ON MANŒUVRES WITH A MECHANIZED FORCE.

By Colonel P. J. Hanafin, D.S.O.

On a recent Southern Command Exercise I was detailed as Assistant Director of Medical Services of a Mobile Force. This force consisted of: 11th Hussars, less one squadron, (an armoured car regiment); 1st Tank Brigade; 7th Infantry Brigade—three battalions with mechanized transport and embussed infantry. These formations had attached to them a very large proportion of ordnance units, supply units, etc., so that the wagon column consisted of 1,004 vehicles. It assembled at Highnam, west of Gloucester, on September 17, 1934.

The special idea of the manœuvres was briefly as follows:—

Eastland and Westland were at war. The frontier running between them was: The Severn to Saul, Cheltenham, Stratford-on-Avon, Coventry. Westland has invaded Eastland and its armies occupy the line: Weston-super-Mare, Bristol, Chipping Sodbury, with Eastland's main position about seven miles south-east of this. Westland's V Corps was crossing the mouth of the Severn and would be east of it by evening of the 17th. The Commander-in-Chief proposed to attack the Eastland army on September 21 and turn its right flank.

On Salisbury Plain were a large number of Eastland aerodromes, munition dumps, etc., in addition to the Second Army Headquarters. The only fighting formations for the defence of this important area were the First Division and one squadron armoured cars in the neighbourhood of Tidworth, Bulford, Netheravon.

The General Officer Commanding Mobile Force was ordered by the
Westland Commander-in-Chief to raid this area, crossing the frontier not earlier than 02.00 hours on the 19th, doing as much damage as possible to important enemy centres and returning to Minety by 15.00 hours on the 21st and to be prepared in time to exploit the success which was expected when Westland attacked the enemy’s armies on the 21st. He thus had sixty-one hours to carry out the raid.

The medical problem presented was entirely novel and the following appreciation was written sitting in a car at Highnam on the afternoon of September 17. It was written very hurriedly and under what might be considered to be active service conditions and may be of interest for that reason if for no other.

The appreciation assumed that medical units in accordance with present war establishments had been provided. Actually two small units, of 2 medical officers, 5 other ranks and 2 motor ambulances each, accompanied the force, so that the appreciation was only of academic interest and was not presented to the General Officer Commanding. Arrangements had, however, been made that the O.C.’s of these units were to assume that the medical units mentioned in Appendices “A” and “B” were mobilized by the night of the 19th/20th and were to consider during the course of the
manoeuvres how these units could deal with the various situations that arose. The assumption as to tactical situations and casualties mentioned in the appreciation have been reviewed by the General Officer Commanding the force and approved by him.

APPRECIATION OF THE SITUATION BY THE A.D.M.S. MOBILE FORCE.
Highnam, September 17, 1934.

(1) Object of the Appreciation.
To consider the best means of preservation of the health of the force and the treatment and evacuation of sick and wounded with the means at our disposal.

(2) Factors Influencing Attainment of Object.
(a) Preservation of Health.—The campaign is being conducted at a healthy time of the year and no serious epidemics are anticipated. The usual colds, injuries, etc., will probably give us a daily sick rate of 0.3 per cent. daily, of which 35 per cent. will be stretcher cases. Two blankets per man will be required at present, and in three weeks' time three per man.

(b) Evacuation of Wounded and Sick.—The means at my disposal for this purpose are totally unsuitable, and should be modified as indicated at once.

A field ambulance (7th) has been provided for use with the 7th Infantry Brigade. This includes sixteen horsed vehicles which must be changed for motor vehicles of corresponding capacity. The field ambulance so modified is shown in Appendix "A."

For use with the Tank Brigade, in accordance with modern formations, a cavalry field ambulance is provided. This is unnecessarily cumbersome for service with a formation where mobility is a vital factor and I suggest that it be replaced as early as possible by a unit which I consider would meet all reasonable requirements and is only one-third of its size. The complete composition of the two medical units mentioned is given in Appendices "A" and "B."

If sanction for the formation of these units is given forthwith, their formation will be sufficiently advanced to permit them to take the field with the mobile force on the night of September 19.

My appreciation of the position as regards casualties is as follows: There is very little previous experience to help in the formation of the estimates given, and I would like an expression of opinion by "G." on this point.

(1) An infantry brigade with mechanized transport will fight on foot as ordinary infantry, and consequently the same difficulty as regards collection of casualties as with an ordinary infantry brigade will be experienced. The ordinary field ambulance organization will, therefore, be required.
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As used on the present occasion, however, the brigade is not likely to be called on to assault a prepared position or to hold one for any length of time. Its action I understand will be more in the nature of a "tip and run game." Casualties will consequently more nearly approximate to those of a cavalry force, and should not exceed 5 per cent. on an average day's fighting. When used as a raiding force the demands of mobility may be such as to call for serious modification of the treatment of wounded, etc., and on occasion, if fighting in a civilized country, it may be essential to leave the more serious cases to the care of the enemy.

All personnel are provided with accommodation on some vehicle, consequently "sitting" or "walking" cases can be accommodated on the "buses" or other vehicles of the brigade. Ambulance wagons need only be provided for stretcher cases and as feeders of sitting casualties to the bus column. In most cases, the troops will not remain for long in immediate fighting contact with the enemy, therefore bearers will not be required as ambulances can drive to the regimental aid posts.

In view of the above, the ambulance provided for the 7th Infantry Brigade will be organized with a light section which is all that will accompany the brigade on occasions such as these. (See Appendix "A").

(2) The Tank Brigade.—Wounded requiring ambulance accommodation will be very few. If a tank is penetrated by a shell, it will be more a case for the undertaker than for the doctor. Apart from this, the bulk of the casualties will be from small splinters of bullet casing, or from "scaling" or splash from the inner side of the armour. These cases will almost all be classified as "sitting" or "walking" cases and can be accommodated on the vehicle from which the relief is drawn.

Wounded (as apart from dead) I should estimate as not more than 4 to 5 per cent, and the proportion of stretcher cases amongst these as 10 per cent.

Casualties in tanks can only receive such first aid treatment as can be given by the crew. All casualties can be brought to the rallying point and, in most cases, to the rendezvous in the tank concerned.

Should it be essential to clear the tanks for further action, serious cases could be dropped out at the rallying point, and the number and position of these notified to the Tank Brigade Field Ambulance with "B" échelon. If the enemy has been driven off the field, it may then be possible for the ambulance cars of the medical unit to collect these cases. If in large numbers, the mobile dressing station can drive to the spot and treat the cases where they are.

At the rendezvous, the tanks are met by the field ambulance, all cases are dressed in the mobile dressing station, sitting cases transferred to the buses or other vehicles from which the relief crews have been drawn, and stretcher cases placed in the ambulance wagons.

If my estimate of the number and nature of casualties is correct, it follows that of a total strength about 1,440 in tanks not more than 57 to
72 would be wounded, and of these 6 to 7 would be stretcher cases (2 car-loads). This estimate is confirmed by a Staff Exercise in the Southern Command in December, 1932, where a Tank Brigade with accessory units in two days' fighting had 75 casualties (equal to 60 wounded). From this it will be seen that a very small medical unit would suffice for a tank brigade. No bearers would be required and very little stretcher carrying capacity. It is essential, however, that the dressing of wounded should be rapidly
carried out, as the time at the rendezvous may be very short, and at the same time the dressing station must be prepared to carry out major (abdominal) operations, as the cases may have to be retained in the unit for several days or, if in a civilized country, left in charge of the local inhabitants.

The dressing station must then be able to come into operation in a few minutes, carry out major operations and still be able to move off at extremely short notice. These requirements can only be met by a dressing station on wheels. When one sees the marvellous caravans that are nowadays built on trailers weighing only a few hundredweight, it will be realized that a little ingenuity could devise a very excellent operating room on such a trailer or on a thirty-hundredweight chassis (see figs. 1 and 2).

This dressing station would carry all the necessary medical equipment in addition to the required staff. A medical unit of the size described, although only one-third of the size of that allotted to a tank brigade in war establishments, could carry out all that is required by considerations of humanity, could efficiently salvage wounded and maintain the morale of the personnel, whilst not seriously interfering with the mobility of the brigade.

Armoured ambulance wagons have been recommended for collection and conveyance of wounded. If plated with armour sufficiently thick to resist a rifle bullet they would either be of enormous weight if big enough to carry four stretchers or else so small as to be worthless on account of their limited carrying capacity.

The medical requirements of an armoured car regiment are very similar to those of a tank battalion. A very small percentage of wounded requiring medical attention is anticipated and all of these can be carried on the car until an opportunity occurs for handing them over to one of the medical units of the force.

In estimating casualties and designing medical units for a tank brigade, wounded only have been considered. My estimate may however be very much upset by the use of mustard gas. From my personal experience of this gas I am convinced that if the outside skin of a tank or armoured car was sprayed with it, all the crew would become casualties unless they immediately abandoned the vehicle until it had been decontaminated. From conversation I have had with members of the Royal Air Force I understand that a line of tanks could be easily sprayed from an aeroplane (each plane can carry forty gallons). If this is so the casualties instead of being 4 per cent to 5 per cent may reach 30 per cent or more. It would be necessary to get an authoritative opinion on this point before coming to any definite conclusions as to the amount of ambulance transport required for these units.

(3) Plan.

For evacuation of sick and wounded the ambulance should be re-organized as indicated forthwith. As mobility is of primary importance on this raid, only the light section of the 7th Field Ambulance and the
Tank Field Ambulance, less two ambulance wagons and the 2nd line lorry, should accompany the force. This will be ample to deal with the casualties as estimated. Should a large number of gas cases result from an air attack on the column on the march, those which require lying accommodation must be provided for on empty supply lorries, the numbers of which will increase daily.

No special precautions for preservation of health need be considered on a raid such as this.

It is not practicable to encumber the column with extra gas clothing, etc. Should clothing become splashed with mustard gas it must be discarded and the man must do the best he can to acquire other garments from the dead or from civilians, even though this may detract from the uniformity usually demanded.

APPENDIX "A."

**7th Field Ambulance.**

Composition as in War Establishments but:

- 6 Limbered G.S. wagons
- 3 Water carts
- 1 Maltese cart
- 1 Officers' mess cart
- 1 Travelling kitchen
- 4 Ambulances, horsed, heavy
- replaced by
- 2 30-cwt. lorries
- 2 Carden-Lloyd utility vehicle
- 3 Motor ambulance wagons
- 3 Trailers, water cart
- 1 Trailer, kitchen

The vehicles of the Field Ambulance then being:

- Bicycle ............. 1
- Motor cycles .......... 4
- Motor cars (2-seater) .. 3
- Motor cars, light ....... 1
- Motor ambulances ...... 9
- Lorries, light .......... 8
- Trailers, water ......... 3
- Trailers, kitchen ...... 1
- Carden-Lloyd utility vehicles ........ 2

In addition to these, 4 buses would be required when the Brigade is embussed.

On a raid, etc., when mobility is essential, the following light section would suffice:

**Personnel—**

- Officers ....... 7
- Other ranks .... 34

**Vehicles—**

- Motor ambulance wagons ..... 8
- Light lorries .......... 2
- Carden-Lloyd utility vehicles .... 2
- Motor cycles ...... 4
- Water trailer ......... 1
- Bus for personnel .... 1
- Light car .......... 1 (for officers)
- Two-seater car .... 1 (for O.C.)

APPENDIX "B."

**Tank Brigade Field Ambulance (2 Sections).**

**Personnel—**

(a) Officers—1 as O.C. Field Ambulance,

- 2 as Section Officers ("A" Section),
- 2 as Section Officers ("B" Section),

Total 5
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(b) Other Ranks—

1. Warrant Officer, as S.M. of Field Ambulance.
2. N.C.O.'s, as Section N.C.O.'s.
3. 2 N.C.O.'s, as Section N.C.O.'s.
4. 6 Privates as Nurs. Ord.'s (includes 1 orderly for each of the 10 ambulances and 50 per cent spares for casualties, etc.).
5. 3 Batmen.

Total 29

(c) Other Ranks—

1. 1 Driver of O.C.'s car.
2. 2 Drivers for Section Officers' cars.
3. 4 Drivers of Mobile Dressing Stations.
4. 2 Drivers as despatch riders (motor cycle).
5. 15 Drivers as motor ambulance drivers (includes 1 driver for each of the 10 ambulances, and 50 per cent spare for casualties).
6. 1 Driver for 30-cwt. lorry.

Total 25

Vehicles—

1. 10 6-wheeled motor ambulance wagons (5 to each section of field ambulance).
2. 2 30-cwt. lorries fitted as Mobile Dressing Stations.
3. 2 6-wheeled cars for use of officers.
4. 1 2-seater car for O.C.
5. 2 Motor cycles for despatch riders.
6. 1 30-cwt. lorry (2nd line transport) for spare kits, etc.

NOTE.—3 men on each ambulance wagon, 1 driver and 2 R.A.M.C., or 2 drivers and 1 R.A.M.C., alternatively, all to be trained in first aid and stretcher drill.

Cases from “B” échelon to be cleared by motor ambulance convoy, when supply column comes forward to refill “B.”

Contrast—

<table>
<thead>
<tr>
<th>Proposed Tank Brigade</th>
<th>Cavalry Field Ambulance</th>
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<tbody>
<tr>
<td>Personnel</td>
<td>54</td>
</tr>
<tr>
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PROGRESS OF MANŒUVRES.

The 7th Infantry Brigade crossed the frontier at 02.00 hours on the 19th, and proceeding on a wide detour via Cheltenham, Burford, Faringdon, arrived at Hungerford shortly after daylight. This town was occupied and held until the night of the 20th. The Tank Brigade left Highnam at 18.00 hours on the 20th, and, less one battalion, proceeded via Cirencester to Hungerford. A battalion of light tanks went via Marlborough to Savernake Forest. In Marlborough they encountered two battalions of infantry with all the anti-tank guns of a brigade. A battle was fought here in which the tanks were declared to have had the following casualties: eight tanks and 40 per cent of “B” échelon. They remained in the forest until the night of the 20th. On the afternoon of the 20th one battalion of infantry was sent from Hungerford to help to hold the forest position.

At about 18.00 hours on the 20th it was decided that if the force was to be back at Minety in condition to take part in the main battle on the 22nd, no further offensive action was possible and the force withdrew during the night of 20th-21st by a still more circuitous route than that by which it had advanced, at first proceeding due east to Newbury and then north to Abingdon and so west and then south to Cirencester and Minety.
Although the great tank action which we hoped to study did not come off, still a number of lessons were learned by the medical units which we hope to amplify next year.

The general conclusions come to were as follows:—

(1) Any medical units to function with a Tank Brigade must be divisible into four independent sections. Tank battalions are despatched on independent subsidiary missions, and even when a Tank Brigade is moving on a single objective different routes may be taken by the various battalions. As will be seen from the unexpected battle in Marlborough any one of these battalions may unexpectedly have a number of casualties. In this case the section of the field ambulance, if with "B" échelon of the light tanks, would probably have had serious casualties itself; still its place was with the échelon.

If the ambulance is to be divisible into four sections one mobile dressing station capable of undertaking major operations should be provided and three of a less pretentious size, the latter possibly mounted on an ambulance wagon chassis.

(2) A large number of lorries would be available for the conveyance of stretcher cases. Much though we may desire to provide every comfort for the wounded, these considerations must give way to military necessity. That necessity in the particular operation was to keep the non-fighting transport as small as possible so as to increase the mobility of the force. In the present mobile force there are already over one thousand such vehicles without counting the transport of the medical services. In the Great War it was not found practicable to use the empty supply lorries for evacuating wounded, but on a raid such as this they can and should be used for this purpose. The lorries in question, as they are in hostile territory, must keep in close touch with the fighting units on all occasions for their own protection. Every day that the force spends away from its base some of these lorries are being emptied of their supplies of ammunition, petrol and rations, and will then be available for the conveyance of stretcher cases. There will be no difficulty about getting into touch with them, as they and the ambulances will move in the same column. This being so, only sufficient ambulance wagons to act as collectors for the lorries need accompany the force. On the raid in question there were 30 lorries available on the first day and 100 by the end of the second day before the withdrawal commenced.

In view of this I consider that only 8 of the 10 ambulance wagons of the Tank Brigade Field Ambulance and 6 of those of the mechanized Field Ambulance should have accompanied the force. The number of ambulance wagons will change with the nature of the operations and when the mobile force is used to roll up the flank of the enemy as was intended on the 22nd inst., all the ambulance wagons of both medical units will probably be required. In such an operation the force will be in closer touch with its base and with other formations of the army, so the number of supply lorries
accompanying it, if any, will be much fewer and the medical units will have to rely on their own transport.

(3) It would appear that the only treatment the wounded in a tank or armoured car could possibly receive during an action and for a short time afterwards would be that which can be given by their comrades. For this reason every man in the Tank Corps and Armoured Car Regiments should be trained in first aid. Training sufficient to enable a man to obtain a St. John's Ambulance Certificate could be given in about twenty lectures of one hour each. This certificate would subsequently be of considerable value in enabling the holder to obtain employment in civil life and every effort should therefore be made to encourage as many men as possible to obtain this certificate.

(4) If, as I am told, the medical officer of a tank battalion cannot be accommodated in an armoured vehicle, so that his services can be utilized at the rallying points, he is of very little use. A further economy may be effected by omitting the medical officer from the war establishments of these units and adding two medical officers to the strength of the ambulance. This would involve the addition of another car for their conveyance, but would release one car from each battalion.

(5) In long drives in a big column of motor vehicles in close formation the effect of exhaust fumes on the eyes and even of carbon monoxide poisoning becomes serious. On the retirement we drove in close formation from 20.00 hours on the 20th to 0.700 hours on the 21st. A large number of men complained of abnormal drowsiness and eye irritation and some were so seriously affected as to require admission to hospital. One man who lay on the floor of a bus was rendered unconscious.

It is hard to see how this trouble is to be avoided. Greater spacing will render the vulnerable "B" échelon dangerously long. It would appear as though the cause of the trouble should be tackled by very careful attention to carburettion. A perfect mixture should result in an exhaust free from carbon monoxide. Some improvements may result from leading exhaust pipes to the top of the vehicle.

(6) The personnel of a tank brigade if caught by the enemy out of their tanks when harboring may suffer severe casualties and the proportion of wounded, stretcher cases, etc., in that event would be the same as those suffered by infantry. Such an event would, however, be rare and would only be likely on a raid into enemy country.

(7) Those of us who saw tanks in action in France and Belgium must get the pictures formed then out of their minds. The use of tanks in direct support of infantry is contrary to modern ideas. In future they will be employed on raids such as has been described above, acting on the enemy's exposed flanks or to follow up a victory. They will consequently require medical units of their own and cannot rely on help from the Divisional Field Ambulances.