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**SOME THOUGHTS ON THE ORGANIZATION OF  
A FIELD AMBULANCE**

BY

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A PAPER on unit organization can be dry reading if it is no more than a catalogue of sub-units and duties, but it can be more interesting if one considers the way in which a unit's characteristics can be affected by its organization.

But first one must define the relationship between organization and deployment. Organization refers to the chain of command within a unit or formation and the groups or sub-units of which it is composed. Deployment is the business of getting the unit or formation into action. "Company," "platoon," "section" are terms of organization. "A.D.S." and "C.C.P.," like "gun-area" and "defended locality," are terms of deployment. But deployment is a development of a pre-existing organization and so one sometimes speaks of "reorganization," alias "re-grouping," when this is a step in deployment. The groups in which one employs men in battle, and more particularly the groups in which one moves them towards the battle, are varied with the type of action and other circumstances and one cannot devise a permanent organization in which the distribution of personnel can be applied in detail to every action. Nevertheless a unit's organization can provide a basic grouping and chain of command which can be developed readily into the usual forms of deployment. It should also enhance the characteristics required for functional efficiency and survival in war.

To be fit for battle a field medical unit must be mobile, adaptable, well controlled, robust and possessed of a high morale. Training and discipline contribute as largely to these characteristics, but here I am concerned only with the way that organization affects them.

The obvious contribution to mobility is a sufficiency of transport—but no more. Each additional vehicle adds something to the time of getting on to and off the road and another obstacle to other units' movement. This applies particularly

to the forward areas, where the need for mobility is greatest and where uncontrolled use of transport can have the worst results. One must be able to devote to each sub-unit or detachment just what vehicles are essential to the current movement and to hold the remainder where they are out of the way and least likely to be damaged, and that is generally as far back as practicable. Moreover, as the system of "F," "A" and "B" Echelons used by brigade troops is designed to these ends, a field ambulance must be ready to conform when under brigade command. But flexibility in transport is not enough. If one cannot move the technical staff for an A.D.S. without moving at the same time the Q.M. and M.T.O. and all their men and stores, or if one has to move twenty men when ten would suffice, it will take longer to get moving and there may be fewer suitable places to go to. Flexibility in personnel organization is equally necessary.

Flexibility in the use of men is in itself an essential if the unit is to adapt itself to the variable demands upon it. In battle a field ambulance has to find a variety of detachments for aid posts, car posts, rescue parties and so on. Even the more nearly stereotyped tasks vary in their manpower requirements. A central brigade C.C.P. requires at least two M.Os. and fifteen to twenty men, but one serving, say, the divisional administrative area needs no more than one M.O. and half a dozen men. Where an A.D.S. receives from two or three brigades in a set-piece attack one wants four or five M.Os. and about forty men, but when there is movement and casualties are light half that strength will do. A field ambulance moving in support of a brigade on an independent axis may even have to find two separate A.D.S.-forming groups. And although a field ambulance's activities fall normally into a forward collecting sphere and a rearward technical sphere, in rough or mountainous country where stretcher-bearing is a major factor, or in an assault crossing of a river, or in a withdrawal on a wide front where several routes must be covered, the one company may not be able to cover the forward task and the whole unit may have to be devoted to it.

What, then, are the features in organization that make for flexibility? *The first is that specialization should be reduced and versatility promoted.* There is a minimum practical degree of sub-unit specialization, but the greatest practicable portion of the unit should be organized in versatile general purpose groups. A unit which has one group specifically forward and another specifically rearward is less adaptable than one which has two versatile groups, both of which can take either role. That is not to say that the former arrangement, which is that of the standard field ambulance, has not other advantages, but it is less adaptable, for instance, to the occasions in which more than one company is needed for the forward task or, in a prolonged defence, to the relief of the company in the line. Another form of specialization, and one it is hard to resist in training, is the shaping of one's organization specially for any one type of manœuvre. On exercises tactical movement in M.T. receives great emphasis. In this it is an accepted drill to move a proportion of the medical troops in small groups under regimental or battalion command and one is tempted to adopt this grouping as permanent. But in war much more time and effort is spent in hard fighting in attack or defence and, much more often, a simpler, less dispersed

disposition of the medical forces is more effective. A field ambulance working with armour can afford to be rather more stereotyped than one supporting infantry, but one cannot allow one's tactical dispositions to be dictated by any feature of one's permanent organization. The latter should be designed, therefore, not in an attempt to provide a universal grouping, but as a framework which can be elaborated to meet current needs.

Secondly, as has been mentioned, the technical and the maintenance personnel must be able to work and move independently. Those who control and co-ordinate (the unit and sub-unit headquarters) should not be tied to any one group under their command, but free to move to whatever is their key point at the time. This is simply achieved by composing a self-sufficient team for each function. But the function in which it is most important to avoid arbitrary bonds or alliances is ambulance transport. One might have a standard numerical distribution to R.A.Ps., to C.C.Ps. in the brigade area, to the A.D.S. and so on, but this would require frequent modification, and it is quite impracticable for every individual driver to continue at the same R.A.P. or C.C.P. for even a few days of action. A pool of ambulance vehicles distributed according to requirements is the most flexible arrangement and, in one form or another, the only one that will survive several months of war. Some of the jeeps and D.Rs. are best handled on the same principle. Even with the load-carrying transport one must erase the notion that each vehicle is tied to a particular load and establish the principle of allotment as required. Nor can one keep to any fixed ratio of stretcher-bearers to other personnel unless one uses the term, as is probably best nowadays, to cover general field medical duties. When the need for cross-country stretcher-bearing arises the bearer teams must be composed for the occasion, for the requirements rest entirely on local conditions.

A field ambulance will not run through all the variations that have been mentioned in a few weeks' active service, but as they go from one type of country to another, from one sort of fighting to another, from perhaps one campaign to another, *they will meet the necessity for using their men and vehicles in several different groupings and combinations.* They will experience casualties, unexpected contingencies and periods when they are hard put to it to meet the demands upon them, and will learn that robustness against the shocks of war and adaptability go hand in hand. If they have not previously achieved this virtue they will find it thrust upon them. And it will be acquired more quickly and with fewer pains if they start with the idea that the final grouping—the composition of the appropriate medical teams and their integration with the means of conveying casualties—is done by a drill adaptable to the current battle, that is as a step in deployment, rather than as part of their permanent organization or establishment.

But mobility and flexibility will end in confusion if there is not a proper control. The part that communications play in this, although vital, is secondary. Control is acquired by a combination of organization and training. The organization is, in two words, a co-ordinated decentralization. Specified responsibilities are delegated to key officers and an appropriate group of men put under the

command of each. Where necessary each major group undergoes a further decentralization and at each level their activities are co-ordinated by the unit and sub-unit headquarters. Before action the C.O. applies the responsibilities of each group to the action in hand by defining the extent of the task allotted to each and the points of co-ordination between them. The trained subordinate commander knows what is expected of him and the limits beyond which he must not go without sanction, and will interpret his C.O.'s will in quite unexpected circumstances with remarkable sureness.

In a field unit which is constantly on the move and which may be extended over long distances the primary delegation of responsibility must be regional. As has been said, the activities of a field ambulance usually fall into a forward and a rearward sphere. So the primary decentralization requires at least two main groups or companies.

In the rearward sphere activity centres on the A.D.S. A C.C.P.-forming detachment is often wanted too, but the need for it is not constant enough to warrant its permanent existence as a separate entity. The headquarters Section was introduced in 1941\* as a detachable sub-group of the main headquarters group, but, in at least the writer's division, it fell into disuse on active service for that reason. When a detachment was wanted one struck a balance between the number of men one would have liked to put to it and the number one could spare; nor did one use the same men each time. One could call the detachment a Headquarters Section, but it had no permanent identity as a group. The requirement then in this sphere is a medical group (trained to produce detachments as required), the maintenance group and, of course, a group headquarters to co-ordinate their activities and administration.

In the forward sphere there is greater variety in the area covered and the patterns of deployment. One cannot state a set combination of subordinate groups which would suit even the majority of occasions, but one can say that when the forward group is extended its activities usually fall into two subordinate spheres. A brigade usually advances or withdraws on one or two routes. A defensive layout may be divided by a natural feature into two parts, but it is unusual for a brigade to be given an area so divided into three. Alternatively in hilly country where tortuous roads and tracks increase the time and distance factor or where, say, the brigade straddles an obstacle, a subordinate decentralization in forward and rearward spheres may be required. In either case more than one detachment may be required in one or both sub-spheres and within each co-ordination of the detachment(s), with the movements of ambulance cars and the troops they serve as necessary. The O.C. of the forward group would seldom want to decentralize in three separate spheres. The attachment of a section to each of three battalions for an assault landing or river crossing is not an example, for here there can be no control by the field ambulance until they land and, when they do, there will be nearly always two landing places and the assault

\* In a War Office directive which also introduced the three-section organization of the two forward companies of the current (1937) establishment. Both these features were incorporated in the 1942 field ambulance establishment.

will be on two axes. The attachment of a section to each of three regiments or battalions is far from a universally applicable drill, but when it is used it is usually wise to retain some portion of the group under field ambulance control. A sounder argument for three sections would be that one often starts with two sections deployed and it is a good thing to have a reserve. Equally good arguments can be made for four sections. But the essential point that experience forced upon one was that in covering the various manoeuvres of a brigade—and it may be an infantry brigade of three battalions, or an armoured brigade of three or four regiments, or a mixed armoured-infantry brigade group—one cannot be bound to any fixed system of grouping. What is wanted in the permanent organization is a simple interim grouping which can be developed readily into any of the finer subdivisions that may be required on deployment. For the reasons given, and because it is the simplest, the organization of the forward group that does this best is in two parts. The two parts would not necessarily always be equal but each could provide at least two detachments and a sub-unit headquarters for their co-ordination.

But a functional as well as a regional decentralization is required. If the C.O. is to retain control of the unit supply and M.T. affairs, the Q.M. and M.T.O. must be directly responsible to him in everything to do with their functions, and the manner in which their personnel are included in either main group and subordinate to the group commander must be carefully defined. There is no difficulty with the Q.M.'s small and constant team, but the relationships of the M.T.O. and the group commanders with the R.A.S.C. drivers are open to ambiguity and contention. If the R.A.S.C. are treated as a distinct group which is deployed in connection with the R.A.M.C. groups on the C.O.'s orders, not only are these relationships much clearer but also the C.O. has, through the M.T.O., a more direct, a more flexible and a better co-ordinated control of the unit transport. And this introduces the consideration of balance in organization. If one could organize the unit in three or four similar groups, administrative and tactical decentralization could be even and impartial. But if one group comprises a majority of the unit, perfect impartiality in administration is not in all ways easy and the tactical initiative which can be permitted to this group commander is very limited. If he is given further responsibility in personnel administration, in supply and M.T. affairs, the C.O. must restrict his initiative in them. If this restraint is not imposed by the C.O., nor voluntarily assumed by the group commander, one will get, what one has seen, a unit run by the second-in-command. However, it is better to balance one's organization so that neither a majority group nor a Pooh Bah will arise. The sizes of the groups depend mainly on the regional requirements, but a balanced delegation of responsibility allows the free use of initiative within their own spheres by the responsible officers, removes the bones of contention, and promotes co-operation between them.

A balanced grouping helps too in the development of team spirit and morale. Three or four more or less equal groups give a better play to the competitive spirit with less tendency to petty jealousies and antagonisms than do just two groups, especially if there is much disparity between the latter. The formation of

a R.A.S.C. group helps in this way by producing, instead of two uneven groups, three of more even size. But undoubtedly the greatest contribution to a sturdy morale that organization can make is that membership of the groups should be constant. *Stability in companionship is the one stable factor that war-time life permits and it should be studiously preserved.* There can be no permanency in the membership of groups of section size and, in a field ambulance, a company of fifty to sixty men is the smallest group that can provide it. The smaller teams can be cast and recast, but the companies must be the foundation of the unit organization. If it can also be arranged, the even distribution between the companies of hardship, danger and warlike achievement is obviously a valuable aid to morale.

And now to apply these considerations to the standard establishment of a field ambulance. This shows two main groups, the strengths being, in the Higher Establishment, as below :

- (1) The "Headquarters" and with it a "Headquarters Section" which must be regarded as a detachable portion of the former. These form the rearward group : Officers 8, O.Rs. 135.
- (2) A "Company," which is the forward group : Officers 5, O.Rs. 86.

The term "Headquarters" as used in the establishment covers personnel performing several different functions. There are disadvantages to this collective use of the term instead of the more usual custom of applying it specifically to the commander and those who assist him directly in the control of the unit (or sub-unit). It is proposed therefore to use the term "Headquarters" in that specific sense and to use "Headquarters Company" as the collective term for the first group. The forward group will be called "A" Company. The establishment shows a Company Headquarters and three sections in the latter, but in the Headquarters Company the subordinate groups are not defined except for the Headquarters Section, on which comment has already been made. All the vehicles, including the ambulance cars, are shown distributed down to sections, but this distribution should be taken as a "standard," but variable, allotment rather than as a permanent feature of the organization. Some elaboration of the organization given in the establishment is necessary when a unit is formed. This, along with some modifications prompted by the arguments in the foregoing pages, are outlined below.

It is proposed that a field ambulance should be organized in a Headquarters and three companies—viz., Field Ambulance Headquarters and Headquarters Company (Officers 7, O.Rs. 87), "A" Company (Officers 5, O.Rs. 56), M.T. (or R.A.S.C.) Company (Officers 1, O.Rs. 78). The strengths are, of course, subject to detail modification. In the organization of the companies the principle is that the organization takes the grouping only so far as it can be permanent or nearly so. The final subdivisions and combinations are left to the time the unit takes the field. Each company should train on a small repertoire of deployment groups which, with appropriate equipment scales, should be put on to paper in the unit's "Standing Orders, War." Further details and comments are given.

## 1. FIELD AMBULANCE HEADQUARTERS

Commanding Officer, Adjutant (Captain, non-medical), R.S.M., clerks four, batmen-orderly two. D.Rs. are attached from the M.T. Company as required, as are the divisional signals wireless operators when allotted.

## 2. HEADQUARTERS COMPANY

(a) *Company Headquarters*

O.C. Company (Major), R.S.M., orderly corporal, clerk, storeman, sanitary duty N.C.O., batman-orderly.

(b) *Maintenance (or "Q") Platoon*

Quartermaster, R.Q.M.S., dispenser (sergeant), clerk, storemen (3), equipment repairer, water-duty men (2), post corporal, batman-G.D.O., carpenter and joiner (R.E.), cooks (A.C.C.) (6).

(c) *Medical Platoon*(i) *Medical Section:*

M.Os. 2, O.Rs. 38, including sergeants (3).

(ii) *Ambulance Orderly Section :*

One orderly for each ambulance car ; at present scale 16.

(iii) *Dental Section :*

Dental Officer, O.Rs. R.A.D.C. (2), batman-G.D.O.

Man-management, care of equipment and all the things that make up company administration should be as firmly delegated to O.C. Headquarters Company as to O.C. "A" Company, and he too needs a Company Headquarters. They would have less tactical business than Company Headquarters of "A" Company, but the details of the movement and deployment of their company would be their concern. The R.S.M. has a "company" as well as a "unit" role and a place on the Company Headquarters.

The Maintenance Platoon is responsible for drawing and delivering to both companies all their supplies, including water but excluding M.T. fuel. The team is constant except for the cooks, who are for distribution as required. This undergoes some variation in and out of battle and according to detachments.

The deployment groups for the Medical Platoon should include a "Grade I" A.D.S. (allotment of personnel of the whole platoon to duties in an A.D.S.), a "Grade II" A.D.S. (the same with 20 to 25 men), and a C.C.P.-forming detachment of one M.O. and 10 to 12 men. Each ambulance orderly is paired as permanently as can be with a driver, but reliefs and replacements as necessary are found from the Medical Platoon. They bring to the otherwise rearward company a part in the more warlike activities of the unit.

## 3. "A" COMPANY

(a) *Company Headquarters*

O.C. Company (Major), general duty M.O., Stretcher-bearer Officer (subaltern, non-medical), company staff-sergeant, clerk, storeman, batman-orderly.

(b) *No. 1 and No. 2 Platoon (each)*

M.O. i/c and O.Rs. 24, including sergeants (2) and cooks (A.C.C.) (2).

The attached R.A.S.C. sergeant and O.Rs. become members of the Company Headquarters. The general duty M.O. and the S.B.O. on Company Headquarters are available for recce and liaison duties or as an increment to either platoon. In practice the M.O. would often not be available to the company. A field ambulance is, as often as not, deficient of one or two M.Os. and in battle this M.O. would often be required for duty with Headquarters Company. The two-platoon organization eases the problem of continuity in the command of the sub-units. With one section per M.O. on the company establishment it is impossible.

The practised deployment groups for this company would include a "Grade I" C.C.P. employing a whole platoon and "Grade II" C.C.P.-forming detachments or "sections" of half-platoon strength with alternative lorry-borne, jeep-borne and man-pack equipment scales. The M.O. in command, his senior sergeant and the attached R.A.S.C. corporal constitute a Platoon Headquarters to whom co-ordination in their own sphere of action can be delegated when this is desirable. A company grouping in two sections per platoon might serve as standard for an armoured brigade unit or with infantry for, for instance, a tactical move in M.T. An establishment would have to show the two platoons as equal, but in action one might often increase one at the expense of the other.

#### 4. M.T. (OR R.A.S.C.) COMPANY

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| <p>(a) <i>M.T. Headquarters</i><br/>M.T.O. (Captain, R.A.S.C.),<br/>C.S.M., drivers for clerical duties<br/>(2), orderly corporal, D.Rs. (7).</p> <p>(b) <i>Fitters (or) Repairs Section</i><br/>Vehicle mechanics (3), electrician,<br/>Class I drivers (4) (three as<br/>assistant mechanics, one as store-<br/>man).</p> <p>(c) <i>Ambulance Car Platoon</i><br/>Corporals (2) and drivers for</p> | <p>ambulance cars (16), jeeps (4),<br/>and the T.C.V. lorry.</p> <p>(d) <i>"G.T." Platoon</i><br/>No. 1 Section: General trans-<br/>port for Headquarters and<br/>Headquarters Company (in-<br/>cluding one jeep for the C.O.).<br/>No. 2 Section: G.T. vehicles for<br/>"A" Company (including two<br/>jeeps for "A" Company Head-<br/>quarters).</p> |
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The ambulance cars are allotted numerically by the C.O. to R.A.Ps., "A" Company and Headquarters Company, as occasion demands. The drivers are named by the M.T.O., who also arranges what reliefs and replacements may be necessary. By the end of an action many who were forward will be back and vice versa. The other vehicles in this platoon are those which have a dual role, ambulance or general purpose, and which are best handled in the same way. With the D.Rs. on M.T. Headquarters similarly treated, there can be a standard distribution of the other vehicles which, under normal road conditions, would be sufficiently nearly constant for the two G.T. sections to be a permanent feature. Nevertheless there would have to be some variation in membership to meet casualties and the conditions which limit the use of transport in the forward

areas. One might put part or the whole of "A" Company on to a jeep and 15-cwt. truck scale.

The M.T. Headquarters and Fitters' Section, with any vehicles in reserve or under repair, together with the Maintenance Platoon, form on deployment an Administrative Echelon which can be moved and staged with the divisional administrative units, or with a brigaded "B" (or "A2") Echelon, or alone independently of the Medical Platoon. The Medical and Headquarters group is thereby rendered more mobile and, having only twelve to fifteen vehicles, could claim a more forward place in a brigade column. "A" Company might hold one form for long or short periods. A sectional grouping would be held over a phase of rapid movement; a simpler form with occasional detachments of small parties would prevail in less mobile conditions.

The organization proposed above preserves the main features of the standard arrangement—namely, the combination of a forward collecting group with a rearward largely specialized technical group. It has been hinted that there would be advantages in having, instead, two versatile groups, both of which could take either role, and in the writer's division such an organization was evolved in the latter part of the Italian campaign. In this there were: Headquarters Company (Unit Headquarters, Maintenance group, ambulance orderlies, and a small medical section); two identical medical and general purpose companies, called "A" and "B"; a R.A.S.C. Company. "A" and "B" Companies each had a Company Headquarters and was handled in two groups. There was no fixed establishment for these, their strengths being adjusted to the occasion. They could be used "two-up" or, as was usual, one as Medical group forming the A.D.S. or a central brigade C.C.P., and the other as a Light or Mobile group responsible for any forward or collateral tasks. When the company was in the rearward role the Medical group absorbed most of the men, but in the forward role, supporting the brigade, the Light group was usually the stronger. We had no divisional F.D.S. and the field ambulances held the division's light sick, either each for its own brigade or in one company of one field ambulance. The main advantages of this method of organization were its great adaptability and the alteration between battle experience and medical work, which was very much liked by officers and men and contributed greatly to their enthusiasm and morale. With a new unit the main disadvantage would be that it would take longer to bring both companies to efficiency in their tactical training, for this can only be achieved by co-operation with the parent brigade on exercises. The orthodox arrangement of one forward and one backward company has a great advantage in this respect, but the disadvantages inherent in group specialization would appear after a hard time in battle. Conversely the advantages of this unorthodox, unspecialized organization only appeared after such experience. However, this scheme of organization has been described only to demonstrate that there is more than one practical solution to organization problems.

An attempt has been made to relate the serviceable characteristics of a unit to certain features in its organization, and a scheme embodying these within the general outline of the standard field ambulance has been described in some,

but not complete, detail. The two-platoon organization of the forward ("A") Company might be regarded as unorthodox, and so might the R.A.S.C. Company, but the other features are common in divisional units. Even the ambulance platoon is in a small way a counterpart to the Support Company of an infantry battalion. A plea has been made for distinction between the normal day-to-day organization which obviously must be constant and the organization, or grouping, on deployment which must be adapted to the current action.

My thanks are due to Major-General R. D. Cameron, *C.B.E., M.C., K.H.S.*, Director of Medical Services, Rhine Army, for permission to forward this article.

## A METHOD OF MOUNTING BIOLOGICAL SPECIMENS IN PLASTIC

BY

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THE advantages of mounting biological specimens in plastic are very apparent, especially in preparing demonstration specimens for large classes. Even the most delicate of insects, when embedded in a transparent block of plastic, can be passed round the class without getting damaged. The use of such specimens is not limited to naked eye demonstration alone. Specimens may be viewed under a dissecting microscope and even with the 2/3 objective on an ordinary microscope.

The method in use at the Army School of Health is very simple and can be employed by anyone who has the slightest knowledge of biological mounting techniques.

The plastic used for embedding is "Marco S.B. 26 C Resin."

The kit consists of two solutions; the more viscous resin which is weighed out in grams, and the thinner hardener which is added at the rate of three drops per gram of resin by means of the special pipette provided. This embedding kit is obtainable from E. M. Cromwell & Co. Ltd., Galloway Road, Rye Street, Bishop's Stortford, Herts. (price 25s.).

Specimens can be prepared for mounting in several ways according to the effect required.

Insects may be mounted dry, after having been set in the normal way, or they may be dehydrated and cleared in ether followed by immersion in the prepolymer of the plastic. Larvæ, such as those of mosquitoes, may be fixed in formal-saline or corrosive sublimate. They are then washed and dried for a few minutes on filter paper and mounted as usual.

The method of mounting is as follows:

A glass mould of the required size is prepared by sticking pieces of micro-