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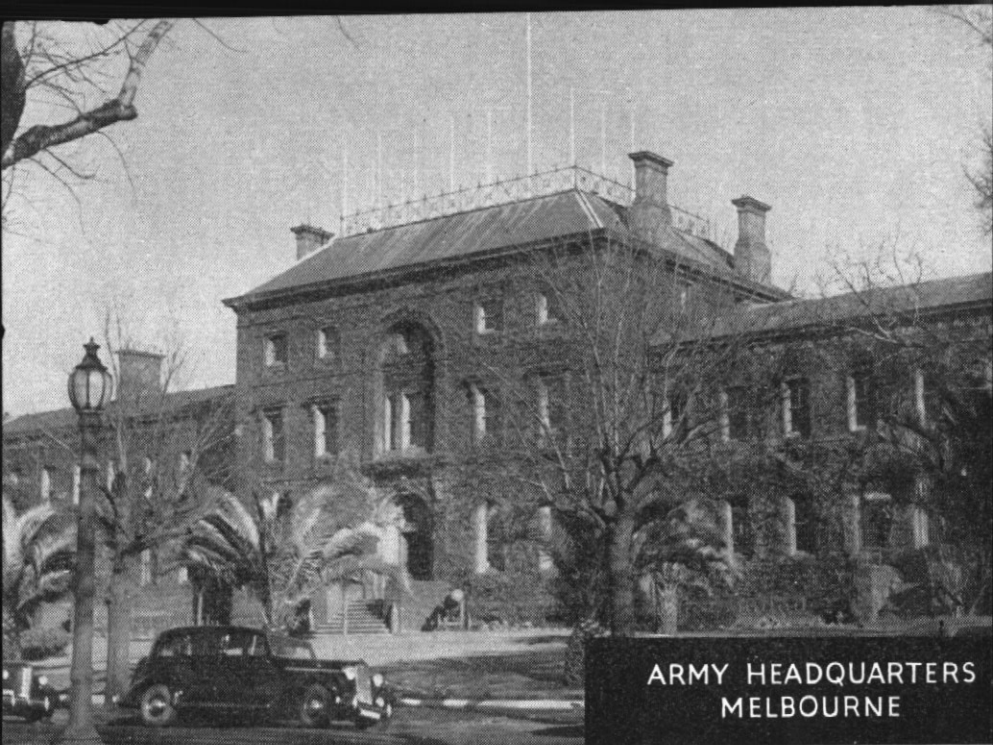
CONTENTS

The National Service System of the British Army	<i>Lieutenant J. C. German</i>	5
The Infantry Section	<i>Brigadier S. H. Porter</i>	9
El Alamein to the River Sangro—5	<i>Lieut-Colonel O. D. Jackson</i>	19
Sea Power	<i>RAN Directorate of Naval Intelligence</i>	30
Organization and Employment of the Army Service Corps	<i>Directorate of Supplies and Transport</i>	34
Field Artillery Rockets	<i>Captain Pierre Martel, Canadian Army</i>	40
The Logistical Planning of Operation Overlord	<i>Lieut-Colonel Frank A. Osmanski, US Army</i>	42

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ARMY HEADQUARTERS
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The
NATIONAL SERVICE SYSTEM
of the
BRITISH ARMY

Lieutenant J. C. German, RAAC.

IN view of the announcement that the Commonwealth Government intends to introduce some form of national service for the armed services, a brief outline of the system at present being followed in the British Army may be of interest to Australian officers.

Terms of Service.

Very broadly, the national serviceman is required to serve for eighteen months, with the option of prolonging his service for a further six months. During this service the soldier may be given a commission, but a single star or stripe is the maximum promotion that he may expect.

Certain exemptions include university students, who may defer service until their professional training is completed, and then be commissioned as doctors, dentists and in other professional capacities. Miners are totally exempt, in an effort to attract Britain's youth to the mines and to maintain essential coal output. For similar reasons farmers are exempt, provided that they have been working on a farm for at least twelve months after leaving school.

Several other categories are exempt, but the remainder must serve their eighteen months in the Royal Navy, Army or Royal Air Force.

Service with the Regular units completed, the soldier must serve for a further five years with the Territorial Army, which is organized on exactly similar lines to the CMF, with the exception that some of the Commanding Officers are Regulars.

Training of the Soldier.

The young national serviceman, for example, may be posted to the Royal Tank Regiment, of which there are eight full-time regiments in Hong Kong, England, Germany and the Canal Zone. He will be posted to the 8th Royal Tank Regiment at Catterick, England, which trains national servicemen for the seven remaining regiments. This duty changes hands in turn, and later the 8th will be relieved of the job. In this regiment, then, the soldier receives his basic general military training, including such subjects as Drill, Small Arms Training, Map Reading, Physical Training and

kindred subjects. Here also he will receive his first specialized training.

Let us assume that our national serviceman is a tank gunner. He will leave Catterick as a qualified Gunner Class 111, and will be posted to one of the Royal Tank Regiments, probably overseas. Assuming that he is posted to the 1st Royal Tank Regiment at Detmold, Germany, he will be received by "A" Squadron, the training squadron, in a draft of about 40 men.

Now he will be sent into the D and M or the Wireless Wing, to receive his second trade training. After a period of nine weeks, he emerges as a signaller, for example, and is classified as a Gunner-Signaller, to be employed in his former capacity, in this case, as a tank gunner.

This man is now considered to be technically proficient enough in his job to be posted to one of the fighting squadrons. Joining "HQ", "B" or "C" Squadrons, he will be absorbed into a troop, and becomes a gunner in a Centurian tank. His training is not yet complete. In his troop, he will receive tactical training. This will include troop tactical training under his troop leader, squadron training follows, and then Regimental, Brigade, Divisional, and finally, about October, Western Union manoeuvres, in which he will be co-operating with soldiers of many nations in manoeuvres carried out on a huge scale.

These manoeuvres are not of much use in teaching him anything new, but they will settle him in his position as gunner, teach him to live comfortably in the field, to cook for himself, to maintain his gun in the field, and allied subjects. After troop and possibly squadron training, the tactical aspect of the

manoeuvres will be above the average soldier's head.

However, the soldier will be able to see a fair cross-section of the Army at work, and will learn to appreciate the other arms. He will also see equipment which he has not seen before, and will get the best possible taste of war that peacetime can give.

The best men are selected by troop leaders and, after the squadron leader's approval, the names will be passed to the Commanding Officer. He may elect to give them one stripe, or send them on a Regimental course for junior NCO's under the RSM during the winter months. There is no reason why a keen and energetic soldier should be unable to receive limited promotion.

Finally, his service completed, the soldier is demobilized and then joins the Territorial army, which involves a fortnight's camp a year and the usual night training, as in the CMF.

Training of the Officer.

The prospective officer joins the 8th Royal Tank Regiment as a national service trooper. He claims a personnel selection interview, and is interviewed by the Personnel Selection Officer at the end of his basic training. If he be considered unsuitable, there the matter ends. However, if he passes the Personnel Selection interview satisfactorily he is posted to Mens (All Arms) OCTU for a concentrated four months' course.

For five weeks he receives infantry training and then specializes in his own arm, in this case Armour. The course is sketchy and the cadet receives a smattering of Military Law, Administration, minor tactics, and

technical subjects. Unfortunately, at present the officer cadet receives all his technical training on the Comet tank and the 77 mm. gun, and thus knows nothing of the Centurian III and 20-pr gun he will be using in his regiment.

Commissioned as Second Lieutenant, the young subaltern joins his regiment, where most of the officers are Regular Officers. He is, however, at no disadvantage, as he knows something of tanks and tank work. His Sandhurst counterpart of the Regular Army has received all his tank training at the Armoured School after leaving Sandhurst. This would not be the case in Australia, as the junior officer receives some tank training at Duntroon.

The Commanding Officer usually sends both types of young officers to the training squadron to do a short course on the Centurian Tank. It comprises about two weeks each of D and M, Wireless and Gunnery. The Tactical training of the young subaltern is the responsibility of the squadron leader, who holds night classes in minor tactics. If manoeuvres are being held at the time of joining the junior officer is sent out as a wireless operator or gunner, and finally commands a tank under an experienced troop leader. No new officer commands a troop upon arrival at his regiment.

Having completed nearly a year's commissioned service, the national service subaltern is demobilized and enters the Territorial Army. Depending on the location of Territorial units, the Armoured officer or soldier is not guaranteed that he will serve with a Territorial armoured regiment, but every effort is made to ensure that his training has not been wasted.

The national service officer who wishes to enter the Regular Army, must relinquish his rank, and serve his full eighteen months at Sandhurst before being recommissioned as Second Lieutenant.

The Character of the Average Soldier.

The average national service soldier does not appear to resent the Army. He is reasonably happy in the regiment, but is very pleased to return to civilian life. The more responsibility thrust upon him the happier he appears to be, and the more likely to join the Regular Army. The vast majority of drivers are very proud of their tanks and the gunners and signallers, to a lesser extent are proud of their equipment and proficiency.

On manoeuvres everyone is in his best form. To most of the city lads the freedom of tank manoeuvres, sleeping under the stars (or huddled against the rain) and cooking for themselves, is all very novel and they revel in it.

The boredom of the winter months is trying and very monotonous. The tanks are eternally maintained, and revision of drill, small arms, map reading and similar general training occupies the soldier's time. This, of course, is inevitable.

Great efforts have been made by the regiment to provide for the soldiers' welfare. As always amongst Englishmen, soccer flourishes. Most sports are available to the soldier, and trips about Germany in sporting teams provides added incentive. The corporals have their own club, and troopers have a very well stocked canteen for amusement within the regiment. Perhaps the most popular of the 1st Royal Tank Regiment's

amenities is the Mayfair Club. This is an OR's dance-cabaret club, and is located outside the camp in the town. Beer is sold, and good band plays nightly to crowded dance floors. Soldiers are allowed to bring their German friends to this cabaret. Certainly, amusements are not lacking.

Advantages of the System.

There are many advantages of the national service system. First and foremost, it provides a body of trained and semi-trained men for the defence of the nation. Secondly, it takes the young man out of his home environment, sends him to foreign countries, educates the illiterate, furthers the education of the literate, and very definitely improves the character of the average man. This latter accomplishment is of prime importance to the country. If the soldier does not elect to remain in the Army, at least the Army has given him a flying start in civil life and responsibilities. Furthermore, if an efficient soldier he has a character reference to present to his prospective employer.

The system keeps the Army ranks relatively full to meet any national emergency. The Regular NCO's and officers are assured of rapid promotion according to merit, due to the jobs created by the body of national servicemen. This should be an incentive to regular enlistments, but too often is not appreciated.

Finally, it gives the keen and energetic national serviceman a taste of the Regular Army, and attracts the best men to enlist.

Disadvantages of the System.

The primary disadvantage is that the system lacks incentive. The

average man, although reasonably happy, is content to drift along through his service, with the certain knowledge of his discharge date. As a result he does not make very great efforts, naturally enough fails to be promoted, and so forms a poor opinion of Army prospects. He has, unfortunately, the knowledge that Lance-Corporal is his highest likely rank.

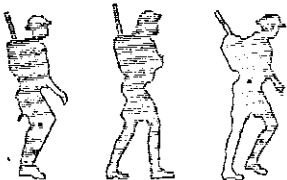
The lethargy thus produced tends to lower the efficiency of the Army as a whole. Discipline has to be more strict and this again lowers the national serviceman's appreciation of the Regular Army.

As always, it is difficult to teach an unwilling student. A volunteer, by his very nature, will absorb instruction at a very much faster rate (particularly noticeable in the CMF), resulting in a satisfied instructor and a satisfactory student. There are many national servicemen who are unwilling to absorb instruction and they impose a severe strain on all the Regular staff. Fortunately, the number is not high.

Finally, national service absorbs a fair proportion of the civilian labour so urgently needed by British Industry. However, since the armed services must have manpower to carry out their tasks, it is hard to see how the loss to industry can be avoided.

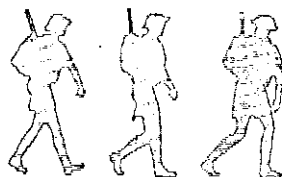
It will be seen that national service is not in itself the complete answer to all the the Army's problems. Sound planning and administration and much hard work are required to extract from it the maximum benefit to the nation, the Army and the national serviceman.

THE INFANTRY SECTION



Brigadier S. H. Porter,
DSO, ED.

Commander,
6th Infantry Brigade.



Introduction.

The most delightful command in the Army is that of the infantry section. It involves the personal leadership and care of a complete all-purpose team, with which the leader lives continuously. For any but a true leader, it is a difficult command; but to one who is capable of summoning and combining the best in his men, it is simple and satisfying.

All the crack divisions and corps ever known were composed of crack sections combined into crack units, and the commander who neglected the training, morale and leadership of his sections was like the architect who devoted his time to blue prints and neglected the bricks. One of Field Marshal Montgomery's successful tricks of leadership was his habit of sparing time to talk to sections of men and to show his interest in them. Sections are human machines which require up to thirty or more years in their production. They are, therefore, the most valuable machines that go to make up an army.

The History of the Section.

It is, no doubt, possible to go back into history and point to a stage in

the development of armies when a General's command became so complex that delegation down to a group which corresponded to the modern section took place. To do this, one would simply be regarding our modern section as a "gang" or a "band" of manpower. One would then become involved with bands of pikemen, bands of horsemen or squads of crossbowmen. Even after the introduction of gunpowder, numbers of "men" often counted most in tactical reckoning. In the middle ages, a commander reckoned his strength in terms of the number of men whom he could marshal and control. All this is evidence of the doctrine of "manpower." However, our modern section is not based upon unrelated manpower.

It is still an assault team—just as the 1914-18 section was an assault team—but, whereas the 1914-18 rifle section was regarded mainly as being representative of the final stage in the evolution of delegation of command, the modern section is primarily a fire unit. Strictly speaking, it is less a rifle section and more a light machinegun team. It is not based upon the optimum number of individuals, each armed with

a weapon, whom a single leader is able to command. It is based upon a highly efficient machine gun which is its main weapon in the fire-fight of a battle, and members of the section are organized on the basis of:—

- (a) Providing sufficient personnel (and relief personnel) to man the gun in action.
- (b) Providing sufficient men to protect the gun numbers while the latter are executing their tasks, also to complete the assault phase of attack.
- (c) Providing sufficient men to carry ammunition for the gun, so that it may operate independently of transport.
- (d) Catering for the fact that a section seldom functions with full strength in numbers.

In fact, the designer of the 1914-18 section claimed that a section should number no more than six, because a single commander could not command more than six other men. (In modern battle, it is doubtful whether any individual could divide efficiently his attention among six terminal points of command, if such was necessary).

Yet the designer of the modern section has produced a team of up to eleven men, which has proved a success in battle. This fact points to two others:—

- (a) The modern section is NOT based upon the direct command of men, but upon the application of fire power.
- (b) A new light has to be thrown upon "command" and "control." We must think in terms of "leadership" and "co-operation."

For these reasons, it would appear that early bands of pikemen, and even the 1914-18 rifle section, provide no complete parallel for the modern infantry section.

In 1919-21 our tactics were almost revolutionized by the realization that the machine gun has a most decisive influence upon the final stages of battle—that stage which requires the attacker to advance over the last 200 yards. Guns sighted in forward positions where they could be fired across the front were found to be capable of providing an obstacle of fire, with their dangerous space and their beaten zones stretching like fences of bullets for hundreds of yards, out of all proportion to the small arms fire of forward troops armed with rifles.

Arming some of the forward sub-units with light automatics was an early measure, but the resultant Lewis gun, even though its fire power was reckoned as the equivalent of 30 rifles, was an unsatisfactory weapon from many points of view.

The two main advances came in the form of an anti-MG weapon which could be fired by infantry at targets which the artillery had not touched in their preliminary fire, and in the greater use of MG's in forward roles.

The mortar survived tests and research and became the "infantry cannon" for close support, and it remains one of our most valuable weapons. Also, the infantry battalion became possessed of its own medium machine guns to be used:—

- (a) As forward guns.
- (b) As supporting guns.

- (c) As reserve firepower of a mobile character.

While the mortar proved its worth, as did the MMG in supporting and reserve roles, the forward MMG proved to be deficient in mobility and self protection during the attack. It also proved to be no better than a lighter weapon in a forward role in defence. These facts prompted a search for:—

- (a) A better method of transporting MMG's, so that they would have self-protection while leap-frogging forward with leading infantry.
- (b) A less conspicuous, lighter MG which could be easily man-handled and quickly brought into action. (The Vickers gun is fired from a relatively heavy tripod, with the firer in a sitting position.)

Eventually further developments followed—the carrier and the streamlined, longer-range bullet. But the important step took the form of a Bren light MG, an instrument which took over the role of "forward MG" from the Vickers and which was given to the rifle company and also mounted in a carrier for extra-wide flanking fire tasks. We have since re-armed the carrier with a Vickers gun.

Every section of a Rifle Coy. became a LMG section as well as a rifle section, and a platoon commander could use one or more sections, as MG's or riflemen according to his role and his plan.

This evolution of application of fire is the history of the birth of the modern infantry section. The knowledge of it should clear the approach to section tactics and give the stu-

dent a picture of the main potentials of the section.

A More Detailed Aspect of the Section's Weapons.

To reiterate, the LMG, used as a light machine gun, is the section's main weapon in the fire fight.

However, the ultimate aim of infantry is to close with the enemy, or what is left of him, and remove final traces of him. This necessitates assault, the occupation of newly-won ground, and pursuit.

Thus the section has to be equipped with:—

- (a) Weapons to produce concentrations or volumes of fire in the fire fight.
- (b) Assaulting weapons.
- (c) Digging "weapons."
- (d) Marching "weapons."

Pre-Assault Weapons.

When first introduced, the Bren LMG was issued, complete with a light tripod, as a replacement for the Lewis Gun (light automatic). Very soon, it was found that, fired from its bipod mounting, it could produce sufficiently well the effect of a forward MG. However, introducing the gun in this manner was an excellent idea, for it laid emphasis upon the fact that here was a machine gun, and not merely a light automatic. There is still a proportion of tripods available to a battalion for special roles in defence or for A/A mountings.

The rifle, when used expertly, is capable of inflicting casualties on an enemy at ranges up to 600 yards or more. In certain circumstances a marksman with a well-cared-for

rifle may even produce the same effect as a light machine gunner with his Bren, and with far less ammunition. After all, it requires only one effectively-fired round to produce a casualty. However, one rifleman cannot be expected to produce the same accurate concentration of fire on a point target as can a machine gunner. But, when a consistent, slow rate of fire on a linear target is required, six riflemen may produce a better result than a machine gunner with his Bren.

Therefore, in the initial stages of the fire fight, and in the penultimate stage of the attack, the most effective section weapons are:—

- (a) The LMG—fired "single shot" like a rifle, or as an MG.
- (b) The rifle—fired as an individual weapon (as in sniping or snap-shooting) or collectively with other rifles and the LMG, in what may be termed a "Section Shoot" under the fire control of the section leader or his deputy.

Assaulting Weapons.

In 1937, a Soviet Military writer wrote: "The Red Army has solved every tactical problem except that of covering the advance of assaulting troops as they complete the last 100 yards of their attack." This writer apparently presupposed that it was not possible always to employ tanks in the assault, and that there was a stage when supporting weapons had to "lift" in order to allow the assault to proceed.

The answer to this problem, assuming that we are to avoid the old doctrine of pouring in numbers of men so that we are sure to have sufficient survivors to overpower the enemy, is to arm the assaulting

troops with weapons which produce volumes of close-range fire; in other words, to produce their own covering fire as they move in to the enemy's positions. One of the reasons why the A.I.F. succeeded in Syria was that our troops were better equipped in this respect than were the French, and that we closed with the enemy at almost every opportunity. We were armed with the submachine gun, which proved to be an ideal complementary weapon to the bayonet, and the French were not so armed.

Assaulting weapons are, therefore:—

- (a) The bayonet.
- (b) The sub-machine gun.
- (c) The grenade.
- (d) The rifle, fired from the hip.
- (e) The LMG (in certain circumstances), fired as a SMG.
- (f) When specially provided, the flame thrower.

Digging Weapons.

If provided with a digging tool, which allows his rapid development of a fire position, the infantryman may be regarded as having another weapon. Digging must be regarded as positive, offensive, and contributory to maintenance of offensive action. One man, well armed, well "dug in" and well concealed has been known to hold up the advance of a whole battalion. In every battle, whether a force is attacking, defending or moving, some troops occupy positions in support of others who are mobile. All phases of operations have as a common feature "offensive action." Therefore the art of digging must be mastered as part of our method of increasing our offensive action. "Not funk holes, but fighting holes."

Marching Weapons.

In similar light, a soldier's equipment may be regarded as a weapon. If the cordite which propels a bullet is a weapon, so is the wherewithal which assists a soldier forward—his boots, his clothing and his equipment. All these require correct usage and maintenance. Battles have been lost because of slow, painful movement caused by equipment failures. Boots are probably the outstanding items of equipment in this connection; for the fate of an army's stomach does not overshadow the fate of its feet, from the point of view of tactical significance.

Physical fitness and morale are all important. Both may suffer as a result of badly cared for and badly worn equipment.

Leadership of the Section.

Team Work.

There are two alternative ways of inspiring action — "cracking the whip" or giving the signal to start. Sometimes, in exceptional circumstances, "whip cracking" may be warranted; but, when team work has been developed to its proper state, leadership should be a matter of two-way co-operation, with the leader giving the signals or commands necessary for co-ordination and control. This requires training of the team and the leader, so, it has been wisely stated, leadership in battle is a product of training.

Combination of Various Roles.

In the section every member has a role, and the successful leader is he who is able to combine individual roles by encouraging wholehearted, intelligent contribution by each member. Although a leader must

practice the basic moral principles of manliness, leadership is not difficult when preceded by knowledge.

A simple example of the two-way contribution to leadership is to be found in the recognition of a target and the application of fire to it.

Every pair of eyes in the section should seek its whereabouts and, when discovered, estimate its range. Information should pass quietly and efficiently among those concerned. The Section Leader will then use the combined information to decide upon a fire plan, and order its commencement. This procedure should produce a better result than in circumstances whereby the Section Leader assumes sole responsibility for discovering the target, estimating its range and conveying a description of target and plan to unanticipating and idle brains.

Grouping Individuals.

Next comes recognition of the fact that two or three men are capable of combining their efforts by tacit, mutual consent, as when three friends go on leave together. No one is really "boss," but a satisfactory itinerary emerges and is acted upon by common consent. This important factor provides the means of overcoming the difficulty presented when a commander is faced with more than six terminal points of control, the old argument supporting the section of six as a maximum number possible for direct control.

Combining this factor with the thought already expressed — that leadership is a matter of combining roles—it may be seen that leadership is further simplified by grouping individuals with similar roles,

so that each group becomes a terminal point of control, thus reducing the terminal points to:—

- (a) The group firing the gun.
- (b) The group providing protection to one or another flank, or to the front, or
- (c) A reserve group.

To sum up, the main points which produce Section leadership are, therefore:—

- (a) Voluntary team work.
- (b) Combination of roles, under efficient direction.
- (c) Grouping of individuals based upon natural instincts of friendship and similarity of roles.
- (d) Thorough training, which builds mutual understanding and trust.

It is not intended to include a study of the moral qualities of a leader in this lecture, but, to complete the points laid down, one should conclude with a reminder that a leader is able to inspire rather than drive, only when his knowledge and his moral code command respect.

Roles in Relation to Methods.

One of the most difficult problems confronting a Section Leader was, "How to place the section on the ground, for best results in applying fire power and in making use of cover afforded by ground formations." In the modern section, with the conception of an LMG team supported by rifles, etc., it is best to forget diagrammatic patterns and concentrate upon roles. The problem may then be reduced to simplicity.

There are four main circumstances

in which a Section Leader may find his section:—

- (a) The section operating singly, as in a section patrol or an isolated action.
- (b) The section operating with other sections as part of a higher command.
- (c) The section operating purely as a LMG team.
- (d) The section operating as a rifle section, as in the assault and in phases immediately preceding the assault.

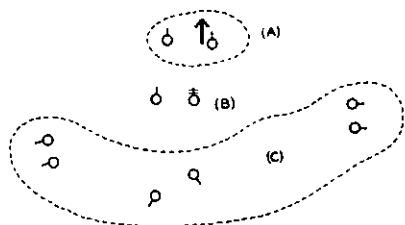
Study of the section operating singly is the most important, as other circumstances merely call for adaptations of roles to meet conditions peculiar to each. If, for example, the section is part of a reserve in a battalion attack, there are few problems of control or method. Also, when there are other sections on either flank, there are not the same problems of flank protection as in the case of the section moving or fighting by itself. We will then devote our attention to a simple case of a section moving and going to ground while operating singly.

Roles, as in the case of the section deploying and going into a fire position with the LMG assuming the main task, are as follows:—

- (a) Gun group in a suitable fire position, the main essential being an adequate field of fire in relation to the task in hand.
- (b) Section Leader and one other in position to control the LMG fire, the main essentials being a field of view and a position of control.
- (c) Remainder disposed for flank protection and re-supply of ammunition to the gun.

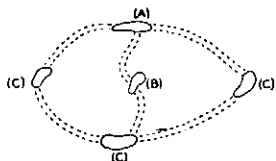
LEGEND

- ♂ SECTION LEADER
- ♂ 2 I/C
- ♂ INDIVIDUAL
- ↑ LIGHT MACHINE GUN

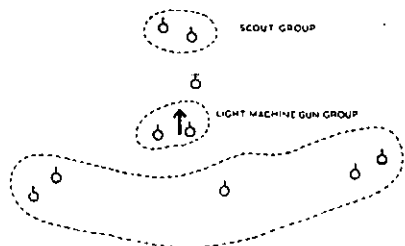


Flank protection groups must be far enough away from the gun to command approaches to its position, and near enough to be within control of the Section Leader.

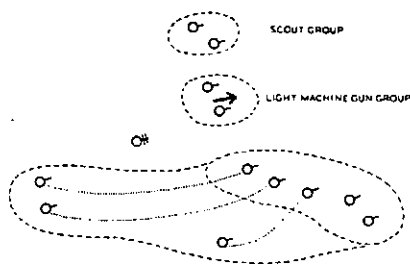
If the section remained in position for such time as was necessary to develop a section post with all-round protection, its layout would be roughly in accordance with the dispositions shown in the following diagram.



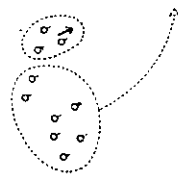
If required to advance in extended formation over very open ground, again it would maintain the same dispositions, unless forward protection was required. It may then look something like this:—



If the whole fire of gun and rifles was required to a particular flank, the formation may swing into a formation similar to this:—



Or, if the Section Leader planned to assault an enemy post while giving covering fire with his LMG from a static fire position, he may perform a movement like this:—



In this case, there are two main roles:—

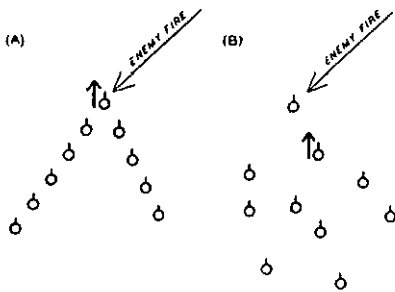
- (a) The LMG group providing covering fire while the remainder of the section advances to a position from which the assault will be delivered.
- (b) The riflemen and sub-machine gunners executing the assault.

The essence of his method of disposing of his groups is based upon:—

- (a) What roles are necessary?
- (b) Where must each group be on the ground in order to execute its respective role?

No longer need he think of a geometric pattern which may easily

conflict with common sense. Compare, for example, the relative merits of the two methods of deployment illustrated in the following diagram:—



In (b) each small group is required to use its own initiative in performing its role and helping the section perform its task. There are more heads than one set upon such problems as:—

- (a) Observing.
- (b) Choosing ground.
 - (i) for a line of advance.
 - (ii) for possible fire positions.
- (c) Keeping two-way communications.
- (d) Maintaining preparedness for mutual support within and, if necessary, without the section.

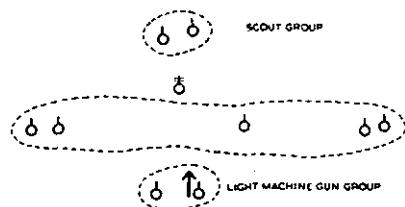
The Section Operating as Part of the Platoon.

More often than not there will be little difference in the deployment, movement and method of operation of the section when it is acting under the continuous control of the Platoon Commander to that which we saw when it was operating singly. In the latter circumstances the Platoon Commander had issued a task to the Section Commander and had left the execution of the plan for completing the task to him. In a pla-

toon operating, tasks are still issued, but sections are subject to co-ordination and control by the Platoon Commander, even to the extent of having tasks cancelled and others set at short notice.

The main difference lies in the fact that there will be mutual support between sections. There will still be a recognition of responsibility for all-round protection, for instance, but the task of attaining it will be easier in most circumstances. There may be a certain amount of specialisation, as when a section is given a role of forward section in an advance. Generally, however, there will be little change in the allotment of roles to individuals.

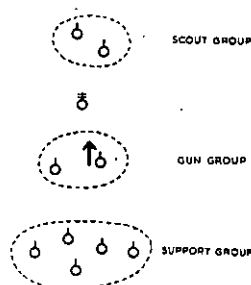
A Platoon Commander may choose to use one or more sections to cover a wide front during an advance. In this case the LMG groups will be preceded by rifle groups in a general formation which is practically "line." It may be thought of as the normal formation "flattened" out for the occasion.



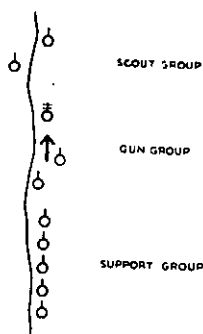
In the assault it was almost a rule that the LMG group should be kept back where it could be at hand to take part in re-organization on the objective, yet could avoid loss in the actual assault. In practice it was found to be essential that the LMG should not be separated from the remainder of the section for more than a brief interval. At the same time it was found that a con-

stant reminder of its presence in the section was advantageous. Thus it was gradually recognised as an assault weapon, and in close country particularly it was often fired, like a SMG, on the move with the leading troops. Experiments were even conducted with a view to fitting it with a bayonet.

If section formations are viewed from the point of view of allocating roles to groups within the section, there need be no difficulty in choosing a "shape on the ground." If more danger is likely to come from one flank than from another, groups may be allotted to protection roles accordingly. If there are likely to be greater opportunities for rifle groups than the LMG group, then it is wise to treat the LMG group as a reserve within the section, and vice versa. Again, if the type of ground favours a "single file" rather than a "moving perimeter" formation, then the normal formation may be compressed into a single file. In the South-West Pacific Area it was common to recognize three groups: "Gun Group," "Scout Group," and "Support Group" (or "Rifle Group"). Normally, these groups deployed thus:—



However, when moving on a jungle trail, the groups compressed into single file thus:—



Type of Fire in Relation to Tasks.

Unless it is considered advisable to reveal the presence of the LMG for "effect"—as, perhaps, during a withdrawal, it should be a fast rule that the gun is carried slung like a rifle and fired "single shot" like a rifle, until such time as its concentrated fire is likely to be decisive.

During the stages of battle when distributed fire of the nature calculated to "keep the enemy's heads down" is required, this fire is best produced by rifles. Each man would then aim at a point in the linear section target corresponding with his relative position in the section. In these circumstances distributed automatic fire would be wasteful and no more effective than well-aimed single shots. On the other hand, a time will come when either a concentration of fire at a point target or a sustained volume of fire is needed. In these latter circumstances, the Bren is the more likely weapon. In some cases, opportunity targets will warrant every weapon firing "rapid."

The Section Leader should use the type of fire best suited to a particular task in the same way as a

carpenter uses the right tool for a particular job. In this way he will attain economy in manpower and ammunition. He must continually appreciate his task in terms of whether he will operate his section as:—

- (a) A rifle section.
- (b) An LMG.
- (c) A combination of both.

The Effect of Reduced Personnel.

Although we have painted a picture of a section operating at full strength, casualties and the provision of LOB personnel usually reduce a section to below the optimum. The question has often been asked: "When does a section cease to exist as such?"

With each reduction of numbers there must come a reduction in:—

- (a) Firers.
- (b) Ammunition carriers.
- (c) Protection.

Hence, mobility or firepower must suffer. But a section may still produce LMG fire with one man and the rule is that it fights "to the last round and the last man." I have seen a section of two men fire an LMG and an SMG with such effect that the remainder of the company to which it belonged was able to extricate itself from a situation which

threatened it with complete destruction. Both men earned the MM.

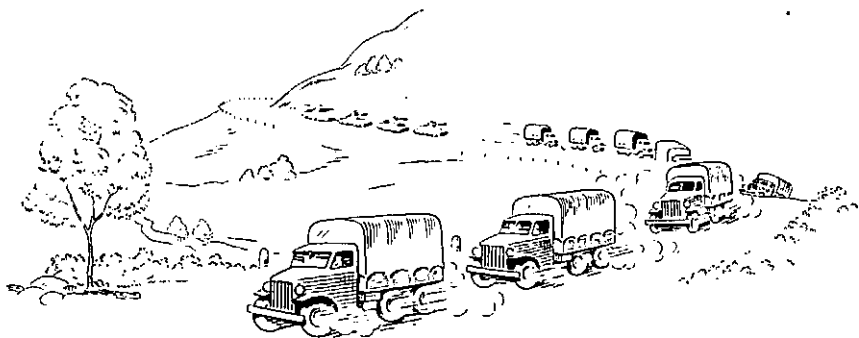
As numbers fall away the support group will disappear, followed by the group which may be protecting the LMG. Finally the gun group may reduce until the Section Leader and gunner become one. By this time, some other section must be called upon to provide reinforcement.

A section of six or more men is usually able to perform sufficiently well to be regarded as an efficient team. Below five there are distinct restrictions, but the section can carry on.

Conclusion.

This is by no means the complete story of the section. It must be regarded as the aperitif to a long and interesting study. I have barely touched upon section tactics, but have sought to clear away some of the misconceptions which could hinder progress in gaining a thorough knowledge of minor tactics. If the textbooks which are devoted to this subject are read as a "follow on" I am confident that the average student will find in them easily digestible theory. It is then only a matter of applying common sense in working out problems on actual pieces of ground—the more problems the better—and the attainment of a reasonable understanding will be assured.

Alamein to the Sangro—Part 5



THE CAMPAIGN IN ITALY

Lieutenant-Colonel O. D. Jackson,
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The Situation as at 20 September, 1943.

The Italian armistice apparently had not seriously weakened the German position in Italy. It seemed that the general pattern of defensive operations included the holding of the Port of Naples for as long as possible, while in the central and eastern sectors the high ground north of Salerno was to be used as a pivot for a general withdrawal. There was obviously little or no hope of a sudden collapse of German resistance.

The immediate Allied objectives were now the important group of airfields at Foggia and the port of Naples. As far as the Eighth Army was concerned the scope of its operations had developed considerably from the original intention of

securing the Straits of Messina. As a result of the German opposition to the Americans at Salerno, the Eighth Army had advanced to Potenza at considerable speed, and it was apparent that extensive administrative reorganization and build up was necessary before any major advance could be undertaken.

In view of the projected advance on Foggia the two main tasks confronting the Eighth Army were:—

The necessity of switching the administrative axis from the "toe" to the ports in south-east Italy, namely, Taranto, Brindisi and Bari. This was a major undertaking and would require both time and heavy commitments in shipping. The port capacity of Taranto and Bari was largely absorbed by troop convoys, and Brindisi could not be opened

before 27 September. It became apparent, therefore, that the Eighth Army would not be able to operate in strength forward of the present line, Bari-Altamura-Potenza, before 1 October.

Secondly, extensive regrouping within the Eighth Army was required to transfer the main thrust from the west to the east flank. On 24 September it was agreed that the Salerno bridgehead was secure and that the Eighth Army regrouping could begin immediately.

The Army plan was now for General Dempsey's 13 Corps (1 Canadian and 78 Divisions, two armoured brigades and commandos) to lead the advance on Foggia, while 5 Corps (1 Airborne Division and 8 Indian Division, which was arriving at Taranto) was to remain in the Taranto area, and subsequently move forward behind 13 Corps and protect the west flank. 5 Division was to remain at Potenza and form a pivot for the advance and a link with the Fifth

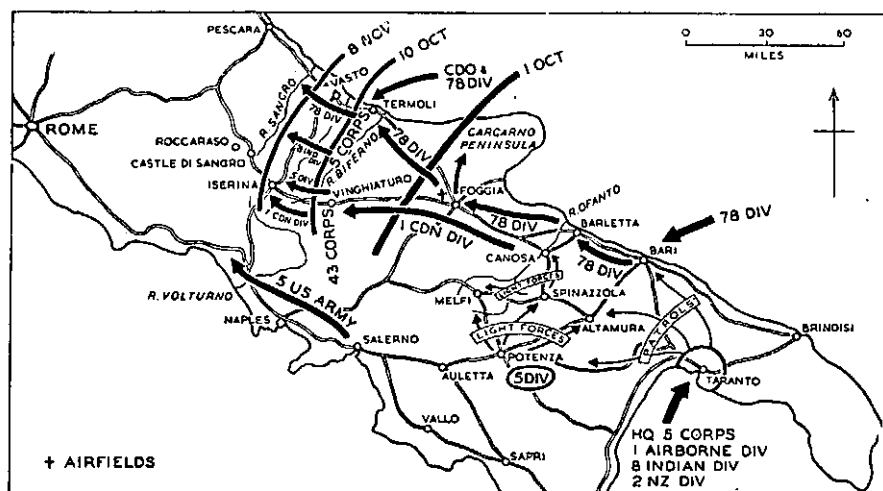
United States Army. This division was to remain under the command of 13 Corps.

No major forces were to move forward of the present general line before 1 October.

The Advance of Light Forces to Foggia.

Although no major operations could be undertaken, orders had been issued on 20 September for 13 Corps to dispatch light forces to Spinazzola and Melfi. 5 Corps had been ordered to continue aggressive patrolling northwards along the east coast axis. (See Map 1.)

By 26 September, 13 Corps patrols had pushed through Spinazzola to reach Canosa and Melfi, while in the east coast sector 5 Corps patrols penetrated far and wide. Elements of 78 Division, which had landed at Bari on 22 and 23 September, pushed northward, and by 27 September had driven German rearguards out of Foggia and cleared



Map 1.

the Gargarno Peninsula. It now became apparent that the German forces had reorganized sufficiently to make a stand in the hilly country to the north and west of the Foggia plain.

The Advance to the River Biferno.

On 1 October, 13 Corps began its advance from the line Barletta-Canosa with 78 Division on the coast road axis and 1 Canadian Division on the left divided into the mountains against Vinchiatureo.

The first serious action was fought across the River Biferno and near the port of Termoli. During the night 2/3 October, commandos were landed at Termoli and a bridgehead was established across the Biferno. The following night, a brigade of 78 Division was landed at Termoli to reinforce the commandos.

German reaction to these operations was rapid. 16 Panzer Division was moved hastily from Fifth United States Army front to launch strong counter attacks against both the Termoli bridgehead and the bridgehead established across the Biferno. Some very bitter fighting took place and on 5 October one of these counter attacks penetrated as far as Termoli itself. During this period the Biferno was in flood and had interfered with 78 Division bridging operations preventing the passage of tanks and supporting weapons.

After several days of dogged fighting, in which the Desert Air Force played a valuable part, the situation was restored, and on 7 October the German forces withdrew northward to the next river line, the Trigno. Here positions covering the river were established by 16 Panzer Divi-

sion plus elements from 26 Panzer and 1 German Parachute Divisions. As had been expected, the administrative situation again enforced a pause before the advance could be resumed.

On the left, 1 Canadian Division had made slow progress in the difficult mountainous country and it was not until 10 October that Vinchiatureo was taken. Here again, administrative considerations precluded any further immediate advance.

The thrusts launched by 78 and 1 Canadian Divisions had now diverged considerably and the front had become too wide for control by one corps. Accordingly extensive re-grouping was carried out. 5 Corps took over the coastal sector including 78 Division, while in 13 Corps, on the inland sector, 5 Division was brought forward from Foggia to operate on the right of 1 Canadian Division. Thus the frontage had been increased from two to three divisions and there were now two corps forward. In addition 2 New Zealand Division was arriving at Taranto, where it was to remain temporarily in Army reserve.

The Resumption of the Advance from the Biferno.

The next task allotted to the Eighth Army was to advance to the eastern sectors of the Rome Line, that is the road running east-west across the Peninsula from Pescara to Rome. There were two major factors controlling the planning of this advance:—

- (a) The administrative organization had not been able to keep pace with the operations as they had developed.

(b) The usual severe Adriatic winter was setting in and there was no time to lose since winter conditions would favour the German defence. Progress off the main roads would be impossible owing to mud and snow, while violent fluctuations in the mountain torrents would create enormous bridging difficulties. In addition, air operations would be severely limited by poor visibility.

The most serious factor, however, was the obvious intention of the German Command to contest vigorously the Allied approach to Rome. The general withdrawal had ceased, German reinforcements were arriving and the Allied advance was meeting determined opposition across the whole front.

In mid-October, while the Eighth Army was making preparations for the resumption of its advance, the Fifth United States Army had fought its way across the Volturno, but German resistance continued to strengthen. The Eighth Army was now opposed by four divisions grouped into 76 Panzer Corps (16 and 26 Panzer, 29 Panzer Grenadier and 1 Parachute Divisions).

The Army plan now entailed diversionary operations by 13 Corps against Isernia on the western flank, followed by a strong thrust in the east by 5 Corps to cross the River Trigno. 13 Corps was to advance from Vinchiatturo on 28 October and the 5 Corps thrust was to begin on the night 30/31 October. It was anticipated that no great difficulty would be experienced in crossing the Trigno and 5 Corps was ordered to carry its attack through to the

major German defence line, which was being prepared covering the River Sangro.

To safeguard the Foggia airfields and to provide a firm base, 2 New Zealand Division was ordered forward to the Foggia plain.

Bad weather and successful patrol action caused changes in the Army plan. On 22 October 78 Division obtained a footing across the Trigno, but, owing to very heavy rain which followed, this bridgehead could not be reinforced and the opportunity was lost. The rain also forced a one-day postponement of the 13 Corps advance in the west.

On the night 2/3 November, the 5 Corps attack across the Trigno began with 78 Division on the right and 8 Indian Division on the left. During the following two days and nights these divisions made steady progress in spite of firm resistance. The German forces then began to withdraw to the Sangro.

By 8 November, 78 Division had established itself on the high ground overlooking the river from the south and 8 Indian Division was moving up on its left.

To the west, 13 Corps had continued to advance in face of strengthening German resistance. Mountain villages had been fortified and used as holding positions, which 13 Corps found very difficult to reduce. When forced to withdraw the Germans had destroyed all available accommodation so that the attacking troops found little in the way of shelter against the rain and winds, and the inevitable extensive demolitions had also caused long delays. By 8 November, 13 Corps had taken Isernia.

Once again a pause for administrative reorganization was necessary before a major attack could be mounted across the formidable obstacle formed by the River Sangro.

Comments on the Advance from Potenza to the River Sangro.

There are two highlights which are immediately apparent in any review of these operations:—

A loss of flexibility in the Eighth Army, due to the inability of the administrative organization to keep pace with the speedy advance.

The excellent results achieved by the light forces during the advance from Potenza and Taranto to the Foggia plain.

With regard to the administrative situation, it should be noted that it was this factor which caused the pauses at the Cantazaro neck, on the Bari-Potenza line, at the River Biferno, and again at the River Sangro. Further, during the advance from Potenza to Foggia it caused the Eighth Army to reduce its strengths in the forward area to light forces only.

These limitations not only gave the German forces time to reinforce their front, and to establish defences above the Foggia plain and north of the River Sangro, but even more important, they were the direct cause of the situation in which the Eighth Army now found itself. With winter closing in the Army was faced with a major battle at the Sangro before they could close up to the Rome line. The possibility of a quick break through the Rome line was now very remote.

It is important then to examine the reasons behind these administrative weaknesses. They may be summarized as:—

● The rather nebulous appreciation for the development of operations after the assault landing. To quote General de Guingand, "I don't say the High Command had an easy task, but I believe that greater administrative foresight might have avoided some delay." Further the landing of 5 Corps in the Taranto-Bari area had been carried out at very short notice and the scale of administrative support allotted to it had been a minimum one.

● The Eighth Army build up had been incomplete, as a proportion of the units and supplies originally allotted to the Army had been diverted to operation AVALANCHE, while the complete priority awarded to the Fifth United States Army had absorbed such reserves of administrative resources as were available in the Mediterranean. The planned rate of build up had been reduced further by the withdrawal of a large proportion of the already slender resources of shipping and craft in preparation for the assault on Normandy.

● The effects of the mountainous country combined with the extensive German demolitions, which required the forward movement of enormous quantities of Bailey bridging, plus other engineer equipment, and caused considerable difficulties in the movement of large bodies of troops and quantities of stores over the meagre lines of communication.

All these considerations point to

one of the most important lessons of the campaign in Italy, namely, the absolute necessity for a great deal of forethought and careful administrative planning at all levels together with the provision of adequate resources to enable the administrative machine to function efficiently.

The second highlight of these operations is the advance of the light forces. The lesson is not so much what they achieved, but rather the manner in which they achieved it. Their success was due mainly to the rapidity of their advance and their bold offensive spirit. An excellent illustration of the sound use of two basic principles, flexibility and offensive action. Admittedly German opposition was very light, but there is little doubt that, had the British advance been limited to the speed of the main forces, this opposition must have been much stronger and the Germans would probably have been able to reorganize more quickly and establish defences farther south than they were actually able to do.

A more detailed examination of this phase of operations reveals at least four more important features. Firstly, the rapid regrouping after the capture of Potenza, and the switching of the main axis of attack (and hence the main arteries of administration) from the central sector to the east coast sector, again provides proof of the high standard of staff planning and movement control achieved in the Eighth Army. These attributes are even more apparent when consideration is given to the difficult terrain in which the forces were moving, the paucity of communications over which the ad-

ministrative echelons had to operate and the inadequate resources available in the forward area, particularly with regard to transport columns.

Secondly, as in the Sicilian operations, it is clear that the operations were again designed to secure the main centres of communication as quickly as possible, for example the road and railway centres at Potenza, Foggia, Vinchiaturro, Isernia and Termoli. In this way the power of manoeuvre of the British forces over the difficult terrain was increased and the flexibility of the German defence proportionately decreased.

Thirdly, the seaborne hooks delivered by a commando and one brigade of 78 Division at Termoli provide excellent examples of the use of flexibility borne of the control of sea and air, to enable an attack to be delivered from an unexpected direction. It was unfortunate that adverse weather conditions prevented the exploitation of the initial advantage gained.

Finally, the destruction of accommodation facilities by the Germans during their withdrawal up the Apennine range caused the troops of 13 Corps to suffer great hardships and brought home the necessity for the provision of shelter for troops exposed to severe climatic conditions. This lesson was fully recognized by the Eighth Army, and when the force faced similar climatic conditions the following winter on the Senio River line in northern Italy, full use was made of all possible accommodation facilities. As the winter approached offensive operations were designed to secure cities and villages close to the Senio River. This shelter was then used as bases

for limited offensive operation during the worst winter months.

Preparation for the Battle of the Sangro.

The German "Winter Line" was based on a strong natural position north of the River Sangro. The level of the river was dependent upon the amount of rain falling in the mountains. During the second week in November it was in flood, but at certain times it was fordable. On the south bank lies an escarpment and on the north a low-lying plain extends to a steep ridge (Sangro Ridge) along which the main German positions were located. (See Map 2).

The axis chosen for the main attack lay across Sangro Ridge to S. Vito and Lanciano, thence northwards to Pescara and Chieti, the main reasons for this choice being:

- The main coastal road was available as opposed to the roads

through the mountainous country in the central and western sectors.

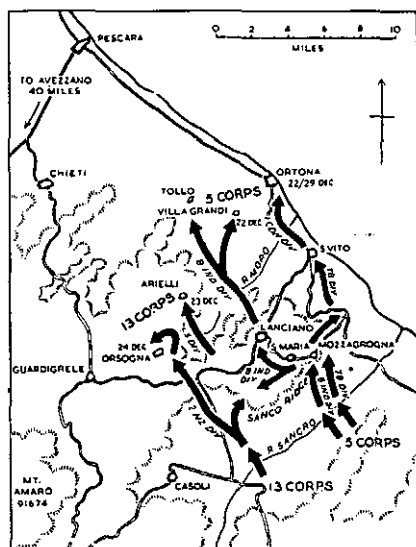
- An attack on this axis could be mounted quickly and be facilitated by full artillery support.

- The coastal area was best suited for air operations and an attack close to the sea could also be supported by naval gunfire.

At a conference held at Army Group Headquarters at Bari General Montgomery was given approval to go ahead with the attack as planned and for the development of subsequent operations from Chieti westward towards Avezzano to help the Fifth United States Army to take Rome. It was also agreed that during the Sangro operations, the Americans would endeavour to pin the German forces to their front, and thus prevent reinforcements being sent from the west coast sector to the Sangro.

13 Corps was ordered to advance immediately to secure Castel Di Sangro and Roccaraso, while the Fifth United States Army was asked to co-operate by increasing its activity in the west. These operations were designed to deceive the German Command as to the direction of the main thrust.

The main attack, directed on S. Maria, was to be delivered on a very narrow front by 5 Corps with 78 Division on the right and 8 Indian Division on the left, 4 Armoured Brigade in support. 2 New Zealand Division was to move forward from Army reserve and take over the sector then held by 8 Indian Division to release the latter for its task in the attack. The target date was 20 November, and the first main objective



Map 2.

was fixed as the line Ortona-Lanciano. Unfortunately, weather conditions deteriorated rapidly. Heavy rain turned the countryside into a sea of mud and, as at least two days of fine weather were necessary before the country could become passable, the plan was subjected to continual postponements and finally modified to limit the scope of the attack.

However, in spite of the shocking conditions, 78 Division again beat the gun. During the period 9 to 15 November, this division succeeded in crossing the Sangro and established a small bridgehead. Further rain then flooded the river and made the conditions of mud and slush even worse. It was impossible to launch any major attack and activities were limited to expanding the bridgehead on the north bank.

By 24 November, the bridgehead had been widened to some six miles and increased in depth to more than a mile. Advanced elements of both 78 and 8 Indian Divisions were across the river, while patrols from 2 New Zealand Division were also operating across the river.

The plan was now to launch an attack on 28 November using 78 and 8 Indian Divisions to break into the Sangro Ridge, while to the west 2 New Zealand Division attacked across the Sangro on a two brigade front.

By 27 November, all was ready for the main battle, the weather had improved and some 100 tanks had been taken across the river during the day. Heavy artillery support was available and an extensive air programme had been arranged in the hope that the weather would hold.

The Battle of the Sangro.

Throughout 28 November the weather continued to be fine, and the 5 Corps assault began at 2130 hours. 8 Indian Division took Mozzagrognia during the night, but German demolitions prevented the forward movement of tanks and supporting weapons. Counter attacks at dawn forced both 78 and 8 Indian Divisions to abandon much of the ground won during the night. To the west, 2 New Zealand Division had made good headway and by first light had secured a good bridgehead.

During the following two days (29-30 November) fighting was intense. Both sides were using tanks, but, with the assistance of heavy artillery and air support, 5 Corps retook Mozzagrognia and advanced east and west along the Sangro Ridge. By the evening of 30 November the whole of the Ridge overlooking the River Sangro had been secured and the 5 Corps and 2 New Zealand Division bridgeheads had been linked up.

With the backbone of the German "Winter Line" in the hands of the Eighth Army orders were issued on 1 December for the re-organization of the forward area. Limited thrusts were to be made from both flanks of the Sangro Ridge, but major forces were not to move forward of the road S. Vito-Lanciano until a high-level bridge had been built across the Sangro to make the communications across the river flood proof.

By 4 December, 5 Corps had taken S. Vito and the Lanciano, but light forces operating in front of the main bodies were held up on the line of the River Moro. To the west 2 New

Zealand Division was facing up to Orsogna. Farther west in 13 Corps, 1 Canadian Division was moving across to 5 Corps to relieve 78 Division near S. Vito, leaving only 5 Division to hold the Corps front.

Heavy rain set in, but by 1 December the high-level bridge over the Sangro had been completed. German resistance across the whole front was now very determined and any forward movement by Eighth Army forces was opposed by strong and repeated counter attacks, particularly in the New Zealand sector. The weather, German reinforcements, and the River Moro, were combining to hold up the Eighth Army advance.

The Development of Operations North of the River Sangro.

With a view of strengthening the right flank and preparing for further offensive operations, General Montgomery again prepared to regroup. The long-term policy was still to secure the Pescara-Chieti lateral and then to develop operations towards Rome.

5 Corps, now with 1 Canadian and 8 Indian Divisions under command, remained on the right flank, while 13 Corps was allotted a sector farther west with 2 New Zealand and 5 Divisions. 78 Division, now in Army reserve, was to be used to hold the mountainous country on the west flank. These movements were carried out over very bad roads and presented many ticklish staff problems.

It was not until 10 December that 1 Canadian Division was able to fight its way across the River Moro and the advance continued to be fiercely contested. Ten days later

the Canadians reached the outskirts of Ortona, where they were involved in bitter fighting with elements of 1 German Parachute Division for a further seven days before the town was taken on 29 December.

On the left of the Canadians, 8 Indian Division advanced steadily through rough country towards Tollo. On 22 December the division took Villa Grandi.

In the west, the 13 Corps plan to assault Orsogna was abandoned after it had become apparent how costly such an attack would be. Instead, the town was outflanked to the north. On 23 December 5 Division took Arielli, and by 24 December 2 New Zealand Division had secured the high ground north-east of Orsogna.

Thus, by Christmas Day, 1943, the Eighth Army line ran from the outskirts of Ortona through Villa Grandi to Arielli and on to the outskirts of Orsogna. This was the general situation when General Montgomery handed over command of the Eighth Army to General Leese, and on 31 December left Italy for London, where he was to assume command of the Allied Land Forces for the invasion of Normandy.

Comments on the Battle of the River Sangro.

The outstanding feature of these operations, the Eighth Army's first major battle in Italy, is the inherent flexibility shown by the British forces. Firstly, the shocking weather conditions forced General Montgomery to abandon his initial plan to carry the main thrust through to the Pescara-Rome road, and instead, to adopt a policy of advancing by short methodical stages as the

weather and communications permitted. The co-ordination and control of these operations was proof of the ability of the Eighth Army senior commanders to meet a rapidly changing situation effectively. Again the determination of the leading formations to face up to the adverse conditions and still retain at least some forward momentum provides proof of flexibility in another sense, namely, the ability to move and fight under adverse conditions of ground and weather. Finally, the efficiency and rapidity with which regrouping was carried out in spite of bad roads and shocking weather conferred upon the Eighth Army the advantage of being able to assemble superior forces at the decisive place.

The dictum: "Flexibility is the very foundation of manoeuvre, which in turn forms the very basis of offensive action and victory," comes to life when it is examined with relation to this particular battle.

Administration.

Many of the major aspects of Eighth Army administration in Italy have been dealt with during this review as it would have been quite impossible to appreciate the course and lessons of the operations unless the operational and administrative threads had been woven together to produce one overall picture. This treatment also indicates the intimate relationship which exists in any operation between fighting and administrative echelons.

At this stage there are three additional administrative aspects which are worthy of note. Firstly, the switch of the Army administrative axis from the "toe" to the "heel" ports had constituted the administrative crisis of the campaign, for it

was during this same period that the leading formations were driving northward at great speed to assist the Americans at Salerno. It was fully appreciated that a considerable risk was being accepted and, although the tactical operations were successful the Eighth Army paid the penalty by finding its administrative reserves exhausted and the flow of replacement supplies inadequate to maintain the desired scale of operations. What had been the alternative? It had not been possible to foresee these requirements and there had been no predetermined plan to meet the crisis.

Secondly, a new administrative feature had been the heavy rate of ammunition expenditure. The experience gained in the North African deserts had proved deceptive and the campaign in Sicily had not lasted long enough to bring this question into prominence. The Battle of the River Sangro had provided the first real warning that offensive operations in close mountainous and easily defended country required a scale of ammunition much higher than any to which the Eighth Army had been accustomed.

The third aspect worthy of particular note was the means employed to meet the heavy requirements of the strategic Air Force once it had been established on the Foggia airfields. The three main "heel" ports could not meet the combined demands of the Army and the Air Forces, but fortunately there was surplus port capacity available at Naples, where the American engineers had achieved wonders in repairing the very heavy damage. The efficiency with which British, as well as American supplies were landed at Naples and transported over second-rate communications

across the Apennines gave an indication of the close co-operation and co-ordination achieved between the administrative machines of the two Allied armies. How was this co-ordination achieved?

The Eighth Army "Fortbase" organization, which had been responsible for the organization of the Eighth Army rear lines of communication during the Sicilian operations had been set up in Taranto at the end of September to carry out a similar task in Italy. A similar American organization had been established in Naples about the same time. Very quickly it became apparent that it was vital to co-ordinate the operations of these two organizations. Thus the decision was made to transfer Fortbase to Naples and there reconstitute it as an advanced administrative echelon of Allied Force Headquarters with authority to co-ordinate, on the spot, all administrative arrangements in Italy for both the British and United States Forces. The officer in charge of this new organization was also appointed administrative staff officer to General Alexander (15 Army

Group). To fill the gap created by the movement of Fortbase from Taranto the administrative responsibilities in this area were given to a District Headquarters, which was placed under the command of the new administrative organization at Naples.

Conclusion.

General Montgomery left the Eighth Army on 31 December, 1943, en route to London to take up his new command. He spent the following day at Marrakesh in western Morocco, where he met the British Prime Minister. Mr. Churchill wrote the following message in the General's autograph book: "The immortal march of the Eighth Army from the gates of Cairo along the African shore, through Sicily, has now carried its war victorious soldiers far into Italy towards the gates of Rome. The scene changes and vastly expands. A great task accomplished gives place to a greater, in which the same unflinching spirit will win for all true men a full and glorious reward."

(Concluded)

SEA POWER

R.A.N. Directorate of Naval Intelligence

THE advent of the atomic bomb and the development of the aeroplane and other instruments of war may suggest to some that "Sea Power" is no longer a factor of supreme importance to the British Commonwealth. This outlook is perhaps encouraged by a mistaken tendency to regard the terms "Naval Power" and "Sea Power" as synonymous, when in fact, the actual strength of naval forces is, and always has been, only one of the elements which go to constitute "Sea Power."

The great American historian, Mahan, defined Sea Power as "That form of national strength which enables its possessor to achieve the ultimate object of war at sea, and that ultimate object is the control of the sea."

Sea power enables its possessor to send his troops and trade across those spaces of water which lie between nations and the object of their desires, and to prevent his opponent from doing so. It is the possession and right use of three things: Fighting instruments of all kinds necessary for the successful control of those waters; adequate bases, without which those instruments are limited in range and endurance; and shipping, without which neither

troops nor trade can be carried in sufficient quantities. Two obvious corollaries are the existence of a sea-going population to man these ships and a ship building industry with the necessary materials to produce them.

In order to achieve its object, the three elements of sea power—fighting ships, bases, and shipping—must be properly directed and used.

Let us look back briefly in history to see how little the pattern has changed throughout the ages. It was sea power that enabled the Athenians to deal effectively with their enemies. The inferiority of their land force was compensated for by its mobility and the element of surprise which could be used to land it in full strength wherever it wished, and destroy the crops of its enemies. The Athenians on the other hand were able to keep their own shores inviolate, and, in addition, to import whatever they required from other countries, while denying similar advantages to their adversaries. To do this, their fleet needed bases and these they secured on the Hellespont trade route.

From the time of Richard II onwards the rulers of England fostered the growth of shipping and seamen

by a series of Navigation Acts, and Elizabeth placed severe restrictions on the use of timber that could be used for ship building; she also encouraged the consumption of fish, in order to increase the fishing population and thereby establish a maritime reserve. Raleigh regarded Newfoundland as important because its cod-fishery provided a nursery for seamen, an element in England's sea power. A writer of this period said, "Without a powerful Navy we should be a prey to our neighbours, and without trade we could have neither seamen nor ships."

While Queen Elizabeth and her advisers realised the importance of developing these two elements of sea power, fighting ships and merchantmen, they saw, too, what sea power could do. Its influence was not confined to the defensive role of guarding the country against sea-borne invasion, but was extended to offensive action such as the raids made by Drake, which were strategical blows aimed at the source of Spain's power to make war, not merely piratical sorties.

It was in the war against Philip, however, that Elizabeth failed to appreciate the importance of the third element—bases. Even after the Armada had been defeated, a stream of wealth from the Indies continued to flow into Spain, and the war dragged on. This was because England had no bases on the flank of the track of the Spanish treasure fleets from whence a stranglehold could be gained. The Azores were ideally situated for such a purpose, as it was here the galleons called for replenishment on their way home, and where they were reinforced by the main fleet for protection through the danger area of the approaches to

Cardiz. The importance of having a fleet based on the Azores was appreciated, but nothing was done, and a great opportunity to shorten the war, through the correct application of sea power, was lost.

Cromwell was fully alive to the need for bases outside the United Kingdom, but, although the Commonwealth created a great fighting Navy and stimulated shipping construction, circumstances prevented the acquisition of these bases, and it was not until Charles II received Tangier, as his Portuguese bride's marriage dowry, that this need for a Mediterranean base was satisfied, if not for long so far as Tangier was concerned.

However, in 1704, Gibraltar was captured and four years later Minorca. With the acquisition of these bases the English fleet was able to remain in the Mediterranean for the whole year, instead of only during the summer months. French armies could no longer move by sea to Naples and into Catalonia, and French trade with the Levant was brought almost to a standstill. British shipping on the other hand was free to move as soon as convoy was available—there was a control of the sea.

The extensive colonization of the mid-seventeenth century had provided bases along the coasts of North America and the West Indies, but no satisfactory base existed in the East Indies and the route to India was flanked by the Dutch possession of the Cape of Good Hope—as this constituted a threat to Eastern trade, it was seized in 1806, when the Cape was recognised as an essential element in our sea power. At that time the colony itself was regarded as

more of a drain on England's population than an asset!

British sea power in the Eastern seas was still unable to exercise complete control until Trincomalee and Mauritius were in our hands. It was from Mauritius that French forces inflicted very heavy losses on our Calcutta trade during the post-Trafalgar period.

In its third element, shipping, British sea power has grown steadily throughout the centuries, although there have been delays in military operations owing to difficulties in providing the necessary transport. When French corsairs operated from Dunkirk, Ostend and St. Malo they took heavy toll of London and North Sea Trade.

In the French wars of the 17th and 18th centuries the fact that our shipping was able to withstand the strain of these attacks was due as much to the volume of shipping available, as the protection afforded by the Navy.

In these wars the French, having lost the initiative in the contest for the command of the seas as between fleets, concentrated their efforts on this form of warfare, as did the Germans in the two great world wars of this century, when they, too, regarded destruction of Allied shipping as the road to victory, and while they came uncomfortably close to success in their object, there is no doubt that their general strategy was at fault in their misuse of surface forces, and that their much vaunted sea power was unable to function properly because it lacked that vital integral element—bases.

In 1865 Bismarck remarked that

Germany would never be a great maritime power without colonies, and the laments of German Admirals on the comparative failure of their commerce raiding cruisers in the 1914-18 war related that failure to the absence of overseas bases. There is no doubt that this exercised the minds of the Germans between the wars and that, from ideological considerations, one of Hitler's principal aims in intervening in the Spanish Civil War was to obtain from General Franco naval bases either in the Spanish peninsula, in Spanish Morocco, in the Canary Islands or in the Spanish colony of Rio de Oro, on the west coast of Africa.

A base in Rio de Oro would have been of inestimable value as it would have enabled him to cover with his submarines and other sea-forces the Allied trade routes to South Africa and South America; it would have been comparatively near the important Allied operational area just west of Gibraltar; and it would have been about half-way between Germany proper and the former German Colony of South-West Africa, which the Nazis were only too eager to re-occupy.

Whether the Germans would have been able to hold their overseas bases and colonies in the Second World War any longer than they were in the war of 1914-18 is a matter of conjecture, but it is unlikely that they would have succeeded in their attempts to do so.

As it was, denuded of such bases, German heavy ships and the fast 10,000 ton "pocket battleships," were compelled to spend long periods lying idle, either in some remote spot in the Baltic, along the Scandinavian coast, or in some harbour

under more or less constant attack by bombers of the Royal Air Force.

Writing in the last year of the hostilities of 1939-45 one British authority said: "Where German naval strategy seems to have gone hopelessly and fatally wrong in this war was apparently not in any lack of emphasis upon the role of the surface ships, as in the method of their employment; in failing to envisage and use them as an instrument for dispute of and, if possible, disruption of, the Allied command of the seas; and in persisting in relegating them, instead, to the subordinate function of commerce destroyers, in which their strength was wasted on nothing higher than to add their mite to the increasing toll of Allied shipping.

"The defeat of the *Graf Spee* off the River Plate cost the German Navy not only that ship, but, what was infinitely more, the nimbus which, up to that time, had surrounded the pocket battleship."

"Similarly the sending out, first of the *Scharnhorst* and *Gneisenau*, and later of the *Bismarck*, upon commerce raiding missions into the Atlantic ended with the prolonged laying up of the first two at Brest and the loss of the latter vessel; all three of which, a few months later, might have proved invaluable for concentrated attacks upon the convoys to Murmansk."

After the fall of France the Germans gained bases of vital importance to the successful conduct of their submarine operations, and in the Mediterranean, the Allies faced an even more difficult situation as Italy was left in a position of great superiority in naval forces, air power and bases. Nevertheless by the cor-

rect and skilful use of our forces, and the determination and bravery of these forces and the Merchant Marine, the battles for the control of the Atlantic and Mediterranean were eventually won.

In the opening phase of the Pacific War, Japan, using the element of surprise, struck a crushing blow at the American Fleet in Pearl Harbour, and was then able to contain and destroy advanced American bases. She was therefore able to enjoy a temporary control of large areas of sea.

As the war drew on, however, and losses of fighting ships and merchant shipping began to have their effect, the Japanese were unable to maintain this control in the face of rapidly increasing American strength in the shape of fighting ships, particularly aircraft carriers; bases, such as Espiritu Santo; and shipping, hundreds of liberty ships—in fact all the elements of sea power.

The advent and development of new weapons must necessitate some modifications in the application of sea power, for example, the Fleet train, which fuels, ammunitions and generally supplies a fleet at sea, really forms an advanced base, and reduces the amount of time a fleet must be in harbour, thus, in turn reducing the period during which it is in greatest danger from atomic attack.

However, despite such modifications it can be assumed that the object and elements of sea power will remain fundamentally the same in the future as they have over the ages.

Plus ca change, plus c'est la meme chose.

ORGANIZATION AND EMPLOYMENT

of

THE ARMY SERVICE CORPS

This is an authoritative article written for the Australian Army Journal by the Directorate of Supplies and Transport at the request of the Director of Military Training. Apart from showing the origins of the Corps, it is designed to present a comprehensive picture of ASC organization and employment, which should be known to officers of all arms.

The famous military historian, Sir John Fortescue, once wrote:— "It has been my fate to make some study of the British Army's campaigns' past and present, and I say, emphatically, that, at present, our Army, without the best possible organisation for mobility and maintenance, is naught. It is like a motor car without petrol—comely, perhaps—well-designed, well-engineered, but inert and lifeless. Such an organisation we possess in the Army Service Corps."

The role of the Army Service Corps, is, true to its name, to serve the Army. This duty embraces the provision and distribution of sup-



plies for the soldier; POL for his tanks, SP guns and vehicles; the road transport and forward distribution of ammunition and most other stores; in fact, the Corps is the Army's road transport agency. (The term "Supplies" as used herein means

rations, forage, expense supplies and fuel for heating and lighting). Further, the Corps provides specialised transport, e.g., ambulance cars, tank transporters, amphibians, vehicles for bridging equipment, etc.

The service sometimes extends beyond the army, as the ASC brings rations, POL and many other supplies to the airman in time of war

(or in overseas stations in peace) and, on occasions, to the sailor.

History.

It was, of course, not always so. Up till the time of Cromwell, armies lived by indiscriminate (later organized) plunder. Cromwell, however, and then Marlborough, organized a system of civilian commissaries who arranged contracts for rations and established some depots. The Duke of York established the Corps of Royal Waggoners in 1794, under military control. This purely transport organization persisted until 1869 under different names, eventually, as the Military Train, fighting as Light Cavalry in the Indian Mutiny.

The birth of the Supplies and Transport Service dated from 1869, when the operation of both supplies and transport were placed under one department and under direct military control. This organisation later became known as the "Commissariat and Transport Corps," but it remained for General Sir Redvers Buller, in 1888, to organize the first Army Service Corps, and it is from this that the present-day organization is derived.

Since 1888, the Corps has been a combatant one. The personnel are trained and armed as infantry and are responsible for their own protection. Although only incidental to the real task, opportunities for such fighting have not been wanting throughout the Corps history. Further, when necessary, the Corps can fight as actual infantry, the most recent example being during the seige of Tobruk in the 1939-45 War.

Organization.

The ASC provides the personnel to operate the Supplies and Transport Service. At Corps HQ and above, there is provided an ST "Staff" to control the technical operation of the Service. ASC units are grouped, principally as companies, under CsASC and, where there is no ST "staff," these CsASC perform the dual role of commanders and advisers to the formation commander concerned.

ASC organization in the field is based on its transport component, comprising some form of MT company built up of standard platoons. The basic platoon is the Transport Platoon, which operates thirty task vehicles and, if equipped with 3-ton trucks, can lift 90 tons of stores or supplies, or the marching component of an infantry battalion. Current organization comprises:—

In an Infantry Division:

- HQ Infantry Divisional Column.
- Three Infantry Divisional Transport Companies (each based on two transport platoons).
- One Infantry Divisional Transport Company (based on three transport platoons).

In an Armoured Division:

- HQ Armoured Divisional Column.
- Four Armoured Divisional Transport Companies (based on four transport platoons).
- One Armoured Divisional Troop Carrying Company (based on four transport platoons).

In an Airborne Division:

- HQ Airborne Divisional Column.
- Three Parachute Brigade Companies (each based on three transport platoons).

For an Independent Brigade:

One Independent Infantry Brigade Company (based on three transport platoons).

or

One Independent Armoured Brigade Company (based on five transport platoons).

As Basic Corps Troops:

HQ Corps Troops Column.

One GT Company, Heavy (based on four 10-ton transport platoons).

One GT Company (based on four 3-ton transport platoons).

One Tipper Company, (based on four tipper platoons, each of 30 tippers and one tank transporter — normally under operational control of CCRE).

One Supply Company, (to hold and distribute stocks of supplies and POL in the Corps Maintenance Area (CMA) and for second-line maintenance for Corps Troops).

As Basic Army or GHQ Troops:

Two Army Troops Composite Companies, each based on two 3-ton transport platoons and one tipper platoon—for second-line maintenance of Army Troops only).

GT Companies, (normally on the scale of one per division and one per corps —basically, for operation between Army Maintenance Area (AMA) and (CMA).

Tank Transporter Companies, (minimum scale normally one per armoured brigade).

Motor Ambulance Companies. (normally on the scale of one per army and one per corps—for the evacuation of casualties, normally behind ADSs).

Tipper Companies,

(as required for engineer work. Normally under operational control of Engineers).

Bridge Companies,

(for the carrying of bridging equipment. Under operational control of Engineers).

GT Companies (Amphibious),

(equipped with amphibians — DUKWS or LVTs—in place of normal vehicles).

With Artillery:

An Artillery Platoon is provided for each non-divisional and non-corps artillery regiment for its second-line maintenance. It should always move with that regiment. In addition, each AGRA has a small ST "Staff."

Divisional Transport Companies and Army Troops Composite Companies have a supplies element in the form of a Composite Platoon. This provides technical personnel for the detailed distribution of supplies, POL and ammunition. Further, all transport companies have a workshops element capable of carrying out both first and second echelon repairs.

Separate Platoons/Companies provide the necessary domestic transport for Divisional, Corps and Army HQ.

In addition to the organizations shown above, there are many other ASC units which, though normally regarded as GHQ troops, operate when and where required. Such units are:—

Water Tank Companies—equipped with water tank trucks.

Transport Companies for special duties with Ordnance.

Animal Transport Companies.

Air Despatch Companies.

Bulk Petroleum Transport Companies—equipped with petrol tank trucks.

Petroleum Companies and other technical petroleum units.

Supply Companies and other technical supplies units, including—

Field Bakery Companies.

Field Butchery Companies.

Cold Storage Depot Companies.

Under British organization, Water Transport Companies are also operated by the ASC, but this does not apply in the AMF.

Port Platoons are also operated in conjunction with both supplies and petroleum units, to exercise technical supervision over loading and unloading.

Operations in the Field.

The principles governing the operation of the ASC in the field are, firstly, that unit requirements must be delivered regularly at a time and place convenient to those units. Secondly, that adequate reserves of ammunition, POL and supplies are held within easy reach.

War material for the forces in the field is brought to the Army Maintenance Area (AMA) (which is generally the L of C Terminal) by the various transportation agencies available, e.g., sea, rail, road, air. From here, the GT Companies available to Army carry this material forward to the CMA, where it goes into depots operated by the army service concerned. The divisional ASC transport then normally takes over.

It must be remembered, however, that the system is extremely flexible. Even forward of the AMA, air and inland water transport may supple-

ment or entirely replace the road transport. Light transport or even pack animals or porters may have to be used. Again, Army-controlled transport from the AMA may run right through to the divisional area, whilst CMAs may or may not be formed. In general, however, the system is that Army-controlled transport columns operate between AMA and CMA and divisional transport columns from the CMA forward.

Ammunition normally only becomes a direct ASC responsibility after it leaves the CMA, although the ASC may take over from Ordnance at the AMA. Within the division, the ASC normally carries on wheels one complete second-line ammunition refill, which is used to form Ammunition Points as required and from which units replenish. Gun ammunition is normally delivered direct to the waggon lines (or even the guns) in original truck loads. As the ammunition is delivered to units, the empty ASC transport replenishes automatically from the CMA or, if the distance is too great, from a refilling point established by Corps. The carrying on wheels of this second line refill requires, in the case of the infantry division, 125 of their available 270 trucks, and more transport may have to be allocated when expenditure is heavy or dumping is required.

Petrol is brought forward in bulk as far as practicable. A pipeline follows the army and, although normally finishing at the AMA, may even reach the CMA. Forward of the CMA, supply is normally in 4½ gallon "Jerricans," although, where the situation warrants, bulk road tank trucks may go forward into the divisional area and refill vehicles direct. The divisional ASC carries

on wheels 50-55 miles POL, using another 60 of their trucks. Petrol Points are established as required, the ASC replenishment being again automatic from the CMA. Petrol Refilling Points may also be established by the Corps ASC, if required.

Supplies are in a rather different category. Daily, in the morning normally, the divisional ASC transport collects the supplies in bulk from the CMA. These supplies are for consumption the following day. Back in the divisional area, ASC personnel break this bulk into unit detail for collection by unit "B" echelons either in the Divisional Administrative Area or at a Supply Point.

Rations are supplied in accordance with ration scales, which are many and varied to meet the several needs of climate, race, religion and operational requirements. Determination of ration scales is a function of home administration and they are scientifically designed to produce a balanced diet. In addition, ASC analysts and research chemists at the base are constantly at work to ensure that only the best foodstuffs are supplied.

The air aspect deserves a special mention. ASC personnel do not pilot aircraft, but they do fly. ASC Companies of airborne divisions are, of course, trained in parachute jumping and landing supplies from the air in keeping with their role. However, in addition to this there is the much larger commitment of supply by air.

Modern methods of warfare may often render the introduction of supply by air necessary. This is particularly the case with air-landed supplies whether by means of glider

or powered aircraft. Parachute or "free" dropping will only be used when no other system of maintenance is practicable. The operation of supply by air was fully dealt with in Australian Army Journal 7, but it must be remembered that the ASC operate the system just as they do any other maintenance system. ASC personnel, therefore, must be trained in the multifarious duties associated with the packaging, despatching and receipt of airborne material whether the method used be glider, parachute, or landing by powered aircraft.

Wireless is provided for ASC units in the field. Seven stations (Number 19 set or similar) are allotted to the divisional ASC and nine stations to the Corps ASC.

Trends.

The trend of development in the ASC is how to do the task better, rather than any fundamental change in task, and in this connection, the soldier's food is always a subject of paramount importance.

The ultimate aim is to provide the man in the weapon pit with a pre-prepared, easily heated, complete meal supplied as such by the ASC, and there are indications that this may be not as impracticable as it appears at present. In the interim, the aim is to provide fresh food whenever units can handle it. To this end, current developments in quick-freezing are important, requiring concurrent developments in refrigeration. Mobile refrigerated trucks are, even now, mooted as part of the equipment of the divisional ASC.

Special Ration Packs are receiving considerable attention in Australia.

Britain and the USA. There will, in the future, be revolutionary changes in these packs both as regards palatability of contents and packaging. The staple commodity, bread has now been successfully canned and will limit the use of the old service biscuit.

With POL, the accent is on carrying the bulk even further forward—right into the Divisional Administrative Area in fact. To this end, light-weight pipelines are being developed, capable of being laid quickly in the same fashion as signal cable. Even helicopters may be useful in this connection, whilst the aerial tanker also has an important future role. Where refilling is necessary, new automatic filling machines will not only increase the rate, but will make light work of what is now a rather arduous and lengthy operation. To assist the individual soldier-driver, lubricants may, in the future, come in expendable containers, after the fashion of large toothpaste tubes.

Where larger containers are required, 44-gallon drums, for example, experiments have shown that aluminium may well replace steel in their construction. The resultant saving in weight, particularly in air supply, will be readily appreciated.

On the transport side, it has long been recognised that to provide transport on a scale that would meet any contingency, however remote, is most uneconomical. Accordingly, present trends are not only to continue the centralisation of ASC transport under the highest practicable authority (normally Army), but to reduce unit transport in forward areas to basic requirements, providing for the exceptional cir-

cumstance from ASC resources. Available transport will thus be pooled. Tasks will be undertaken and completed, and on completion the transport will return to the "pool." A more extensive use of the trailer is also forecast.

Again, experience in the 1939-45 War showed that, with modern maintenance problems, the capacity of the road system is of the utmost importance. There is, therefore, a tendency nowadays to discontinue movement in convoy (in spite of its better domestic control) in favour of independent running between static traffic control points.

Conclusion.

In an article of this nature it is possible to give only the barest outline, and for this reason emphasis has been laid on the organization and functions within fighting formations. However, it must be borne in mind that none of this is possible without adequate support from the rear. Many ASC installations and units not mentioned here have their home at the base or on the L of C, as well as right back in the Main Support Area. It is on their continued, efficient, routine functioning that the success of the more spectacular portion of the Corps depends. Further, it must be remembered that the strength of the ASC in peace-time is notably lower in proportion to its war-time strength than most other arms of the service.

Finally, the maintenance system, as operated by the ASC, is designed to achieve maximum flexibility so that, whatever it may be called upon to do, the Corps will always strive to live up to its motto of "par oneri"—"Equal to the task."

FIELD ARTILLERY ROCKETS

Captain Pierre Martel.
Royal Canadian Artillery.

THE rocket, as a war weapon, is making its third appearance. It was first used by the Chinese in the thirteenth century and, later, in the nineteenth century, they played an important role in the British campaigns on the continent. At that date, rocket brigades flourished in all important countries. Rockets were eventually dethroned from their pinnacle by the development of more accurate and reliable rifled-bore guns. They made an unimportant contribution in the First World War, but achieved again universal recognition during the last one. The modern advances in their design and the terrific effort put in their further development by the major Powers, including Canada, indicate that they may be here to stay.

There is some confusion on the term "rocket." For instance, the V2 is a rocket. To those who were not directly concerned with rocketry during the war, the term "rocket" is likely to bring to mind what is more technically described as "artillery rocket." It is with that meaning in mind that this article is written. The aspect of rockets covered here will be their characteristics in the Field Artillery role.

We must first observe that a rocket is "two-ended." For a considerable space in the rear of the rocket, the jet blast is violent and dangerous. A word of caution is not, therefore, superfluous, because, if accidentally set-off while being handled, a rocket may travel a considerable distance and may constitute a hazard to a large area.

The major advantage of rockets as field weapons is their absence of recoil. The rocket is a self-propelled unit which, unlike a gun shell, does not need a heavy barrel confining gases under high pressure to be launched. As it exerts little or no recoil on the structure from which it is launched, a rocket may be fired from a simple rail or guide. Depending upon the number of guides, the launcher can be a readily portable weapon on the one hand, or, on the other, a weapon with extremely high instantaneous fire power.

The simplicity and lightness of rocket launchers permit large calibre rounds to be fired from small boats or vehicles; rocket artillery is much more mobile than gun artillery. Rockets may, if necessity arises, be fired by infantry from tactical points inaccessible to guns.

The mobility of a rocket battery is best illustrated by looking at the weight of the equipment. A 49-

pound, 5-inch diameter spin-stabilized rocket may be launched from a launcher weighing about 90 pounds. This may be contrasted to the 2,660 pounds weight of a 75-mm. gun which fires a projectile of only 13.5 pounds. The "Bazooka," the anti-tank rocket made famous by the last war, may be carried by an infantryman, and is capable of stopping armoured vehicles up to and including medium tanks.

The second advantage of rockets is their fire power. As mentioned already, launchers can be built with a large number of guides, twenty to thirty, and, consequently, as many rockets can be fired almost simultaneously. The fire power of rockets is such that one landing barge equipped with 150 banks of rockets, such as were used in the Second World War, has fire power equivalent to that of thirty cruisers, each carrying twelve 6-inch guns. Or the fire power of a rocket regiment is roughly equivalent, when falling over a small area, to thirty regiments of Field Artillery.

In general, rockets are not as efficient as guns. If we define efficiency as the ratio of work done to the energy expended, we find that the ratio is larger for guns than for rockets. This is because a better use is made of the propellant in a gun than in a rocket. In other words, a good deal of the kinetic energy of the propellant is carried away by the jet of the rocket motor in a wasteful manner. In addition, the propellant energy in a rocket is used not only to carry the warhead

to the target, but also to carry the rocket motor chamber.

There are some circumstances, however, where this relative inefficiency can be overcome by the larger payloads carried by a given calibre rocket. Because of the small forces exerted by acceleration during propulsion, it is possible to use thin-walled containers and thus carry a maximum payload of filler, like smoke, chemicals, etc. This increase in payload makes up in most instances for the dead weight of the motor, and more than compensates for its thermal inefficiency.

Rockets are not as accurate as gun shells and have a somewhat shorter range. Speaking in general, it may be said that accuracy of a shell is two to three times that of a rocket. The penetration of shells up to the present date is also superior to that of rockets. Finally, rockets are much more sensitive to temperature variation than guns.

Rockets have been described so far as competitive to guns only to emphasize the characteristics peculiar to each. However, the two weapons should be considered as supplementary to each other. The decision to use either one in a particular engagement should be based on the tactical effect required. For instance, there is no doubt that pinpoint targets belong to gun artillery, while area targets may be easier to cover with rockets. The ideal weapon may be thought of as that for which the total weight of ammunition and launchers necessary to carry out a mission efficiently will be a minimum.

THE LOGISTICAL PLANNING

— of —

OPERATION OVERLORD

Lieutenant-Colonel Frank A. Osmanski, General Staff Corps,
United States Army.

This is the second of three articles on the logistical planning of Operation Overlord reprinted by courtesy of the Military Review, USA. The third article will appear in the July issue of the Australian Army Journal.—Editor.

Part 2.

The province of strategic logistical planning can be determined from an examination of the functions performed by the ETO (European Theatre of Operations) strategic logistical planners and of the methods used by them to impart strategic guidance in logistics matters to other planners.

Bolero.

In the European operations, responsibility for that part of strategic logistical planning which deals with

the concentration of troops and their equipment was delegated to SOS (Service of Supply) from the beginning. In fact, it will be remembered that SOS was originally activated for the primary purpose of planning and executing Bolero. Bolero planning began when Combined Bolero Committees (see Chart 4, AAJ No. 12) were established in Washington and London. The Washington committee was to make all first decisions calling for joint consideration on the highest governmental level, and the London committee, comprising representatives of the British supply ministries, US Army Air Force, US Navy, and ETOUSA, was to plan in detail and to execute the actual concentration of US forces in the United Kingdom.

There were four Bolero Key Plans (see Chart II). Key Plan No.

1, published in May, 1942, was designed to establish the means for staging Operation Roundup. When the Russian situation became critical, this plan was modified to Key Plan No. 2, published in July, 1942, which was to provide an increased and accelerated buildup for possible operations in relief of the Russians. Torch operations in North Africa in the late fall of 1942 so attenuated the forces already established in the United Kingdom that a new plan, Key Plan No. 3, published in November, 1942, had to start again from scratch. Finally, when Operation Overlord received the official blessing of the Quadrant Conference in Quebec, Solerno Key Plan No. 4, published in July, 1943, was designed to provide it the necessary means. A final supplement in October, 1943, completed Bolero planning.

Bolero plans required tremendous effort to execute, some indication of which is given by the following statistics:—

Transportation, shelter, hospitalization, supply, training facilities, and general welfare activities had to be provided for 1,200,000 men.

94,000 hospital beds had to be established in existing, converted, or newly constructed installations and to be augmented later by 30,000 additional beds in tented camps.

20,000,000 square feet of covered storage and shop space and 44,000,000 square feet of open storage and hard-standings had to be provided.

Plans had to be made and construction materials stockpiled for all hospitals, depots, shops, railroads, pipe lines, ports, and bridges to be constructed or reconstructed in France.

Imports rising from 753,000 long tons per month in July, 1943, to 1,900,000 in May, 1944, had to be unloaded, transported inland, and stored in depots in the United Kingdom.

Logistical Planning of Overlord.

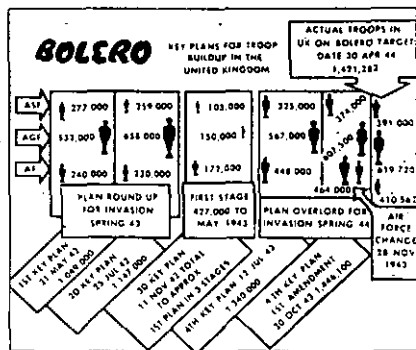
Responsibility for mounting US forces participating in Operation Overlord was delegated by ETOUSA to SOS on 29 October, 1943. By June, 1944, there were 1,527,000 US troops in the United Kingdom and in addition to T/E (unit) equipment there was a stockpile of 2,500,000 tons of equipment collected for the invasion. For purposes of mounting the US effort in the forthcoming invasion of Europe, the western half of Southern England had been allotted to SOS. Mounting was executed in three phases:—

Assault force—60,000 men and 6,800 vehicles;

Follow-up force—70,000 men and 10,500 vehicles;

Build-up force—370,000 men and 53,000 vehicles (by D + 14).

The assault and follow-up forces were assigned to particular ships and craft and were actually preloaded prior to D-day. The build-up forces



were to be transported to the Continent according to prearranged priority tables, but had to depend on returning ships and craft for their lift. Mounting procedures consisted of a series of movements from home stations in the United Kingdom to concentration areas, thence to marshalling areas, and finally to embarkation areas and onto ships. To accomplish the movement of units through these several stages, and to get them onto the proper ships required exact control and co-ordination. This was exercised by a staff organized exclusively for that purpose and known as Build-up Control (BUCO). BUCO was aided by three other control staffs: Movement Control (MOVCO), which issued movement orders and was a function of the Transportation Corps; Turn-around Control (TURCO), which performed liaison with the Navy and kept BUCO in England and the Engineer Special Brigades in France advised of shipping schedules; and Embarkation Control (EMBARCO), which maintained accounts of the location of units and the availability of spaces in the concentration and marshalling areas. The over-all mounting responsibility was a tremendous one and was well discharged. As an indication of its magnitude, the fact can be cited that 3,780 assault craft and 142 cargo ships had to be assembled, loaded, and embarked for the assault alone.

In planning the strategy for the cross-Channel invasion, the first major decision which had to be made concerned the selection of the lodgment area which Overlord must secure. The logistical requisites for this lodgment area were that, principally, it should include major ports capable of development to capaci-

ties adequate for the support of 29 divisions, increasing thereafter at the rate of three to five additional US divisions per month; and that good beaches should be available in the assault area for operation for at least three months following D-day, initially as a substitute for and subsequently as a supplement to port capacity.

Then, of course, there were the further logistical requirements that communications inland be good; that sites for airfields be such that a minimum of construction materials would be required; that local resources, particularly construction materials, be available to the maximum; that the turn-around time of shipping between bases in the United Kingdom and ports on the Continent be the shortest practicable; and that accommodations and hardstandings be available for large depot areas.

A look at the map and a knowledge of assessed import capacities would reveal that there are six groups of major ports which could have been developed to sufficient capacity to support 29 or more divisions. These were the following:—

- Biscay-Brittany Group (Bordeaux-Brest);
- Brittany-Cotentin Group (Nantes-Caen);
- Cotentin-Seine Group (Cherbourg-Dieppe);
- Seine-Pas de Calais Group (Le Havre-Calais);
- Pas de Calais-Belgian Group (Boulogne-Antwerp);
- Belgian-Dutch Group (Dunkirk-Rotterdam).

Good beaches were available for entrance by assault only into the

areas of three of these groups of major ports: Brittany, Cotentin-Seine, and Pas de Calais. The current radius of action of fighter aircraft at that time determined that an assault only into the Pas de Calais, Caen, and Cotentin areas could be supported by air operations. For logistical reasons, the Caen area alone was acceptable, for in the Pas de Calais area the eventual lodgment would have to include ports as far north as Antwerp or south as Le Havre in order to be adequate. In the Cotentin area, although one major port would be captured early, expansion to further ports would be difficult and airfield sites would be scarce. In the Caen area, there were beaches of high capacity, shelter from prevailing winds, excellent airfield sites, and ease of expansion to include either the Brittany or the Channel ports. The Caen area was therefore selected.

The relative positions of the US and British forces on the Continent were next determined. Essentially for logistical reasons, it was decided that the US should be on the right or open flank and the British on the left or pivot. In the United Kingdom, the Bolero build-up of US depots and camps had been concentrated in the western half of the island, the British condensing their installations into the eastern half. Therefore, in order not to cross sea lines of communication across the Channel, and also in order to avail the US forces of the Cotentin and Brittany ports, to which shipments of troops and cargo could be sent direct from the US, the US Armies were placed on the marching flank.

Logistical planners of Overlord encountered many critical and major

logistical problems at an early date and were long concerned with many of them. Among these problems, the following were representative:—

Provision of the necessary service troops in the numbers and types required; (this was particularly difficult as the activation and training of service troops in the Zone of the Interior lagged behind that of ground force units by some six months);

Stockpiling the machinery and material for developing capacity from wrecked ports and acquiring the necessary devices and techniques for reconstructing these demolished ports quickly;

Devising means for exsanguinating the wounded, particularly from the beaches and smaller ports in the earlier phases of the operation;

Producing the necessary lift in assault landing craft to land the required invasion forces;

Most important of all, developing techniques and devising expedients to insure supply over open beaches for long periods of time despite reasonably bad weather and rough water.

Increasing the lift beyond that provided by the original Combined Chiefs of Staff (CCS) directive to COSSAC, in order that at least three assault divisions could be lifted on D-day, remained a major problem in COSSAC and SHAEF until D-day. The problem was solved finally by stepping up US and British production; by diverting 50 per cent. of the landing craft originally allocated to operations from the Mediterranean (Anvil); by rehabilitating derelict landing craft lying about the shores of England

after they had seen better days in training; and, primarily, by postponing the target date of Overlord by one month, in order to gain the advantage of continued and increased production.

The COSSAC logistical planners devoted much effort to the solution of the problem of "bridging the water gap," that is to say, delivering ashore, dryshod, the trucks and other wheeled or tracked equipment brought in by the LCT and LST which would touch bottom rather far off-shore on the relatively flat beaches of Normandy. Various devices were explored, some developed; the Rhino ferry, a chain of US naval pontoons propelled by an outboard motor and so-called because of its characteristic horn-like hook for attaching additional pontoons, proved to be the best.

So concerned were the planners with the problems of supply over open beaches that the logistical planners of COSSAC at one time spent several weeks evolving the organization for a proposed US Far Shore Beach Group, which would develop and operate the beaches for maximum import. However, this study was soon overtaken by arrivals in the United Kingdom of the more efficient Engineer Special Brigades.

The most significant and spectacular solution developed by COSSAC for a pressing problem was the conception and design of the artificial harbors, known as the Mulberries. The original appreciation and outline plan of Overlord had stated that the operation would be feasible on the earlier small scale of assault only if three conditions prevailed in North-West Europe on D-day:—

The German Air Force, particularly its fighters, would have to be appreciably reduced. (Air operations of the US Eighth Air Force and British Bomber Command, culminating in Operation Pointblank, saw to this).

No more than 12 mobile reserve German field divisions should be present in France. (The great Russian offensive which opened 30 May, 1944, assured this; in fact, only eight such divisions were present in France on 6 June, 1944).

Some expedient would have to have been devised to insure that supply over open beaches would not be interrupted by average bad weather or rough seas. (Mulberry was the answer to this).

This third condition, originally recognized and emphasized by the COSSAC logistical planners, was seized upon by the British naval planner at COSSAC, Commodore Hughes-Hallet, who proposed that the Allies construct their own ports by prefabricating them and erecting them artificially on the shores of Europe. At a conference in Scotland, with Lord Louis Mountbatten presiding, an original design for an artificial harbor was presented and approved and a committee headed by Brigadier Wehrner was established to co-ordinate the planning and the production agencies involved in developing the project.

There were many early ideas for stilling the waters off the Caen beaches, including the proposed use of what was known as the Lilo breakwater, which consisted essentially of a rubber air-filled mattress which was to float at anchor off-shore and act as a buttress between the rougher outer waters and

the smoother anchorage inshore. Another idea was the bubble breakwater, which consisted actually of laying under the water compressed air pipe lines from which a wall of bubbles was to be emitted to still the waters. Finally, there were huge steel and concrete structures which were to be either moored afloat or sunk in series to form breakwaters.

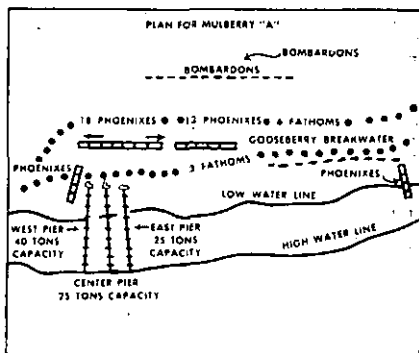
Originally, there was to be but a single Mulberry located at Arromanches to serve the US and British forces jointly. But increasing requirements for import capacity and the early recognized principle that US and British lines of communication had better be developed independently from separate ports of entry soon demanded that two such ports be constructed, the second, the American one, at St. Laurent.

The American Mulberry (see Chart 12) consisted of three major breakwaters and three piers. Among its components were the so-called Bombardon, the 200-foot-long cruciform floating steel structures which were moored in line to form the outermost breakwater behind which Liberty ships could anchor in shelter. These weighed about 1500 long tons each. Inshore from the Bombardon were the so-called Phoenix, huge concrete caissons, some as large as 60 x 60 x 200 feet and weighing from 2,000 to 6,000 long tons each, sunk in about 5½ fathoms of water to form an inner breakwater. Closest inshore were the Corncob, which were blockships sunk in about 2½ fathoms of water, including some 70 obsolete warships and merchantmen of the American, British, Dutch, and French fleets, one of them 40 years old. As originally designed, each Mulberry was to develop a capacity of 6,000 long

tons per day by D + 14. Although a severe storm demolished the US Mulberry prematurely, the British Mulberry was in fact producing 6,750 long tons per day by D + 20.

In addition to the organic Mulberries, there were originally five small semi-circular shelters, known as Gooseberries, each formed of sunken blockships and intended as protection for smaller craft and ferries in times of rough seas. Two of these five—one was off each of the five assault beaches—were subsequently expanded to form the Mulberries. So sensational was the idea of the Mulberry that SOS engineers soon conceived on an even more extravagant scale a similar plan for the development of a colossal artificial port in Quiberon Bay on the South Brittany coast. This project, known as Chastity, was never realized because events, both tactical and logistical (the long siege of Brest and the onset of winter), rendered its construction infeasible.

The logistical planners at COSSAC considered it one of their prime functions to develop means of insuring that the logistical support of the assault and other critical phases



of the operation could in fact be provided. They therefore made detailed studies of these phases and developed plans for the logistic support of them on a day-to-day basis. They also recognised that bulk POL facilities were a valuable expedient by which the critical capacities of ports, roads, and vehicles could be conserved. They accordingly developed plans for underwater pipe lines, 25 of which were eventually laid between Dover and Holland, and for ship-to-shore and inland pipe line systems which became the arteries of the combat forces.

Similarly, the COSSAC logistical planners concerned themselves with planning emergency measures which should be provided and which might be used to prevent major disaster in the event tactical operations should not succeed as the overall strategy contemplated. Among these emergency measures were the use of supply by air, utilizing troop carrier and other types of aircraft diverted from airborne and bomber missions; provisions to crash-land upon the shores or in the open fields of Europe small ships or large gliders carrying pre-planned balanced supply loads; the provision of floating reserves off the assault beaches consisting of balanced supply loads in dumb-barges towed across the Channel and anchored off the critical areas; the early establishment ashore of the maximum levels of reserves that shipping and import capacities could handle.

The COSSAC logistical planners prescribed how the service forces

were to be integrated with the combat forces for initial operations into Europe. During the assault phase from D-day to approximately D + 14, the Advance Section of Communications Zone (ADSEC) was to be attached to First US Army and, in effect, to operate the Army Service Area for it. During the second phase, approximately D + 15, to D + 41, ADSEC was to operate under Forward Echelon Communications Zone, which in turn was attached to First US Army Group (FUSAG). This latter arrangement never worked as planned because of the failure of Com Z and FUSAG to agree on responsibilities. Finally, during the phase D + 42 to D + 90, FUSAG and Com Z were to become co-ordinate commands mutually co-operating under SHAEF.

When SOLOC became operational in France, G-4 (Plans Branch) SHAEF was called upon to provide the basis for the re-allocation of US service troops between Com Z and SOLOC. This it did by combining factors such as divisional slices, priorities of logistical support, relative indices of logistical activity, and comparative efficiency quotients of the American service troops available to Com Z and of the Italian prisoners of war and French service troops available as part of the SOLOC strength. The net result was a conclusion that there should be a transfer of some 20,000 service troops from Com Z to SOLOC, the detailed implementation of which was arranged by the Service Troops Branch of G-4 SHAEF.

C Coy Fri 11 Aug

Forest Lodge - 8.50

Mitchell - let know if you can

ring Mitchell tomorrow.



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