserve Supplies.

Each vehicle carries 32 gallons of spare petrol, in addition to tanks full, at least 18 gallons of spare water in camel tanks or 2 gallon containers, and three days reserve vehicle rations for all personnel travelling on the vehicle. Penthouse vehicles each carry a tapped 44 gallon water drum for patients and medical use. It has been proved time and time again that all vehicles have to be capable of a separate existence.

The average consumption of petrol by load-carrying vehicles is approximately 5 m.p.g., and vehicles have to carry their own spare petrol, as no petrol lorry is available, while replenishment is often difficult.

(2) Maintenance.

Constant supervision and interest by the Transport Officer, as well as by the Field Ambulance and Company Commanders, is essential. Strict discipline with regard to drivers' daily maintenance tasks must be insisted upon.
Too much reliance on the present R.A.S.C. Workshops is unsatisfactory as they are often not in the vicinity of the unit when one needs them. Besides, they have "their hands full" keeping their own transport on the road. It is necessary, therefore, for the Transport Section lorry to become what is, in fact, a small Workshop with a reasonable supply of spares, especially springs. These latter were a great source of trouble in the Western Desert: When a larger stock than normal is obtained each vehicle is made to carry its own spare springs. If adequate minor spares are not carried it often means the vehicle is off the road for days and weeks at a time waiting for a replacement from Base. Therefore the Transport Section should endeavour to be relatively independent, making as few claims as possible on the Brigade R.A.S.C. Company, but every endeavour should be made to have every vehicle inspected each month in the latter's Workshops.

(3) Transport Drill.

Reference has already been made to the necessity for every driver and every man in the unit to know where his vehicle is located in camp or travels on the move. A stereotyped drill is necessary for both these manoeuvres. Apart from minor modifications indicated by local features there is no reason to grossly alter the "clockface" layout.

On arrival on a camp site, the Orderly Room and Cookhouse proceed first and, once they are placed, other vehicles automatically take up their positions from them, i.e. operational penthouse vehicles in the front along the axis track; "Q" department on the one side and transport on the other; H.Q. cookhouse in the middle, H.Q. office and Officers' lines at the rear and the reserve Company in rear of Officers' lines. When possible, 100 yards dispersal between vehicles or entities is maintained.

Similarly, vehicle drivers are taught to assume their correct position in Column or Desert Formation as soon as their vehicles are ready after an order to move has been given.

On the move in Column, H.Q. vehicles proceed first in their operational order (see M.D.S.), spare Ambulance Cars, &c., next, and the Companies in rear.

(4) Establishment.

(1) Load-Carrying Transport.—The special Middle East Establishment for desert warfare of nineteen 3-tonners, as against four 3-tonners and fifteen 30-cwts., as per War Establishment, is very adequate. It makes the organization described, with its many advantages, possible, in that the whole unit is entirely mobile.

(2) Trailers.—Some units which have been in the desert for a considerable time, have "acquired" trailers made from derelict vehicles with the help of Ordnance or R.A.S.C. Workshops. These are invaluable as an Office, Officers' Mess, Canteen, &c., but are an adjunct, not an essential.

(3) Ambulance Cars.—The number of ambulance cars—eight—on the vehicle Establishment of a Field Ambulance, does not meet the requirements of mobile desert warfare, where a long line of evacuation extending up to as much as 40 miles (at an average speed of 5 m.p.h.) is the rule rather than the exception during active operations. Extensive use must be made of returning "B" echelon vehicles to evacuate walking and sitting wounded.

The fact that ambulance cars can be sent up to R.A.P.s is a great advantage but the feeling that the unit will not have enough cars available to clear its own sections and/or A.D.S. is a constant source of anxiety—especially during a withdrawal.

The Establishment of eight cars, which catered for the distance of 6 to 10 miles between the Car Post or A.D.S. and M.D.S. in the war of 1914-18, is now required to maintain a line of evacuation often four or five times this length.

It is understood that this Establishment is very shortly to be increased to twelve or fourteen ambulance cars and this should prove satisfactory. The Austin K.2 type is extremely reliable but spring breakages are enormous over rough country and they are not as suitable as the light Ford or Dodge ambulance car for work up to the R.A.P. and for patrol work with Sections.
It is suggested that an Establishment of, say, six heavy Austin K.2 type and six or eight light 2-stretcher ambulance cars would more nearly meet the requirements; the number rather than the capacity of vehicles available being of greater importance.

D.—Evacuation.

(1) By Ambulance Car.—Reference has been made in the preceding paragraph to the evacuation of patients from R.A.P. to the forward Medical Posts, thence to the M.D.S. Because night driving in the open desert is most hazardous, evacuation of patients by night is well-nigh impossible except in bright moonlight and then only as a life-saving measure with a driver who knows the desert and route very well indeed.

On a long line of evacuation it is essential, therefore, to despatch casualties from one stage to another to reach the latter before dark. Experience has shown that medical posts, where the patient may be seen by a Medical Officer or accommodated for the night, should be located within 30 miles, or four hours’ journey, whichever is the less.

M.A.C. cars evacuate from the M.D.S. to the Corps M.D.S. or C.C.S. A close liaison between the M.A.C. representative (generally a junior Officer, R.A.S.C.) and the M.D.S. is essential and it is through the M.A.C. channels that emergency supplies of drugs, dressings, stretchers, blankets and ordnance equipment are obtained by forward medical units.

(2) By Air.—If the M.D.S. is near an aerodrome on which Ambulance, Transport or Bomber planes can land, this is, of course, the method of choice, for seriously wounded cases. The number of hours taken by this method to reach a major medical unit often corresponds to the number of days taken by ambulance car, train or boat, with obvious advantage to the patient.

E.—Geneva Convention.

Medical units in the desert, broadly speaking, receive, at the hands of the enemy, reasonable consideration for the terms of the Geneva Convention but, to obtain this consideration, it is essential to leave no room for error. Small red crosses either on flags, ambulance cars or vehicles are useless as they cannot easily be seen from the air or from a distance. Six feet red crosses or even bigger are painted on the penthouses. Large ground crosses are displayed, while six or nine feet square red cross flags are flown at the A.D.S. and M.D.S. Ambulance Cars and tarpaulins covering vehicles are marked by four feet red crosses. It is noteworthy that the size of the white circle is of greater importance, from a visibility point of view, than the size of the red cross.

Red cross flags of the size suggested have to be manufactured within the unit as they are not normally obtainable through official sources.

F.—Inter-communication.

The Field Ambulance which is not equipped with wireless is considerably handicapped. Telephonic communication is almost invariably lost immediately active operations start while "contact" officers may not be able to get through—this is especially so in a withdrawal.

The unit is, therefore, very dependent concerning the whereabouts of its forward elements on information gleaned from returning ambulance cars and personal liaison with them and Brigade or Division.

TACTICAL.

In modern warfare campaigns are divided up into static phases of reorganization and preparation for attack and periods of highly mobile warfare. It is to this latter end that all training must be directed as it is then that the efficiency of a medical unit is put to the test. In mobile operations a Field Medical Unit which cannot move rapidly, completely and efficiently in its own transport is a liability to itself and its formation.
A.—Static Phase.

(1) The Companies.

During the static phase the Companies of a Field Ambulance, in turn, form a full A.D.S. serving a Brigade, about 2 to 3 miles in rear of the forward troops. Sections are temporarily detached for use with mobile columns of all arms as occasion requires.

(2) The M.D.S.

This is normally situated 10 to 20 miles in rear of the A.D.S. and generally serves two Brigades. One M.D.S. of a Division may well be employed resting, many miles in the rear, forming a Divisional Convalescent Camp.

B.—Active Phase.

The Advance.

(1) The Companies.

In open warfare, once the stage of movement is commenced, a Company is to all intents and purposes Brigaded; the A.D.M.S. and O.C. Field Ambulance retaining, in practice, only a small measure of control. Its task, to evacuate the casualties of its Brigade wherever they may occur, necessitates that it never loses contact with the advancing formation, moving in accordance with operational needs, either as a whole or by Sections. The Company or part thereof should, therefore, be in the general area of Main Brigade H.Q.

If the tactical situation demands, part or the whole of the reserve Company proceeds forward to "leap-frog" or augment the first Company.

(2) The M.D.S.

One M.D.S., to which a Surgical Team and possibly a Blood Transfusion Unit are attached, serves the A.D.S.s of at least two Brigades, until such time as the advance has left it at 20 to 30 miles in rear, when a reserve M.D.S. of the Division, taking with it the Surgical Team and Blood Transfusion Unit, "leap-frogs" it in accordance with operational demands under Divisional arrangements.

In order to facilitate inter-communication, the main functioning M.D.S. should be in the general area of Divisional Rear H.Q.

The Withdrawal.

(1) The Companies.

Sections are used to "leap-frog" each other in echelon, in accordance with the tactical situation; thus producing a series of small very mobile medical posts which can close and fall back at the shortest possible notice.

(2) The M.D.S.

It is essential under these conditions to keep the M.D.S. as light as is compatible with efficiency. This is achieved by despatching the majority of non-operational vehicles well to the rear, e.g. "Q" department, Workshops, H.Q. Office, Messes, &c., retaining only such penthouse vehicles, cooking facilities and light trucks or staff cars as are necessary.

The M.D.S. proper thus consists of about three vehicles and, of these, only such as it is utterly essential to "open" are temporarily immobilized by having penthouses erected over them.

C.—General.

In practice, it is found that the O.C. Field Ambulance and A.D.M.S. have relatively little control over the forward Company during battle. The Company Commander, working in close liaison with Brigade, must have full authority to dispose of his Company and/or Sections in accordance with the rapidly changing tactical situations, without being hampered by the "time-lag" involved by referring the matter back to O.C. Field Ambulance or A.D.M.S.

In an advance the tactical handling of Divisional Medical units is comparatively easy. In a withdrawal, it is always difficult; the important consideration being the speed with
which casualties can be despatched along the line of evacuation and this is dependent upon
the number of ambulance cars available for this duty.

**Summary.**

The article endeavours to demonstrate the great importance to Field Medical Units in mobile warfare of:

1. Transport and, above all, *mobility*.
2. The provision of adequate and suitable accommodation for patients by penthouses, such as is not provided by the G. 1098 scale of Field Ambulance tentage.
3. Operational adaptability and tactical manœuvrability made possible by the organization of the Companies into independent Sections, while at the same time retaining the advantage of Company formation.
4. Self-sufficiency and the ability to function efficiently and maintain an independent existence if temporarily cut off from supplies—medical, p.o.I. food and water—for two to three days.
5. Training and teamwork.

Finally, the article submits that the Field Ambulance, so organized, can function with equal efficiency under the diverse conditions encountered in either close or open modern warfare.

My thanks are due to Colonel J. Melvin, O.B.E., M.C., A.D.M.S., Division, for permission to forward this article for publication and to Serjeant R. R. R. Martin, R.A.M.C., for the care and trouble he has taken in illustrating it.