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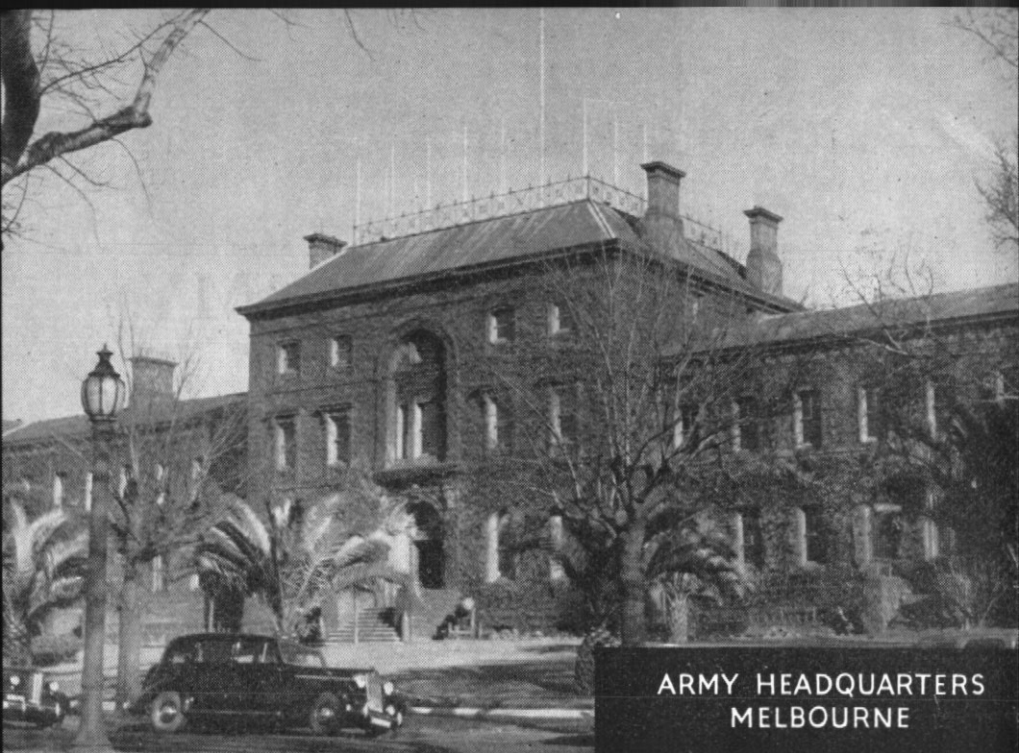
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ARMY HEADQUARTERS
MELBOURNE

AUSTRALIAN ARMY JOURNAL

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The AUSTRALIAN ARMY JOURNAL is printed and published for the Directorate of Military Training by the Army Headquarters Printing Press. The contents are derived from various acknowledged official and unofficial sources and do not necessarily represent General Staff Policy.

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Australian Army Journal

THE editor of a commercial journal sold in open competition with numerous other periodicals is never in any doubt about the success or otherwise of his publication. The value set upon it by the readers he aims to attract will be accurately reflected by the volume of his sales. On the other hand, the editor of a periodical like the Australian Army Journal, which is circulated privately and without charge, has no accurate gauge for measuring the esteem in which his publication is held.

However, in reviewing the work of the Journal in the eighteen months of its existence it is fair to say that we have been able to present to officers studying for examinations material which could not otherwise have been made available to them. The fact that military journals in the United States, Canada and India have reprinted a number of our original articles suggests that we have not been altogether unsuccessful in our efforts to encourage military writing in this country. At the same time the increasing demand for copies indicates that the Journal is appreciated by the Australian Army.

With the elimination of some of our production difficulties we are now able to publish the Journal every month instead of every second month. Consequently this number covers the period February-April, 1950. The first of the new series will be published early in April.

This change will enable us to present more up-to-date information of immediate interest to the Australian Army, and to devote more space to overseas military thought, trends and developments. This latter function is considered to be particularly important because, owing to restrictions on dollar expenditure, only a relatively few officers have access to many important overseas military publications.

At the same time every effort will be made to develop our own contribution to military thought and literature. Naturally, these efforts cannot be left entirely to the editorial staff and the Directorates at Army Headquarters. If the Australian Army is to succeed in this branch of military endeavour we must have more contributions from individual officers, contributions on any subject that will help to improve our military education and fitness for war. There must be many officers who, from their experiences in the recent war and from the experience they are gaining from day to day, could contribute articles which would be of interest and benefit to the Army. This experience, this knowledge, does exist. Its value will be increased many times if it is handed on to others. You have it, you pass it on. It is merely a matter of devoting a couple of hours to writing it down and putting it in the post.

Return of the Golden Horde

"The Russians are not the most easterly of western peoples, they are the most westerly of eastern peoples" —

Kipling.

IT is said that man is consistent only in his inconsistency. Yet two outstanding characteristics seem to have ridden him like the old man of the sea from time immemorial — his vanity and the ease with which he forgets his most bitter lessons.

Few civilizations provide a better example of the vanity of man than Western civilization at the present point of its growth—or decline. Dazzled by the brilliance of our technological achievements we walk the earth like gods, confident in the belief that no rival can match our intellectual and material powers. Of recent years, though, our confidence has been shaken a little by the diplomatic and scientific successes of our rival civilization behind the iron curtain. But, because of our affinity with the ostrich, we find little difficulty in escaping from our doubts. The only difference is that we go to a great deal more trouble than that long-legged bird. Whereas he escapes from reality by the simple expedient of sticking his head in the nearest patch of sand, we must needs weave up for ourselves an elaborate structure of unreal argument and pretence behind which we take comfort with our conceit. In the long run it would be much easier, and just as effective, to find a handy sand-hill.

For many years we hid our fears of communism behind the notion that the Russian regime was on the point of collapse. A lot of men made a lot of money spinning this pleasant yarn for us. When that story wore a bit thin reams of evidence were produced to demonstrate the military inefficiency of the Russians. The Russians destroyed that

comforting myth by their achievements in the recent war, but we still give it some credence. And, although scientists assured us that Russia would eventually find the secret of the atomic bomb, we readily believed that it would be later rather than sooner. Now we are pretending that they will never catch up to us in its technical manipulation. And we watch the dominion of the Kremlin steadily extending over Asia with considerable complacency because we vainly and erroneously think that the Asian never has been, and never will be, a match for the European.

These are dangerous notions. Asia, indeed, has contributed much to the onward march of mankind. She produced no less than 10 of the 20 or so known civilizations, Europe and Europeans have produced only four. All the great religions still in existence were born on Asiatic soil. Asians have contributed much to science and art. And Asia has produced great military leaders and military systems which, more than once, have very nearly succeeded in bringing the entire civilized world under their dominion.

We could demonstrate the fact that, in the past, Asia has produced many great military leaders by listing their names and deeds. Imposing as this list is, it will, perhaps, serve our purpose better if we select just two names, and those the names of men whose people have freely intermingled with the Russians for centuries and whose birthplace lies within the communist heart land.

In the year 1162 AD, on the bank of the Onon River in Siberia, a son was

born to Yesukai, the chieftain of a congeries of nomadic tribes. Yesukai died when the boy, Temuchin, was thirteen years of age, and the overlordship of the young heir was immediately challenged by a number of petty chiefs. Backed by his warlike mother, Temuchin spent the early years of his youth in establishing his authority over his father's tribes. That done he turned to the more ambitious project of extending his sway throughout the length and breadth of the Mongolian steppes, a task which he brought to a successful conclusion in the year 1206. It was then that he assumed the title of Jenghiz Khan, a name which a little later was to arouse terror and despondency in the mighty empires that lay to the east, the west and the south.

It is safe to say, indeed it is on record, that the creation of a loose confederacy among the nomadic Mongolian tribes of Central Asia was regarded with complacency by their neighbours in the powerful Kin Empire in China and the Karismain Empire in Persia. "After all," said the people of these Empires, "they are only wild horsemen, backward people who are years and years behind us in the arts of peace and war. They have no industrial potential at all. They will never catch up with us."

For this part Jenghiz Khan quietly inaugurated a five years' plan designed to perfect the military system he had evolved and to prepare the way for the realization of his ambition of world hegemony.

Conquest of China

As a first step he organized a vast network of spies and fifth columnists throughout the Kin Empire. Through this very efficient intelligence system he collected much information about the territory and the people he planned to attack, whilst his fifth columnists created dissension and disruption, weakened morale and established traitorous cells at key points in the military and administrative systems.

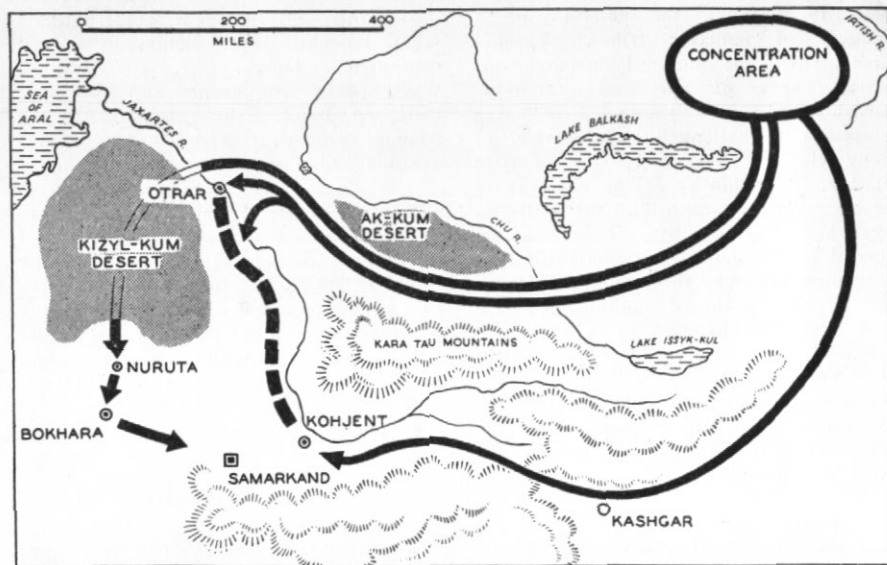
Suddenly, in the year 1213, Jenghiz Khan launched three armies in a vast concentric attack. The Kin Empire, weakened by complacency and treachery, collapsed before the onrush of the Mongol columns. Within a few months Jenghiz Khan was master of China.

In his conquest of China Jenghiz Khan demonstrated the calculated use of terror as a weapon of war, slaughtering some 18,000,000 persons in the course of the campaign. After that the mere rumour that the Mongols were approaching spread alarm and despondency amongst the civil population, and tended to undermine the morale of the opposing troops.

Mongol Organization

Jenghiz Khan spent the next five years absorbing the wisdom of the Chinese and adapting their technique to his own purpose. He went in for quality rather than quantity. Merit was the only key to advancement and the Khan gathered into his staff a number of extremely capable generals. These generals attained "intellectual discipline" almost unique in military history. The supreme command was in the hands of Jenghiz Khan; but once the plan was decided upon, the generals executed the operations without interference, and with but the rarest communication with the supreme command. The degree of co-operation and teamwork attained was truly remarkable.

The Mongol Army was composed entirely of mounted troops and was organized on the decimal system. Ten men made a troop, ten troops a squadron, and ten squadrons a regiment of 1,000 men. The strongest formation was the *touman* composed of ten regiments. An army was made up by a temporary grouping of *toumans*, usually three. In addition there was a *touman d'elite*, the Guard, which usually formed a general reserve in the hands of the commander-in-chief. There were also various formations of auxiliary troops.



Their weapons comprised a lance, a curved sabre and two bows—one for use on horseback, and the other for greater precision when in dismounted action. They had three types of arrows designed for use at different ranges. Their pack artillery comprised various missile-throwing machines, mangonels and catapults. It could fire rapidly and accurately and could go anywhere.

Conquest of Persia

By 1219 Jenghiz Khan was ready to move against Persia, and began the concentration of an army of 150,000 men between Lake Balkash and the Irtysh River. His fifth column, which had been busy for a long time, whipped up its activities and rattled the Persian Shah into providing an excuse for war. He covered his concentration, ensured its secrecy and forestalled the danger of an immediate Persian offensive by sending a force under Juji into Persian territory between the desert of Ak-kum and the Kara Tau mountains to pillage and burn. When the Persians counter-attacked, this force slowly retired behind a smoke screen from burning towns, villages and crops.

Jenghiz Khan now gave his terror weapon time to produce its effect. Secretly urged on by fifth columnists, the Persians clamoured for protection against further Mongol incursions. The Shah fell into the trap and violated the principle of concentration by spreading out his army in an attempt to close his entire frontier along the line of the Jaxartes River. He assigned garrisons of about 40,000 men to each of his two principal cities, Samarkand and Bokhara, but failed to retain a strong general reserve. In all he had about 200,000 men in the theatre of operations.

Having caused alarm and despondency within the enemy ranks and brought about a dispersion of their forces, Jenghiz Khan made his next diversionary move early in 1220. Chepe, with two toumans, attacked along the Jaxartes River from Kashgar towards Khojent, an operation which threatened the Shah's right flank and the cities of Samarkand and Bokhara. The Shah reacted by reinforcing the threatened point.

Covered by this diversion two other Mongol armies, under the command of Juji and Jagatai respectively, passed to

the north of Lake Issyk-kul, and early in February suddenly debouched on the Shah's left flank. Juji and Jagatai turned south from Otrar, clearing the line of the Jaxartes and working towards Chepe who, after taking Khojent, had turned north to meet them. These operations, which occupied the whole of February, were successfully directed towards defeating the Shah's army in detail and drawing in his reserves.

Meanwhile Jenghiz Khan, with Sabutai as his chief of staff and 40,000 men under his direct command, had followed Juji and Jagatai to Otrar — and disappeared. At the moment when the fighting on the Jaxartes was at its height this force, having crossed the supposedly impassable desert of Kizylkum, suddenly re-appeared in the Persian rear, took Nuruta, and was almost on top of Bokhara. Paralyzed with terror, the Bokhara garrison offered but a feeble resistance to Jenghiz Khan as his army swept onwards to join hands with his other columns converging on doomed Samarkand.

Starting with 150,000 men, Jenghiz Khan had in the space of five months wiped out an army of 200,000 and overthrown the mighty Karismain Empire, a people far more advanced technically, politically and culturally than the Mongols.

In this campaign we see the sureness of touch of the great master. Every move was calculated, purposeful, and directed towards the attainment of the ultimate object. The successive blows of each column reacted to the advantage of the other columns. From the time the fifth columnists set to work everything fitted into a closely woven pattern, every move occurred in a planned sequence leading up to the shattering surprise of the sudden re-appearance of Jenghiz Khan in rear of the Persians and across their communications. In the face of generalship of this calibre technical and numerical superiority were of no avail.

Re-organization and Preparation

Jenghiz Khan exploited his success by sending an expedition to India to take possession of the city of Delhi, and despatched Sabutai and Chepe westward to establish a base for the subsequent invasion of Europe. Moving by the southern end of the Caspian Sea, they reached the Donetz Basin in the spring of 1221. Everywhere they established a stable civil and military administration. They pushed their espionage service deep into Europe, and planted informers and collaborationist cells in influential circles as far west as Rome. Having established the base, Sabutai and Chepe brought the main bodies of their armies home in 1223.

Before his third five years' plan, designed to provide the resources for the invasion of Europe, was completed Jenghiz Khan died in 1227. Subsequent disputes about the succession, and the influence of an "eastern school", delayed the European venture for a generation. The project, however, was never lost sight of, and active preparations for its accomplishment were pursued continuously. In 1239 central Russia was subdued as far west as Moscow as a preliminary step towards securing the communications of the invading armies. The whole of southern Russia was organized as a vast remount depot.

Invasion of Europe

By 1240 Ogdai, the new Emperor, was ready to strike. The supreme command of the expedition was vested in Sabutai, who had been the directing genius of all the preparatory actions.

The first major objective was the conquest of Hungary because in that region dwelt the Christianized descendants of the first Mongol invaders of Europe, the only people of the Turco-Mongol race who still remained outside the authority of Jenghiz Khan's successor. In addition to the Hungarians, the neighbouring powers were likely to resist the invasion, notably Poland, Bohemia,

the Holy Roman Empire and the German military orders.

In January, 1241, Sabutai concentrated his army in the vicinity of Lwow in southern Poland. After providing garrisons and detachments to guard his depots and communications, he had more than 100,000 men available, not a large force with which to attempt the overthrow of the European powers who were preparing to dispute his passage.

Sabutai intended to force the passes of the Carpathians and march on Gran, the Hungarian capital. It was necessary, however, to secure this movement against interference by the Poles and Germans on his right flank, and to ward off any counter move based on Austria or Bohemia.

Sabutai divided his force into four armies, each of three *toumans*. Three of these he allotted to the main operation, the fourth, under the command of Prince Kaidu, to the mission of removing the threat to his right flank.

Kaidu moved first, and he moved fast. He crossed the Vistula at the beginning of March, and a fortnight later fell like a tornado on the Polish army at Szylow. Driving its remnants in two divergent directions, Kaidu swept on with incredible speed, took Cracow and then Breslau. On 8 April he arrived at Liegnitz where a powerful German army had been concentrated. Only one day's march away a strong Bohemian army was moving to join the Germans. The junction of Allied forces was never effected because on the 9th Kaidu cut the German army to pieces in one of the most terrible disasters that have ever befallen European arms. In a little over a month he had covered 400 miles, fought two pitched battles, taken four great cities, and conquered Poland from the Vistula to the borders of Saxony.

The Bohemians fell back in the hope that the Mongols would follow them into country unsuitable for mounted troops. Instead of falling into the trap, Kaidu turned Moravia into a desert to protect his flank. He then turned south, ready

to fall upon the flank of any force moving from Austria to the assistance of the Hungarians opposing the advance of the other Mongol armies.

Meanwhile Sabutai had advanced into Hungary in three columns, of which the two outer ones traversed the circumference of an elongated circle, while he himself with the central mass started later and moved along the diameter. This close linked system gave him maximum all-round security. The dates of departure and the routes were so arranged that the three columns should junction on the Danube near the Hungarian capital, where the main enemy forces were likely to be met.

The right column moved to the north of the Carpathians, its right flank covered directly by the Vistula and indirectly by Kaidu's army. Crossing the mountains by the Jablonika Pass, it turned south-west down the March and Vag rivers, and reached the Gran area on 17 March.

The left column executed a circular sweep to the south-west through Transylvania and arrived in the concentration area on 3 April.

The central column started last and, moving by the valley of the Theiss, reached the Danube on 4 April.

By these swift moves, carried out with clockwork precision, Sabutai had concentrated his three armies in the vicinity of the main Hungarian forces. Kaidu, however, had yet to fight the battle of Liegnitz, and the situation in the north was still uncertain. Besides, Sabutai felt that it would be unwise to attempt to cross the Danube in the face of the Hungarians. Therefore, he resorted to stratagem by retiring slowly towards his advanced base at Munkacz. If the Hungarians abandoned the protection of the Danube and followed him, he would catch them in the open. If they refused to move Kaidu would arrive eventually, and make the forces at his disposal more nearly equal to those of his opponents.

The Hungarians elected to follow, and they reached the obstacle of the River Sajo the day after Kaidu had destroyed the Germans at Liegnitz. That night Sabutai recrossed the Sajo, and at day-break he was ready to strike. By midday the Hungarian army had ceased to exist.

How Sabutai managed to co-ordinate and synchronize the movements of his columns we do not know. But that he did synchronize them, and that infinite

naissance in force into Austria to gather information and lay waste the land. At this point, however, Ogdai died, and the Mongol Empire was riven by an internecine struggle for power. Sabutai decided to return home, and withdrew from Europe unmolested.

Conclusion

In assessing the accomplishments of Jenghiz Khan and Sabutai it must be



care went into the planning of the campaign, is certain. Strategic masterpieces like that do not happen by chance.

After the holocaust on the Sajo, Hungary was occupied without further fighting. Sabutai established a sound administration, and proceeded, as usual, to weave up his web of spies and fifth columnists further to the south and west in preparation for his next major move. To cover the build up in his new base in Hungary and to keep his terror weapon in action, he sent a recon-

borne in mind that all their major successes were won over people who considered themselves vastly superior to the Mongols in every way. Undoubtedly they were superior in political, economic and social organization, technical knowledge and material resources. But these advantages were of no avail when matched against the superior military skill and organizing ability of two men from central Asia.

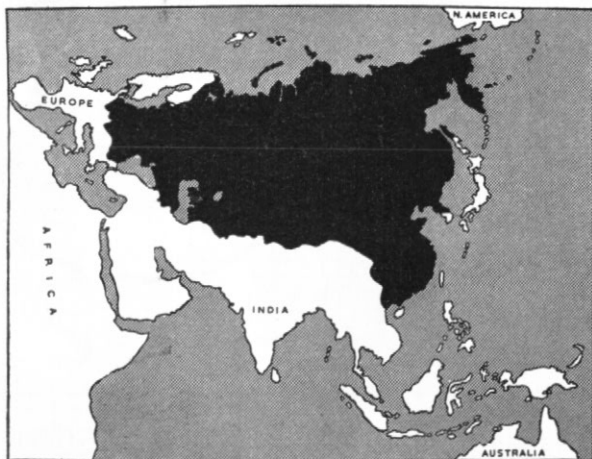
At each stage of their onward march Jenghiz Khan and Sabutai paused to

adapt the techniques of the conquered peoples to their own purposes. Each step was planned and prepared with infinite care and patience. Ahead of their armies moved their secret agents and their quislings, to create dissension and undermine morale. When all was ready the military blow, the *coup-de-grace*, was delivered with incredible speed and power.

Russian communism has adopted a Western social-economic creed, and is using it to prepare the way for its march to world hegemony. In central Asia men, faithful to the ambitions and teachings of their ancestors, are adapting Western scientific and industrial techniques to forge the military weapon

to exploit the successes of their hidden advanced guards. They have already demonstrated their skill in the application of political and diplomatic pressure, and in their mastery of disruptive techniques.

We of the West are not devoting sufficient energy to preparing ourselves morally and intellectually to meet the ever growing threat. Unless these essential elements of successful resistance are developed and strengthened our material resources are likely to run through our fingers like sand, broken, as the material resources of China and Persia and Europe were broken, by the machinations of far-sighted, ruthless schemers behind the Urals.



1950

The Attack

Major-General F. Kingsley Norris, CBE, DSO, ED, KHP, MD, BS, FCNA
Director-General of Medical Services

This is the third of three articles on military hygiene contributed by the Director-General of Medical Services.

Field Service Regulations, Vol 1, states, as it has stated for years, "The maintenance of a high standard of health is one of the most important responsibilities of Commanders. The Medical Service is responsible for advising Commanders in carrying out these duties."

In view of this clear direction, at no time should a Corps Commander say to his DDMS, as was said in World War II, "What about this malaria of yours"? The malaria problem and responsibility for its solution, as with all other problems of health were his—the Commander's. Most senior and junior Commanders realized this—but many did not and such ignorance cost at least one Commander his appointment.

Hygiene, which is concerned with the rules and principles of health maintenance, and sanitation, which is concerned with the implementation of these rules, are the responsibilities of every soldier in the Army. Unless these rules are understood and accepted by every soldier they cannot be successful.

We have presented the important role of disease in armies and the various means by which these diseases are spread. It is necessary for all those who are charged with the responsibility of maintaining a high standard of health to understand the means at their disposal

with which they can discharge this responsibility.

These means may be divided broadly into—

- i. Those designed for the protection of the individual before exposure.
- ii. Those designed for the protection of the individual during exposure.
- iii. Those designed for the elimination of the carriers of disease.

Measures Designed for the Protection of the Individual Before Exposure

Recovery from a bacterial disease is brought about by a victory of the defensive mechanism of the body. Fortunately, in health, we have, normally, within our blood certain substances which can seize upon and destroy invading organisms and their poisonous products or toxins. If these substances are adequate victory is assured and recovery follows, if inadequate—defeat and death. It is possible to increase or enhance many of these protective substances in two ways—

- (a) actively
- (b) passively.

It is possible to enhance the normal protection against smallpox, diphtheria, typhoid fever, tetanus, and to some extent tuberculosis, by introducing into the blood stream the organism or toxin producing each disease, modified and controlled in such a manner as not to be dangerous but adequate to stimulate the production of the normal protective qualities beyond the normal content of the blood. As long

as this excess quantity or quality persists the protection is thereby enhanced. The duration of this enhanced protection varies with different organisms. Smallpox protection lasts many years—cholera protection only a few months.

By this means—vaccination through the superficial layers of the skin—smallpox can be conquered. By injection into the deeper tissues diphtheria has been reduced to relative unimportance, tetanus has lost its terrors and now influenza is susceptible to the same control.

But unfortunately so far there has not been developed a similar control of all bacteria diseases. There is still no known similar method of protection against the common cold. Each protection is specific towards a particular organism, increased protection against typhoid has no effect on an invasion by tetanus.

With these weapons already available to us—a denial of their use is a direct contravention of responsibility as laid down in FSR Vol 1.

The blood of a person who is convalescent from a disease such as measles is highly charged with excess protective substances and if this blood, or that portion of blood containing these substances—the serum—is injected or transfused into another person the blood of the recipient becomes enhanced in its protective quality.

The serum of a horse which has been injected with a non-fatal dose of diphtheria poison is highly protective against this organism, and is available for a human being. In the same way protection against snake venom is produced. But generally these methods of passive protection are reserved for treatment rather than prevention of disease. By means of active protection the greatest change has been brought about in the maintenance of health in armies, and the facilities for its provision are always readily available. Insistence in their use will be found in a detailed form in Military Board Instructions 152 of 29 August 1947.

Measures Designed for the Protection of the Individual During Exposure

These may be considered with reference to our three broad means of the spread of disease.

Droplet Infections or Dirty Air.

These diseases are spread by the reception of infected material dispersed from the nose and throats of those who harbour the organism in these sites. The common cold, influenza, meningitis and infantile paralysis are included in the group. Protection may be afforded by removal from the spray range of those infected—normally about six feet. The common cold and those infections associated with coughing and sneezing are more prevalent in the winter, not directly because the weather is cold and wet but because people huddle together in closed spaces well within the range of each other's nasal and oral spray. They spit at and on one another without realizing it. The answer to these infections is "don't crowd".

Recently a cadet camp was abandoned because at the time there was an epidemic of infantile paralysis affecting young adults. For those attending this camp, provided messing and sleeping accommodation were available so that in any closed space there was an interval of at least six feet between heads, the risk would have been much less than that of the inevitable crowding of these youngsters during school holidays—in public conveyances and in picture shows.

There is little danger of the spread of a droplet infection in the open air, and with proper spacing in huts and tents the danger may be reduced to a minimum. An instruction designed to produce sleeping alternately heads to feet is not effective as this procedure is abandoned as soon as lights are out.

Small outbreaks of droplet infections will occur in any concentration of troops as there are always carriers of these diseases present in the community, but these outbreaks are readily controllable

by these measures designed to protect the individual during exposure.

Dirty Food.

This group of disease should present no difficulties to a good commander. No food should be exposed to the carriers of disease which are mainly dirty flies and dirty hands.

If we view the common house fly under a reasonable magnification we realize that his body and limbs are covered with thousands of fine sticky hairs. When we remember that the playgrounds of the fly are filth and food we can appreciate the menace. The most valuable event in the medical history of an AIF Division in the Middle East was the early infection of the Divisional Commander with dysentery. Thence forward flies and filth vied with the Axis Powers in his enmity.

The most rigid care of all food stuffs and those handling them must be instituted and maintained. In this respect water is included in foodstuffs. Water for drinking must be considered unsafe until it is proved otherwise. It is a simple matter to determine this and if necessary it is simple to render the water harmless.

Dirty Skin.

Many varieties of expensive, highly coloured and strongly smelling liquids and soaps are available to cleanse the skin, but the old fashioned simple soap and water still remain supreme. To include within a soap any chemical adequate to be effective against bacteria would almost certainly damage the skin. Any simple kitchen soap is satisfactory as it is the physical qualities of soap that provide its detergent action. Sufficient soap and water—if possible hot—should always be available.

The crop of sores associated with dirt which inevitably occur during a campaign disappear within a few days when adequate washing and bathing facilities are available. Mrs Porter and her daughter—in the famous song—had the right idea about soap and water.

For the protection of the individual against those diseases which are carried by insect carriers it is necessary to render his person inimical to the presence and subsequent bite of the insect and to render, if possible, his blood inimical to the organism injected by such bite.

There is, so far, no known method of vaccination against malaria as there is towards yellow fever and dengue but certain chemicals are available which, if administered in such a manner as to maintain an adequate level of their active principle in blood, will by direct action on the organism suppress its development or actually bring about its death.

Quinine was the first of these suppressants for malaria, later there was Atebrin and now there is Paludrine. In regular adequate doses of one or other of these chemicals it is possible to suppress the development of practically all strains of malaria and at the same time to eliminate the deadly ones. After cessation of this suppressant course in a few cases the organisms will subsequently develop and produce malaria, but such cases will not be fatal. Beyond question if these chemicals are available and administered as directed campaigns may be conducted in malarious areas. In the first New Guinea campaign, contrary to the advice of the Medical Service, these suppressants were considered of low priority in transport importance and were not available in forward areas. The disastrous results of this decision have been recounted.

There has not been developed to date any chemicals having a similar suppressant action towards the other diseases borne by insects except typhus where chloromycetin has the same action.

To render the individual unacceptable to the insect carrier we turn to the habits of the insect. The *anopheles*—the mosquito carrier of malaria—is an evening and a night biter. Consequently from sunset to sunrise as little exposure of the skin as possible must be permitted and to the areas unavoidably exposed

some adequate repellent must be applied. Investigations are proceeding in the development of satisfactory impregnation of clothing with mosquito repellent. Already this is available against the mite carriers of typhus, which was the disease with the highest mortality rate among our troops in World War II.

The success of these various protective measures depends on effective discipline, explanation and understanding. Those issuing the orders must understand them. Those receiving the orders must understand them and their importance. The erroneous idea that malarial suppressants impair sexual function dies hard among soldiers. This idea is quite fallacious. As the late Major-General Vasey told his troops on parade (with characteristic embellishments) "You think quinine stops your desire, I can tell you on the advice of my ADMS that if you get malaria you will lose your ability."

The malarial rate in a unit now is a manifestation of its morale and a mirror of the leadership of its commander.

War Neurosis.

Protection of the individual against many of the rigours of war has been provided by Ordnance and "Q", but protection against war neurosis must be provided long before the soldier enlists. The child is the father of the man. By less shelter and protection, less streamlining in childhood and youth the fibre may be toughened. If the fibre is frail from lack of development or from disease it is not feasible so to shelter and secure the individual in the Army that this will not break. Mental or psychiatric armour is not an issue in the Army. Rather in the Army must we consider the protection of the other individuals and this may be achieved by rejecting any suspected case on enlistment and discharging any demonstrated case at once. This disability may be undetectable on enlistment but must be carefully searched for. A fibre fitted for the tempo of certain civilian activities in which the individual remains an individual may be inadequate for Army life. Granted that only a minority

of soldiers face the front line, discipline, law and order must be imposed on every member of the Army. Until Army life is experienced the inadequacy of the fibre may not be demonstrated. But once demonstrated in one or other of the bizarre forms of self-defence these cases are not economically amenable to attention within the Army under present conditions. They remain unreliable and a menace. In such circumstances the Service must get the benefit of any doubt. These cases should be discharged, not necessarily on medical grounds or with any stigma, but with the honest reason that they have proved unsuitable to be soldiers. If it were possible to institute a probationary period of service during which, with no commitment, the individual was submitted to Army regime (an unknown environment) many of the subsequent problems, including Army crime, would be eliminated.

Common sense and knowledge of mankind in a commander and good man management by officers and NCOs, resulting in high morale, are the most important factors within the Army for preventing the development of potential war neurosis which, in the last resort, are failures—due to congenital or acquired defects—of morale in the individual or in the group.

Measures Designed for the Elimination of Insect Carriers of Disease

Mosquitoes

When De Lesseps, flushed with the triumph of cutting the Suez Canal, turned to the Panama he failed and squandered millions of French francs because he did not commence by killing mosquitoes. Those who have passed through the Panama Canal will recall the striking monument to the power of these yellow fever carriers in the form of rusting and rotting old dredges abandoned because of ignorance.

The mosquito needs still water for breeding, and this breeding can be frustrated either by removing the water or by rendering it inaccessible or unsuitable.

The removal of still water breeding grounds is an engineering problem of canalizing and drainage. If a surface of still water is adequately covered it may be rendered inaccessible, and if the water is sprayed with oil the surface tension may be so lowered that the breathing of the embryo may be impossible, or certain chemicals may be added to the water rendering it unsuitable and fatal to developing forms.

These various measures are largely a question of labour, and malaria is most prevalent in tropical areas where labour is readily available. The question of mosquito breeding is easily answered if it is understood. The Malaria Control Units of the Army are designed to direct and supervise such activities. Within a few weeks 7 Australian Division had rendered Beirut area malaria-free by the employment under supervision of three hundred native labourers. Any area may be rendered malaria-free provided labour and tools are available. A certain breed of fish (*Gambusia*) which thrives in tropical waters is particularly deadly to mosquito embryos, and these are a useful additional means of mosquito control.

The adult mosquito may be destroyed in closed spaces by adequate spraying with the standard DDT solution available within the Army.

Flies.

The control of flies is largely a question of the control of refuse—their breeding

grounds. Before sewerage was introduced into Melbourne at least half of the medical beds in our public hospitals were always occupied by typhoid fever patients. Under the old pan system flies had ready access to the infected excreta of the typhoid carriers who inevitably exist in any community where the disease is endemic. A somewhat crude but impressive anecdote is told in this respect at a seaside resort. An inmate of a guest house had occasion to complain of the discomfort of the outside latrine because of the cloud of flies that hovered around there—"Sir," said the manager, "you should pay your visit at meal time, then the flies are all around the food".

Refuse is inevitable but in the interests of hygiene adequate disposal is essential. Sewerage systems and contract disposal of refuse in camps tend to dull the sense of responsibility in this matter, and improvised but adequate methods of disposal are apt to be forgotten.

It is the responsibility and within the competence of any unit to dispose of its refuse in any area remote from modern conveniences in such a manner as to deny this source of breeding to flies, and these improvised methods should be within the knowledge and practical experience of every soldier in the Army.

The adult fly can be controlled as is the adult mosquito by adequate spraying.

(Concluded)

NEW COMBAT CLOTHING UNDER TEST

DURING the summer and winter months of 1950 units of the Royal Australian Regiment stationed in Puckapunyal, Victoria, will participate in Empire-wide tests of combat clothing designed in the United Kingdom for use in climates where the temperature ranges from 15 degrees to 85 degrees.

Hitherto the efforts of military designers have been directed towards the production of an all-purpose field uniform. That is to say, they have endeavoured to provide the soldier with a uniform which would be smart and presentable when worn in rear areas and on leave and which, at the same time, would be suitable for the strenuous business of fighting and working. The British battle dress, recently adopted for use in the Australian Army, was an attempt to harmonize these requirements.

Whilst battle dress and the present greatcoat are quite suitable for wear in rear areas and on leave they have the following defects when worn in action:—

- (a) The battle dress provides no protection against rain, and is in fact water absorbent.
- (b) The greatcoat is heavy and cumbersome. It restricts freedom of movement and is unsuitable for wear when physical exertion is necessary.
- (c) The groundsheet, when worn as a cloak, restricts freedom of movement of the arms and gives little protection to the lower body and none to the legs.
- (d) Since combat demands freedom of movement neither the greatcoat nor the groundsheet can be worn in action. In wet weather, therefore, the fighting soldier invariably finds himself clad in sodden and uncomfortable garments.

The new range of clothing is designed to remedy these defects and to provide:—

- Increased comfort and a reasonable degree of protection against wet and cold at all times.
- Garments suitable for all occasions in war and for training and working dress in peace.

The range of clothing undergoing trials consists of:—

A Peaked Cap, made of water-repellent gaberdine. This is intended to protect the head from wet and cold and the eyes from glare, and has a flap which can be turned down over the ears.

A Combat Suit, of smock and trousers made of windproof and water-repellent gaberdine.

A Short Greatcoat, made of water-repellent gaberdine with a warm lining. This garment can be worn under the combat suit or as a greatcoat.

High Boots, about 10 inches high and all leather, intended to be more waterproof than the present GS boots and to eliminate the necessity for separate anklets.

A Poncho, which is a rectangular sheet of butyl-proofed nylon provided with sleeves and with a hole in the centre for the head. It is larger than the present groundsheet and is intended for use as a rain cape, groundsheet, bivouac shelter or anti-gas cape.

The peaked cap is intended for wear with the combat suit when it is not necessary to wear a steel helmet. When not in use it can be rolled up and carried in the haversack or pack.

The combat suit is designed for wear in action, in training or as a working dress. In hot weather it can be worn over normal underwear only, if desired with the neck of the smock undone and the sleeves rolled up. As the weather gets colder a shirt, pullover, and even the battledress, can be added underneath the combat suit. It is expected, however, that the clothing will be warm enough without the battledress except in very cold climates.

The short greatcoat, which is intended to replace the present greatcoat, can be worn with the normal battledress, or with the combat suit when additional warmth is required, eg, on sentry duty in cold weather.

The poncho is intended for wear over clothing and equipment when protection from heavy rain or liquid gas is required. It can be used as a groundsheet and is provided with press studs to facilitate its use as a bivouac shelter. When not in use it is carried in the haversack or pack.

With the exception of the high boots and the poncho all the items of the new combat dress have successfully completed preliminary tests and are now undergoing field trials with troops in the United Kingdom, Germany, the Middle East and Australia. Since these trials have to be conducted with great thoroughness it will, of course, be a long time before the results are known.

Battle dress will be retained as part of the new range of field clothing for wear on occasions in war when a reasonably smart form of dress is required, for example, when walking out in rear areas, on leave or for ceremonial parades. It can be worn under the combat suit in very cold weather.

In peace time battle dress will be worn for general duty and on training parades



when the combat suit is not required. For ceremonial parades and social functions the smart and comfortable "blues" will be worn.

MODERN CONCEPTS

of

INTERCOMMUNICATION

This is an authoritative article written for the Australian Army Journal by the Directorate of Signals at the request of the Director of Military Training. It is intended to present a comprehensive picture of the problems associated with the provision of the means of intercommunication required by a modern army, and to describe briefly the equipment and organization designed to meet these requirements — Editor.

Field Service Regulations define intercommunication as "the means of transmission of all orders and information, by which the close co-operation of all forces in the field is ensured". The provision of the means of transmission referred to in this quotation is the mission of the Royal Australian Corps of Signals.

The scale of essential communications has always been dependent on the speed of movement, the tactical role and the size of the force involved. This was borne out during the last war by the expansions which took place in major signal units. These expansions were necessary to meet the needs of mobility and increased complexity of control, rather than as a result of basic changes in organization or equipment. Increased mobility demands in turn a system which is flexible and not subject to interruption for any reason, while the effect of increased complexity of control is

reflected in the higher volume of traffic handled over circuits in the rear areas. All three—increased mobility, increased complexity of control and the increased area of operations—resulted in a marked increase in the size of formation staffs and the detail related to staff work, particularly in regard to the administrative aspect. That the volume of traffic offering should increase accordingly was inevitable.

The second important factor which influenced development was the use of air power on a scale never previously possible or attempted. The principal characteristic of air power is its flexibility and, therefore, the air force doctrine is that control of aircraft is normally best exercised at high level. In this respect, air power differs from land forces, the control of which is necessarily delegated through a long chain of command. This means that the intercommunication system had to resolve the resulting difficulty in co-operation by presenting a means of reconciling the need for low level army control with high level air force control. Air power also had a very material effect on the vulnerability and reliability of the communication system, particularly in rear areas and along the Lines of Communication. The concentrated bombing attacks on the German system in the final phases of the war in North-West Europe provide a good example of how vulnerable is a system which relies entirely on line or

buried cable when a degree of air superiority is not assured.

The foregoing is intended to indicate in broad terms the communication requirements of a modern army as at the close of World War II. In general, the same requirements will need to be met in the future but are likely to increase at an even greater rate with the advent of modern weapons.

Organization

The structure of Signals units generally has been extensively rationalized since the last war, and the standard Regiment — Squadron — Troop nomenclature adopted throughout. Hitherto it applied to armoured signal units only.

Establishments of signals units differ in type according to the commitments to be met. Thus brigade, divisional and corps signal units—serving as they do formations with a basic order of battle which is normally constant—are organized as complete entities. On the other hand, Army, Army Group, L of C, and Air Formation Signal Regiments comprise a number of self-contained establishments which can be built up on a "brick" system and welded into a whole suitable for the prevailing conditions and formation order of battle. Such units normally have a command and administrative element providing personnel for regimental and squadron headquarters, to which may be added the required number of specialist Troops. A normal scale of such attached Troops is laid down, but is a planning guide only and capable of quick variation when necessary.

The major post-war changes which have been introduced into Signals units of the British Army (and which are being adopted in principle by the AMF) can be summarized as follows:—

Infantry Divisional Signal Regiment

(See Figure 1)

Modifications to this unit as a result of experience gained in the last war have

been responsible for an increase in strength to 907 all ranks.

Specific provision is now made for mobile wireless stations, including a command vehicle, for traffic control, and the original "pool" of sets held to meet services' requirements as and when they arose has been abolished. The latter is replaced by separate sub-troops, each consisting of a command vehicle and requisite wireless detachments designed to meet the individual needs of S and T, RAEME and Medical.

Armoured Divisional Signal Regiment

(See Figure 2)

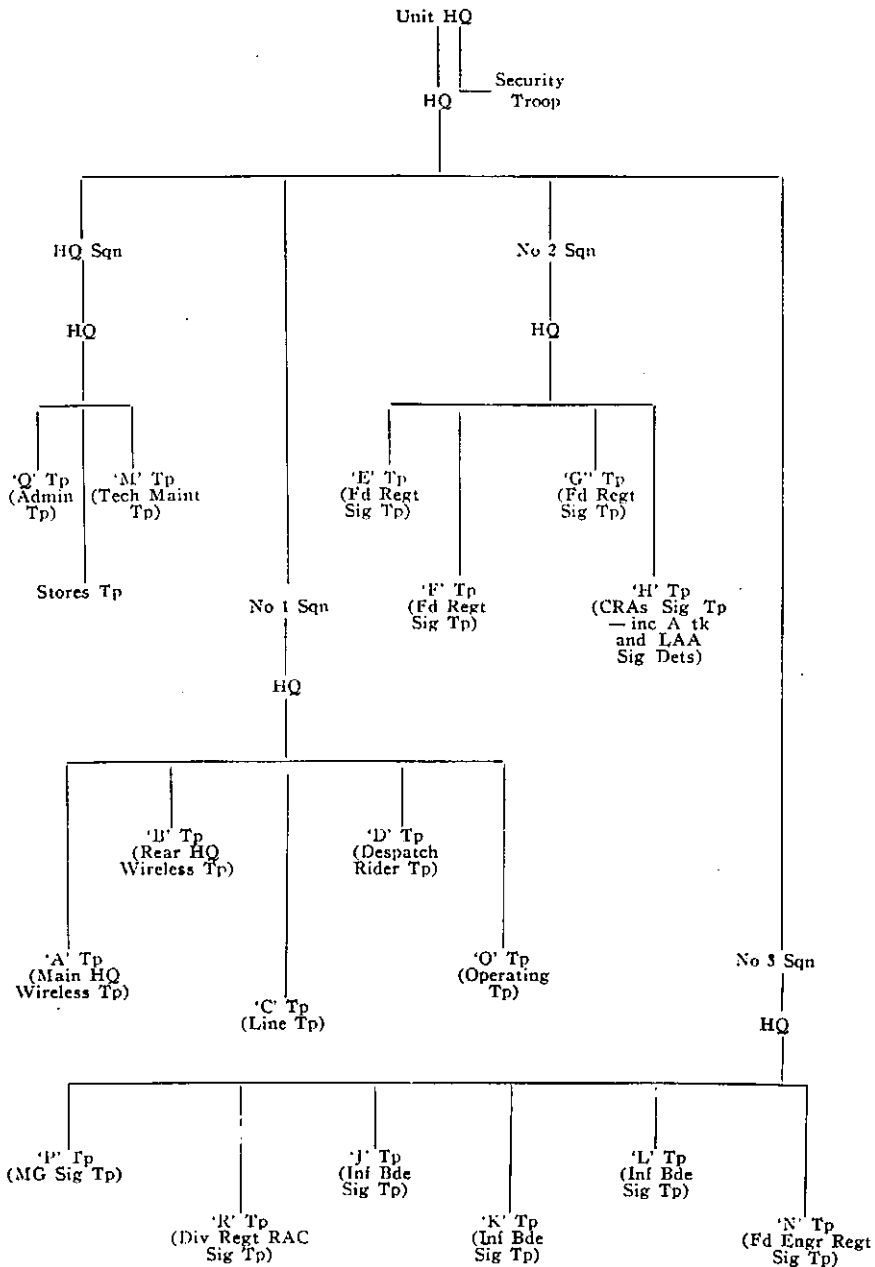
Here again wireless sub-troops have been provided specifically for traffic control and for the services. In addition, general staff policy that the brigades of this type of division shall each be able to fight as composite forces, comprising both armour and infantry, has been reflected in the new organization of the brigade signal squadrons. Each armoured regiment and each infantry battalion now has its own signal troop. Signal squadrons are in every way identical and can function adequately with any combination of armoured regiment or infantry battalion signal troops under command.

Corps Signal Regiment

(See Figure 3)

This unit was until recently one of those described above as being built up on a "brick" system from a HQ establishment and attached troops. In practice it was found, however, that few variations needed to be made in the composition of the unit, hence a fixed organization covered by one composite establishment has been adopted. Elements for traffic control, S and T, RAEME and Medical communications have been added here also, and provision is made for long range wireless communications to, and local telephonic communication at, the Corps Maintenance Area. The strength of linesmen has been increased by 25 per cent to meet these added commitments.

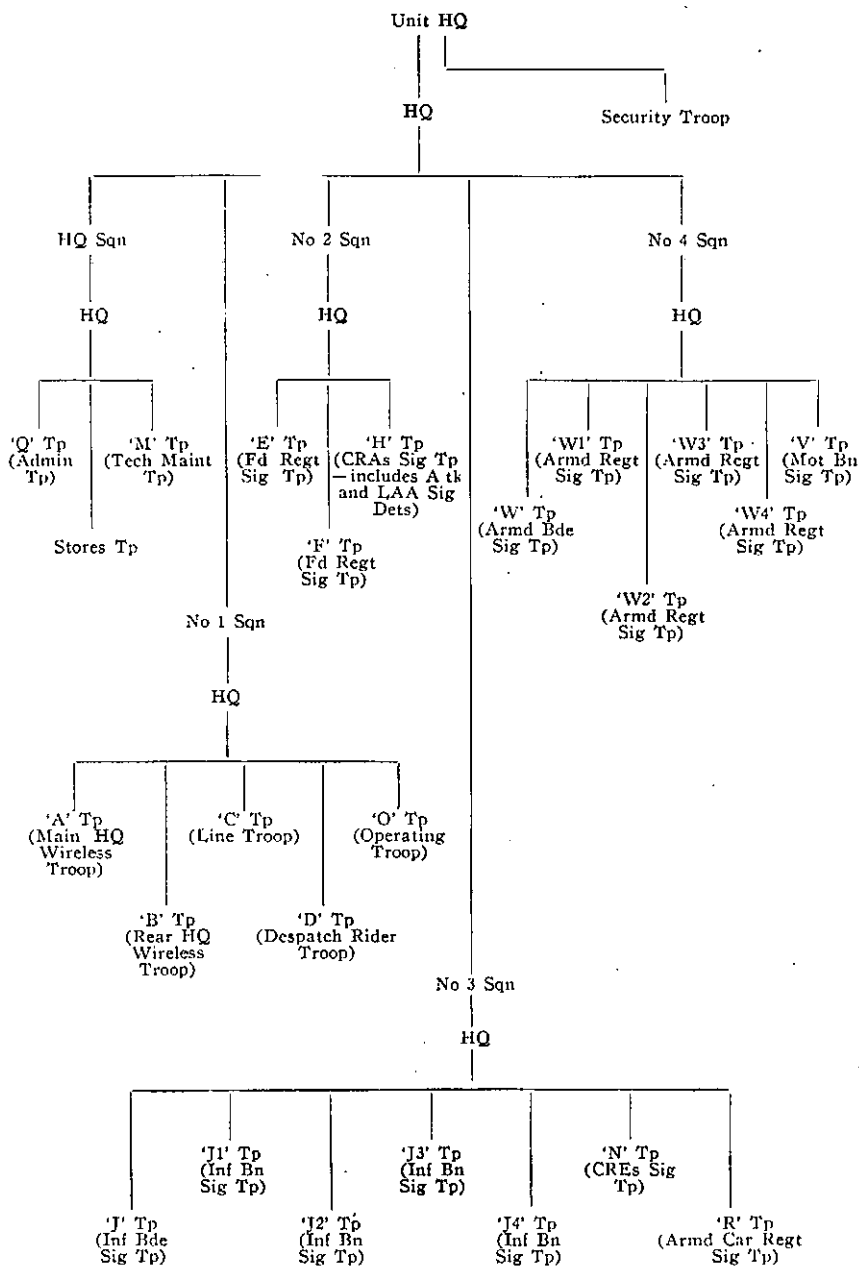
INFANTRY DIVISIONAL SIGNAL REGIMENT



Total Establishment: 907 all ranks

Figure 1

ARMOURD DIVISIONAL SIGNAL REGIMENT



Total Establishment: 917 all ranks

Figure 2

Army Signals

Communications for Army HQ were originally provided by one unit, built up in the same way as the Division/Corps Signals, but it was found, in the case of the British Army, that the units in question frequently exceeded 2,000 all ranks and became so widely dispersed that tactical control and administration became difficult, if not impossible. Frequently, in fact, the Chief Signal Officer (CSO) (Brigadier) at Army HQ and his staff, became involved in command duties which were not their proper function. In future, therefore, the communications for an Army HQ in the field will be provided by two regiments each commanded by a lieutenant-colonel. One regiment will be responsible for communications at main and tactical HQ, and the other will be for rear HQ and Army troops in rear areas; both units being built up on the "HQ plus attached troops" principle. The functions of both units will be co-ordinated by a Commander, Army Signals, who will be a colonel and will have a small staff. In addition, an Army Troops Squadron is to be provided to cater for local training, and the holding of reinforcements.

Other Units

The majority of the many Signals units not mentioned above have also been altered in some way since the 1939/45 war, either as a result of lessons learnt or in anticipation of changing commitments. However, rather than discuss the modifications in detail, it will perhaps be of greater value to recall the functions of the more important of these units.

Air Formation Signal Unit

In general this unit is responsible for providing and maintaining all landlines required by the air force for its ground communications. The army also meets air force requirements for trunk despatch services, but it is not responsible for any point to point wireless communications.

Air Support Signal Unit (ASSU)

By means of mobile wireless detachments known as "tentacles" this unit provides wireless communications for the transmission of demands for air support direct from brigade to Army level, and for the control of the supporting aircraft in the air. Although normally regarded as Army Troops, a unit of this type is included in the present AMF Order of Battle and, as a result of the emphasis now being placed on air/ground co-operation during training, is actively employed in its functional role.

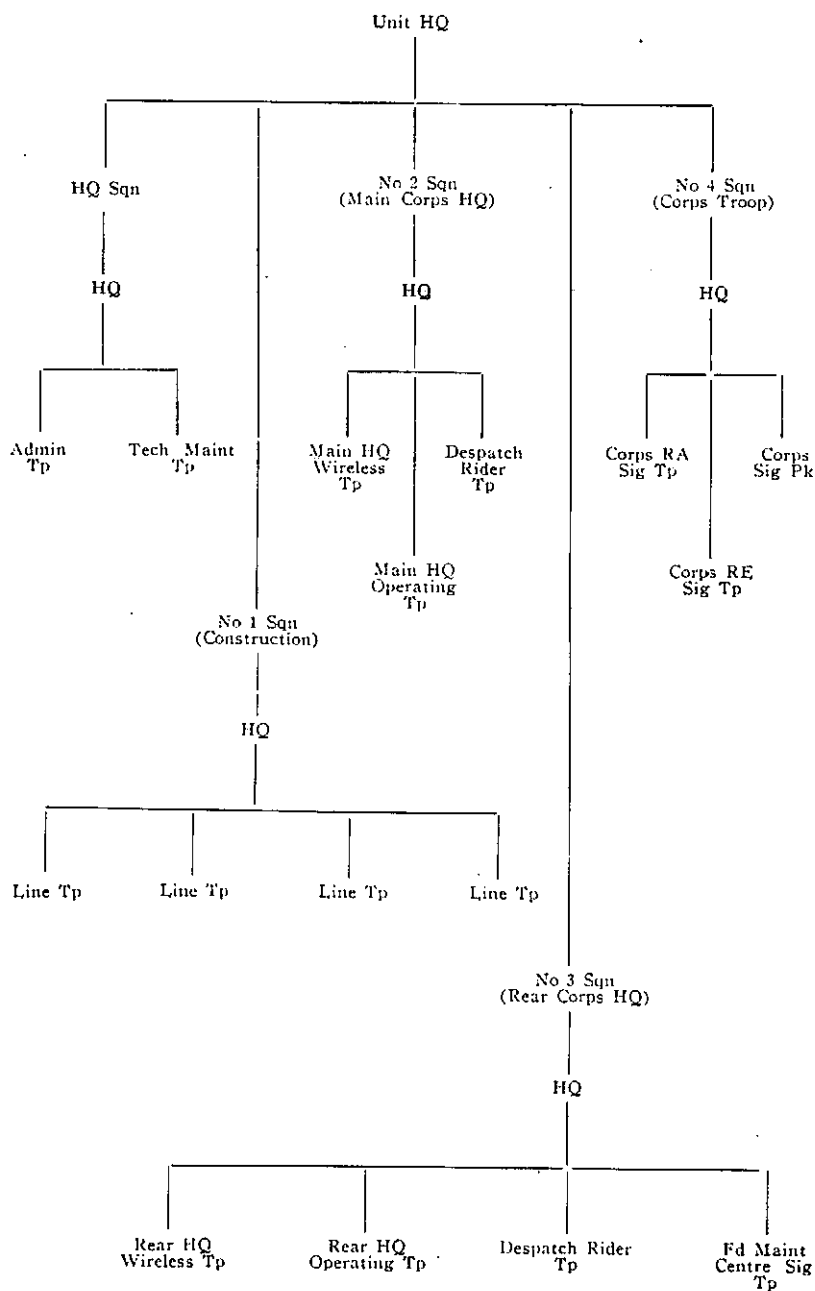
Signal Reporting Regiment

As in the case of ASSU, this unit is equipped with wireless only. Its purpose is to keep the Army Commander informed as to the situation on his own front and so reduce the delay which must result when such information is passed back through successive HQ via normal channels of communication which are handling traffic classified as equally important. When first formed during the recent war these units comprised both Signals and Intelligence personnel, but are now Signals only, the required proportion of the personnel being trained in intelligence duties.

Equipment

The overall requirements of the army have already been discussed in very general terms. It is important to bear in mind, however, that for communication purposes these requirements may be further sub-divided into three broad groups, namely, forward area, field formation and L of C, in each of which a different type of equipment is required to give the grade of service necessary under the conditions prevailing therein. Whereas in forward areas the accent is on minimum weight, simplicity in operation and maintenance, and "on-the-spot" service to individual commanders over relatively short distances, L of C in complete contrast demands a robust system which can be comparatively immobile but must be capable of handling immense volumes of

CORPS SIGNAL REGIMENT



Total Establishment: 933 all ranks

Figure 3

traffic over long distances for indefinite periods of time. Between these extremes, and with no clear-cut dividing line, lie the requirements of the field formations.

The more discriminating reader will have already observed that this problem is again primarily one of mobility. In forward areas all other factors must be subjugated to its achievement but as the command level rises, so mobility of equipment becomes less important and traffic capacity becomes the overriding consideration.

Such deficiencies as the signal system possessed in the past have been largely attributable to its failure to meet these requirements to the necessary degree, for there is no doubt that major difficulties arose due to the physical size and weight of the equipments. However, real progress has been made in this direction and new equipments generally will be very much smaller and lighter. They will be what is termed "miniaturized". This technique, embracing as it does a vast number of improvements in the design of individual components is perhaps the greatest contributor to the new signal system, but will not be considered further here in view of the comprehensive article devoted to this subject in the *Journal* for June-July 1949.

Wireless

The difficulties formerly experienced with wireless sets in the field are well known and almost too painful to recall. Interference was an ever-present problem because virtually every wireless set in the army was crowded into the comparatively narrow "HF" (High Frequency) band and, unfortunately, the frequency spectrum, like water, is incompressible. Use of the HF band has other disadvantages too, particularly where only short range communication is required. Atmospheric noise is at its worst in this band, and due to the latter's propagation characteristics the effective range is far from constant. The fact that even extremely low power HF sets

may, on occasion, transmit a signal over long distances, far from being an advantage, aggravates the problems of security and interference.

These problems were not quite so serious and obvious in rear areas where weight ceased to be so important and powerful sets could be used to push a signal through on the "steam roller" principle. Nevertheless, the inescapable fact remained that wireless circuits had a limited traffic capacity, and were insecure.

In the case of forward area sets an almost complete solution has been found by the use of the "VHF" (Very High Frequency) band in conjunction with a technique new to the army known as *Frequency Modulation (FM)*. The propagation characteristics of VHF are such that the range of transmission is, for practical purposes, limited to just beyond the optical horizon and within that range the signal strength is constant and dependable. Atmospheric and man-made noise is also less troublesome. Thus, at one blow, the mutual interference problem has been largely overcome, security is improved, communication is more consistent, and electrical interference ceases to exist.

An example of the application of these new principles is the WS 88 set for company-platoon and equivalent communications. This set is also an outstanding example of the miniaturization technique, for it uses a total of 14 valves but will fit into the basic pouch. VHF is also to be used for armoured communications and by infantry at battalion-company level, although in the case of the latter there is also a requirement for a set capable of working over the comparatively long distances which must now be expected during movement and deployment.

Notwithstanding its limited range, the VHF and UHF (Ultra High Frequency) bands will play a constantly increasing part at higher command levels for it is possible to relay intelligence over a number of suitably designed sets placed

in "tandem" without appreciable loss in quality. Many readers will no doubt recall as an early example of this technique the WS 10 set which was used with success in Burma and in the later stages of the European campaign. Equipments of this type are capable of carrying a number of different speech and telegraph circuits at the one time and, of course, can be set up more speedily than a line system. They thus combine some of the advantages of both means.

For L of C and strategic circuits, and for the medium distance, highly mobile tactical roles, it is necessary to continue to use the HF band. Development has, therefore, been primarily concerned with improving reliability and traffic capacity and methods of doing so have been found. For example, by means of "single-side-band" and "channelling" equipments, it is possible to convey up to six telegraph channels and one speech channel simultaneously on the one wireless carrier and yet occupy no more space in the spectrum than that formerly required for one speech channel. At present, equipment of this type is bulky and complex, but by means of a slightly different and recently-proven technique it is possible to provide one speech and one telegraph channel simultaneously with field sets such as the WS 153.

Line

A line system has always offered a number of advantages, but to a large extent these have been nullified by the weight and bulk of the line laying and construction gear. In the case of field cable the answer to this problem is the delightfully simple one of developing a method which requires no apparatus whatsoever. The cable, wound in a similar manner to a ball of twine, is carried in a very light, expendable container and laid by being pulled from the centre under its own tension. Using this "dispenser coil" method cable may be laid by aircraft and rockets as well as by the more conventional means.

Line terminal equipment of all types is being improved, but here the developments are less spectacular, although no less important than those already mentioned. New telephones for example will be much lighter and more convenient—the general purpose instrument will weigh 4 to 5 lb against the 12 to 15 lb wartime "lightweight". Telephone exchanges, even at field formation HQ will offer service comparable with a Post Office manual system in that the subscriber will call and clear merely by lifting and replacing the handset, thus saving valuable circuit time and, incidentally, reducing the wear and tear on Staff Officers.

Improved "Carrier Telephone" and "Voice Frequency Telegraph" systems will produce still more channels over a given physical connection. Compare the war-time "Apparatus Carrier Telephone 1 + 4", a five-channel system, with the new equipment which will provide 12 channels and yet is smaller in size. Furthermore, it may be built up to provide a total of 48 speech channels—one or more of which may be replaced by six telegraph channels—all on the one cable. This particular equipment is, of course, intended for L of C and higher formation use, but the same principles of circuit utilization will also be seen at lower formations in simplified form.

The Integrated System

For purposes of clarity wireless and line have so far been considered separately. However, the most revolutionary and beneficial changes are those which apply equally well to both. One of these—miniaturization—has already been mentioned. Another, and undoubtedly the most important, is the new concept of regarding wireless and line not as separate and distinct means of communication, but rather as complementary parts of the one integrated system. Considered separately, each of these basic means has its own advantages and disadvantages under any particular set of circumstances. For example, a water barrier or mountainous terrain may

suggest wireless for that particular section of the route, while equally significant factors may elsewhere demand line. Let us then use the means most suited for the task and weld them finally into the one "system". And this is precisely what the new concept, and the equipments designed for it, will enable us to do. The user need not be concerned with, and will probably be unaware of the fact that wireless is carrying his telephone conversation or message along various stages of its journey. In its present comparative infancy the use of this technique will be restricted to higher formations, but will gradually move forward as improvements are made.

The basically unsound economics of *manual morse transmission* have brought about another significant advance in the military communication system, namely, the rapidly increasing use of automatic machines for telegraph transmission. In its simplest form a machine telegraph circuit comprises merely two teletypewriters or teleprinters working together over any convenient electrical connection at typing speed up to a maximum of 66 words per minute, but even higher operating speeds and reduced manual handling can be achieved by the use of "tape relay" operation. In this method the intelligence to be transmitted is converted initially into the form of perforations in a paper tape, using combinations of a "5-unit code" for each character, and thereafter the message remains in tape form until it reaches its ultimate destination. At all intermediate offices it is necessary only to transfer the tape from one automatic instrument to another. The last stronghold of morse code is a division to brigade level, but even there it is doomed to extinction in the foreseeable future.

Peace Time Role and Commitments

Planning, particularly equipment and system planning, is a vital peacetime task and no excuse need be offered for having devoted so much space to this aspect. It must be borne in mind, however, that a complementary and equally important

task of Signals, in common with that of other Arms, is training for war. This is achieved primarily through the medium of the ARA cadres with CMF units, in conjunction with the School of Signals through which a common standard of basic technical training is achieved. The increasing requirements of the Corps for scientific and higher technical training are being met at the present time by the use of courses at universities and overseas schools, and by attachments to civil organizations such as the Post Office.

In addition, the Royal Australian Corps of Signals has the interest and responsibility of a truly functional role, namely that of providing communications for the command and administration of the peace-time Army. For this purpose, Commands and Districts have their own signal squadrons which man local signal offices and associated communication channels. At present these channels comprise mainly leased civil lines, but it is planned to provide a network of wireless links with a view to effecting financial economy and at the same time affording the ARA and CMF greater opportunities for training in the use of modern fixed wireless communication techniques. The specialized personnel to meet the requirements of these techniques are unlikely to be available readily from other communication agencies in any future emergency as has been largely the case in the past.

The AMF is also an active participant in the Empire Army Wireless Chain, a strategic wireless network with the United Kingdom as the hub embracing the majority of the Commonwealth countries and overseas theatres. It employs the most modern developments in long range wireless communication, such as the "single-side-band" and "channelling" techniques and tape-relay telegraph operation, and will readily be extensible in war to meet more than adequately all foreseeable strategic traffic commitments. Operation of the Australian terminal is the responsibility of the AHQ Signal Regiment which also maintains circuits to BCOF and to inter-state commands.

Future Trends

The shape of the new communication system thus begins to emerge. In it we see a complex but infinitely more flexible and reliable network of integrated line and wireless circuits, each carrying telephone and telegraphic traffic in the volume and at the speed necessary to meet the most exacting demands of modern war.

But what of the future? Signals are admittedly issued with crystals but unfortunately they are not those in which would-be seers are so prone to put their faith, and the answer to this question is therefore not an easy one. However, it is clear that the needs of the army will continue to be more and speedier communication channels at all levels but particularly in the forward area. Evolutionary design must, therefore, be directed to developing equipment which will enable the techniques already established for more static roles to be carried further and further forward into the tactical area. The search for smaller, lighter, simpler equipments, or in other words, the achievement of MOBILITY, must go on.

Wireless is undoubtedly destined to play an ever-increasing part and the interests of flexibility and, once again, mobility, may eventually supersede line communication completely. Imagine the advantages conferred by a HQ exchange system in which the subscribers were connected to the local switchboard and thence to the distant HQ without the need for any physical connection whatsoever. Wrist-radios of the "Dick

Tracy" type have already been used experimentally in the United States.

The possibilities of facsimile picture transmission as a means of remotely reproducing documents in their original form, or as a replacement for existing means of telegraphy are relatively unexplored. So, too, are the potentialities of the new medium, television.

Such technical trends are not without their attendant difficulties. The provision of personnel to cope with the planning, installation, operation and maintenance of such a complex system will present very real problems, and new or improved training methods will have to be found if the required standard is to be reached in the short time likely to be available. A greater degree of individual specialization is a possible solution, but it has yet to be proved to be a sufficiently economical one.

Conclusion

In an article of this nature, it is possible to venture only into the fringe of the complex subject of telecommunications. However, it has been said that the greatest difficulty in any sphere of human endeavour is to define the problem; determination of the answer is then generally found to be a relatively short and painless process. In this respect at least, the reader can derive consolation and encouragement from the fact that the problems to be met and overcome are now more clearly understood than ever before, and that if the answer to each one has not yet been found, it is in sight and the "boffins" have the ball at their feet.

How to Increase Attendance at CMF Parades

Corporal D. Middleton

6 New South Wales Mounted Rifles

AT a conference of several of the NCOs of my unit, it was agreed that a competition along the lines suggested herein would possibly be a way to increase the attendance at night parades.

While the form of the competition is comparatively easy to arrange, it is rather more difficult to devise the means of making the scheme a success—that is, to think of, and hardest of all, to provide the prizes or prize. For the competition to achieve its purpose the men's interest must be maintained, their enthusiasm aroused, and their competitive spirit stimulated. This could easily be done if an interesting enough reward was offered. The only question is whether or not it is possible to obtain a prize sufficient to capture their imagination.

Too long a duration is undesirable, solely by reason of the fact that it is not possible to provide worthwhile prizes. The men will not "bust their boilers" for six months in the hope of winning a toothpick. As we are unable to create a substantial inducement, we must make the winning of it a simple process. It is suggested that the competition be held over six consecutive parade nights (night parades only to be used, any week-end shoots, etc, being disregarded).

The competition will be available only to troopers or privates. The NCOs should have the well being of the unit sufficiently at heart not to require any such stimulus.

Points will be allotted to each soldier attending the parades for such things as attendance, dress, discipline, attention, etc. The specimen score sheet attached will show the method of marking. One sheet will be required for each soldier, and the marks can be totalled on these sheets at the end of the period. A notebook is a convenient way of keeping the record sheets; the pages can be ruled in readiness, and headed with the names of the soldiers as they attend.

A little time will be necessary to mark the sheets, but in order to give a fair result the system is essential. One book will be provided for each troop or platoon, which will cut down on the time required, as officers-in-charge of each troop or platoon can mark their own men.

Unfortunately finance is not available to provide really worthwhile prizes (of which there are many), but the NCOs have agreed to guarantee a sum sufficient to supply half a pound of tobacco. With assistance from the officers the amount may be increased, and, if so, it is suggested that several prizes be offered rather than one large one.

Date	Attendance	Dress				Discipline		Attention	Weekly Total
		Beret Hat	Belt	Boots	General Appearance	Bearing	Paying of Compliments		
	5	2	2	2	2	2	5	5	

It's Hard to Fight a Ghost...

AN ANSWER

"ANONYMOUS" in his provocative article in issue Number 6 of the Journal states — "It's hard to fight a ghost, but it can be done." It is with great relief that we read this statement because it would appear that he knows the answer to one of the greatest problems in the world today. We must assume that his purpose was to stimulate the readers of the Journal into giving their attention to this vital problem. May we expect his solution in a future article?

The "Ghost" is defined as the Communist philosophy and is stated to be the real enemy. However, the article also discusses the activities of International Communism throughout the world and the menace to peace presented by the USSR. This rather tends to confuse the problem and raises doubts as to whether "Anonymous" has selected the real enemy. The ghost would not represent the threat to world peace described, except for the activities of International Communism supported by the power of the USSR. For all practical purposes we cannot separate the ghost from International Communism and defeat of the ghost means that the Communist Party outside USSR will wither and die.

In the USSR the Communist Party and the State are one. Therefore, assuming we have defeated the ghost we still have the USSR to deal with. "Anonymous" has told us that "At some stage war is

inevitable between capitalist nations and Communist countries." This means that the USSR will go to war if necessary to achieve her aim, ie, the communization of the world. She cannot win the current "cold war" without the use of the ghost (and the International Communist Party Organization), therefore, pursuing the theory of "Anonymous", war with USSR will be inevitable even if we have successfully dealt with the ghost. This may be true, but recognizing that the ghost is a major weapon in her grand strategy the chances of USSR winning the war will be greatly lessened by its loss. On the other hand war will become more imminent if the ghost is allowed to gain ground.

The conclusion to be drawn from this is that the real enemy is the USSR and that the ghost and the International Communist Party organization are major weapons in her armoury. Deprived of these weapons she still has her strongest weapon available for use, her vast armed forces.

Having reached a conclusion as to which is the real enemy let us turn to the specific problem set by "Anonymous". He is incorrect in stating that our leaders do not recognize the use being made by the USSR of the ghost in her grand strategy. All the evidence is to the contrary as will be seen by reference to statements by political and military leaders, and press and radio comments throughout the world including Australia.

The general public frequently reads of the "cold war" and recognizes its import. One of the fundamental rules for leaders is to know their enemy. "Anonymous" gravely underestimates our leaders if he thinks they have not studied the aims of Communism and the methods by which these aims have been and will be pursued.

Until the "shooting war" starts the problem of dealing with the ghost is a matter for our political and religious leaders to handle. From the military point of view we must recognize that the ghost may have a grave impact on the morale of the forces and on our ability to raise and maintain them.

Military leaders, recognizing the real enemy and knowing that war will occur if politicians have failed to deal effectively with the ghost (and the USSR), have to be ready to take over the struggle. This is probably the reason behind the statement by General Bradley which was quoted by "Anonymous"—"As long as there are nations which would resort to intimidation and force we invite aggression if we lose our ability to strike back."

Military leaders know that the activities of the ghost are directed not only towards seducing the morale of a whole nation but in reducing its direct war potential. Therefore they watch with grave concern the conduct of the fight against the ghost in the political and religious fields. Opinions differ in these spheres as to the best method of dealing with the ghost. We must leave this

choice to our chosen leaders, but should urge them to take prompt and effective action.

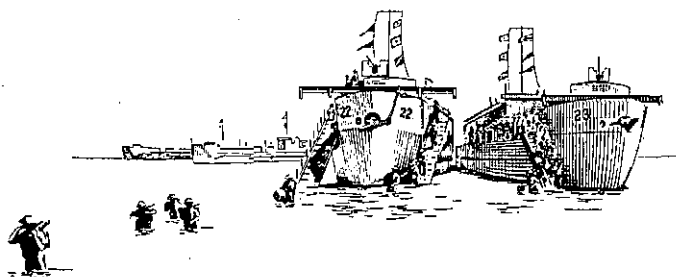
Whatever methods are adopted by them we should ensure that the cardinal principle of war—which applies equally to the "cold war" as to a "shooting war"—is applied. This is the principle of selection and maintenance of the aim, "The ultimate aim is to break the enemy's will to fight. Each phase of the war and each separate operation must be directed towards this supreme aim, but will have a more limited aim which must be clearly defined, simple and direct."

It is not enough for our political and religious leaders alone to select and maintain the aim and plan their campaigns accordingly. Their efforts will be unsuccessful unless they have the solid support of the general public. This means that each individual must select and maintain his aim. In this war there can be no neutrals because to be neutral is to assist the ghost who has achieved many of his major successes through the ignorance and apathy of the general public. Each individual must therefore realize that unless he selects the ghost as his enemy he is in fact abandoning his religion and democracy.

If each individual lived according to his religious beliefs and accepted the responsibilities and duties, as well as the privileges, of a citizen in a democracy, the ghost would have no chance.

Each of us may have selected his aim, but do we maintain it?

Alamein to the Sangro - Part 3



The Campaign in Sicily

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Introduction

In January, 1943, while the Eighth Army was advancing west from Tripoli and the First Army was fighting in the mountains of Western Tunisia, Mr Churchill and Mr Roosevelt met at Casablanca. At this conference the decision was made to invade Sicily as the first stage of the offensive against the "underbelly" of Axis Europe, and from this time plans and preparations were pressed forward so that the operation could begin as soon as possible after the end of the campaign in North Africa.

Topography

Sicily is roughly triangular in shape, its northern and southern sides some 170 miles and its eastern side 120 miles long. It is separated by only two miles from Italy at the Straits of Messina and by 90 miles from North Africa.

Broadly the island consists of a broken plateau with a higher northern edge of some 3,000 feet, which drops abruptly to the sea, and a gentle slope to the south and south-east to heights averaging over 1,000 feet near the south coast. In the north-east is the volcano of Mt Etna, 10,740 feet high, and in the south-east corner is the Mt Iblei tableland. Between these features lies the Catania alluvial plain.

Communications

Messina is the key point on the island since all land communications to Italy converge there. From Messina the main railway and road are confined to the narrow coastal strip and continue around the island. In the west there are two north-south railways, but throughout the interior, roads are poor and tortuous through the multiplicity of small hills and valleys. The hill top positions of many towns aggravate these communication difficulties.

Axis Forces in Sicily

The Allied estimate of the Axis forces deployed in Sicily (proved to be substantially correct) was two German armoured divisions (the HERMANN GOERING and the SICILY DIVISIONS), some five Italian field divisions and six Italian coast defence divisions.

The main reserve forces were located inland from Gela in the south-eastern portion of the island but, owing to the poverty of communications, it was split into battle groups which would require some considerable time to concentrate against any particular sector.

There were many suitable landing places on the long coast line and beach defences were, in general, weak. It was apparent that the Italian coast defence screen was designed to delay the development of hostile operations while reliance was placed on armoured counter-attacks to push an invading force back into the sea. The Axis dispositions also indicated firstly, that considerable importance was laid on the protection of the groups of airfields near Catania and Licata and, secondly, that the west coast had not been forgotten as a likely assault area.

The Overall Plan

The original plans for the invasion (Operation HUSKY) were not made by the commanders who were going to carry them out. Generals Eisenhower, Alexander, Montgomery and Patton were all forced to concentrate their attention on the final phases of the operations in Tunisia until the second week in May, while the planning for HUSKY was being done by a special Allied planning staff in Algiers. The result was that when the outline plan was submitted to them, it did not meet with full approval.

The original intention had been to launch two simultaneous attacks, landing the Seventh US Army near Palermo and the Eighth Army near Catania. This scheme was abandoned in favour of one concentrated attack on the south-east

corner of the island. The change was designed to facilitate concentration of the Allied naval and air forces and also to ensure the early seizure of an adequate lodgment area, including ports and airfields, from which subsequent offensive operations could be mounted with greater security.

The grouping of the Allied forces for the invasion was as outlined on Diagram 1 and the overall plan now entailed:

- (a) Preparatory operations by the Naval and Air Forces to neutralize the enemy naval forces and to gain air supremacy.
- (b) Simultaneous seaborne assaults by the two task forces, assisted by airborne landings, to establish a firm lodgment area on the island. This area was to include Siracusa, Caltagirone and Licata, and from it operations could be launched to capture the ports of Augusta and Catania and the airfields in the Plain of Catania. This phase of the plan is illustrated on Map 1.
- (c) The capture of these ports and airfields.
- (d) Finally, the reduction of the island.

D day was fixed as 10 July, 1943, and the operations were to be supported by the full weight of the Allied air and naval forces in the Mediterranean.

The greatest risk was, unquestionably, on the administrative side. Licata, when captured, was incapable of handling all the requirements of the Seventh United States Army, and it was apparent that both Siracusa and Catania were necessary to the full scale maintenance of the two armies. Thus, until these ports could be captured and put in working order after their heavy battering from the air, maintenance would have to be across the open beaches. It was calculated that the Seventh United States Army might have to maintain itself across the beaches for up to one month until the port of Catania was opened.

OUTLINE GROUPING ALLIED FORCES

For Operation "Husky"

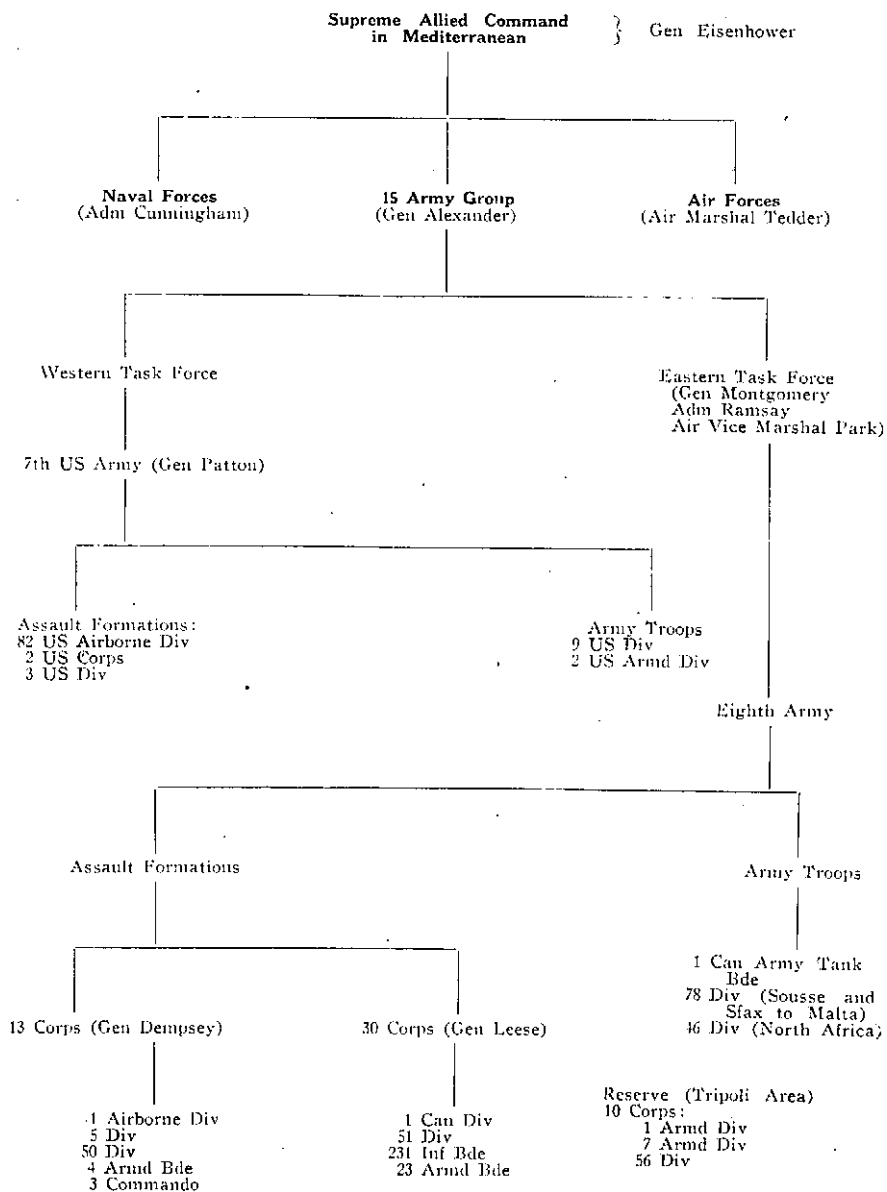
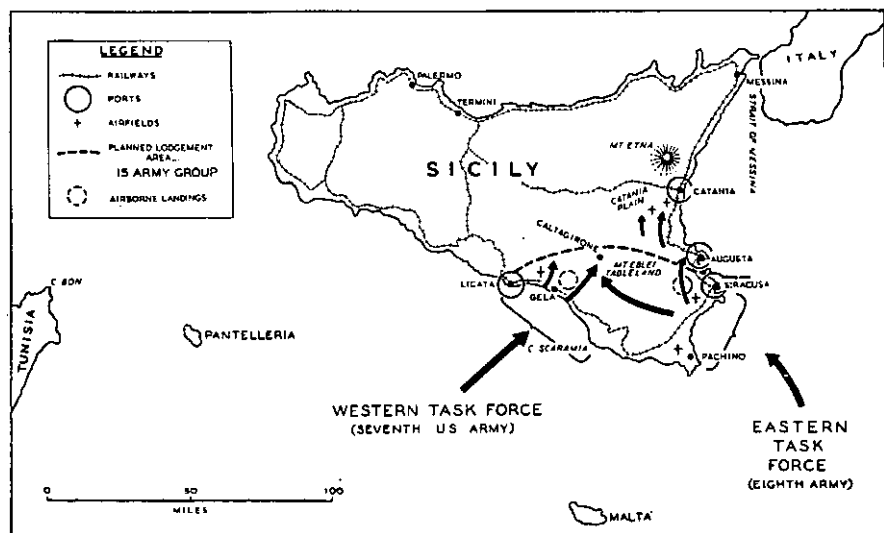


Diagram 1



MAP 1

The Cover Plan

When the original plan had been made the cover plan had been put into effect. It aimed at persuading the Axis command that the eastern Mediterranean was to be the area of assault and not the central or western areas. The movement of considerable German forces into Greece and the Aegean indicated that the initial cover plan was successful.

Once Tunisia had been captured and the assembly of ships and landing craft had commenced it must have become obvious to the Axis forces that an assault on Sardinia, Sicily or southern Italy was intended. To maintain this uncertainty as to the exact area of assault the air attacks were kept widespread until seven days before D day.

The final stage of the cover plan was designed to indicate that Catania was to be the assault area. Heavy air attacks were to be made on this area on D minus 1 and a dummy parachute landing made the following night.

Eighth Army Planning Problems

As already mentioned overall planning was made difficult by commitments in Tunisia. The same factor made the Eighth Army planning equally difficult. The Eastern Task Force planning headquarters was in Cairo (the mounting of the Eastern Task Force was primarily the responsibility of GHQ Middle East) and from early April members of the Army staff were sent there as it became possible to release them from Tunisia. It was not until 16 May that the headquarters as a whole could be released. In fact the detailed planning was done by Task Force Headquarters and 13 Corps in Cairo, by 10 Corps in Tripoli, and by 30 Corps in Tunisia.

The formations which it was planned to use in the assault were even more widely dispersed. 1 Canadian Division was in England and was to join the assault forces direct from English ports, 51 Division was to embark from Tunisia, while 5 and 50 Divisions together with 231 Infantry Brigade were to embark

from Egypt and Palestine. In addition the reserve formation, 10 Corps, was near Tripoli and 1 Airborne Division was based at Kairouan in North-East Tunisia.

This dispersion, in addition to causing difficulties in the co-ordination of detailed planning, also meant that a complex system of timing and control would be required to assemble the ships and craft carrying the assault forces. These difficulties are more apparent on Map 2 which illustrates the concentration of the Eighth Army for the invasion.

Two other factors added further complications. Firstly, the estimates of the number of ships and craft available to lift the assault forces varied continually and made it impossible to go firm on detailed plans for tactical grouping and loading. Secondly, although the Navy and Army planning staffs at Task Force level were able to work together in the same building in Cairo, the Air Force Commander was in Malta where he was engaged in active air operations. It was not until Eighth Army Headquarters moved to Malta six days before the assault began that the complete air picture was made available.

The Eighth Army Plan

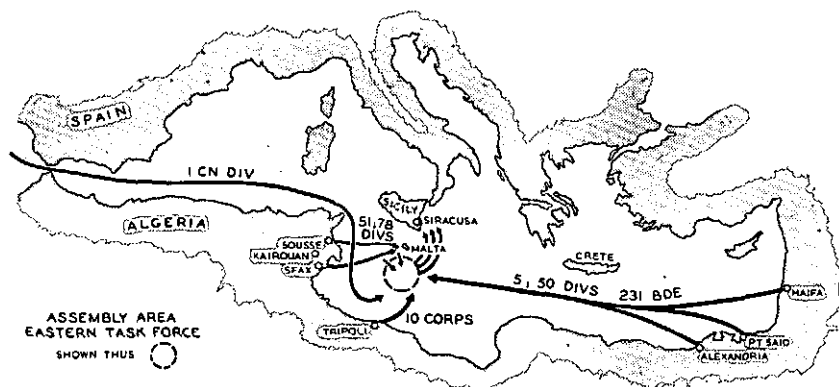
The Army plan is illustrated on Map 3. The main assault was to be launched at

0245 hours on 10 July with 13 Corps on the right and 30 Corps on the left.

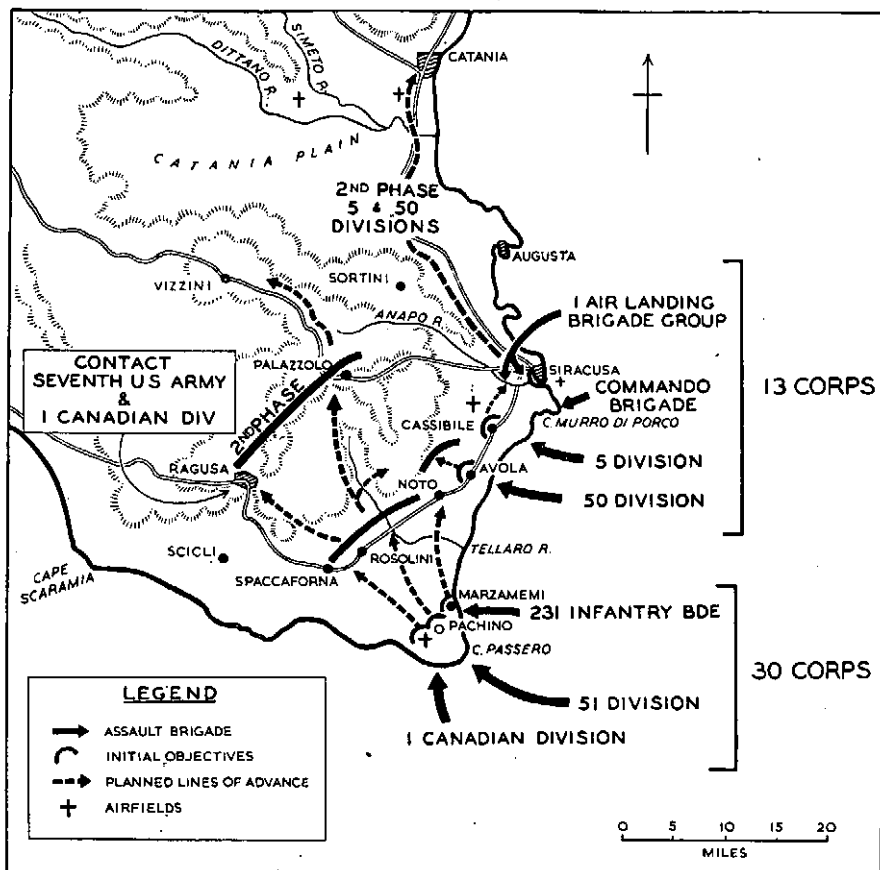
On the Right, the 13 Corps assault was designed to establish an initial bridgehead in the Cassibile—Avola area including a firm footing on the plateau which commanded the coast road between Cassibile and Noto. 5 Division was then to advance on Siracusa. The Corps attack was to be facilitated by two special operations. 1 Airlanding Brigade group was to land west of Siracusa beginning at 2210 hours on 9 July to capture the Ponte Grande bridge over the Anapo River, the coastal batteries north of the river, and the seaplane base. Secondly, a commando brigade was to land some 35 minutes before 13 Corps to capture the main coastal battery at Cape Murro Di Porco.

On the Left, the 30 Corps initial bridgehead was to be established on the line Noto - Rosolini - Spaccaforno. 231 Infantry Brigade was to protect the right flank and make contact with 13 Corps while 51 Division prepared to relieve 50 Division (13 Corps) at Avola.

In the second phase, 13 Corps on the right was to secure bridgeheads over the River Simeto and capture Catania using both 5 Division and 50 Division. On the Left, 30 Corps was to take over the initial 13 Corps bridgehead and advance inland to the high ground Ragusa-Palazzolo where 1 Canadian Division



MAP 2



MAP 3

was to make contact with the American forces. The main 30 Corps axis of advance was then to be developed north-west towards Vizzini.

A Royal Navy bombardment force was to be available to assist the initial landings and the subsequent advance up the coastal sector.

The Air Plan

Up to D minus 7, air operations were closely related to the general cover plan

and covered a wide area from Greece and the Aegean Islands to Corsica and Sardinia. On D minus 7 attention was to be concentrated generally on Sicily although other targets were also to be attacked.

From D minus 7 to D day the primary tasks of all available Allied aircraft were to destroy the Axis air forces in Sicily and southern Italy on the ground or in the air, to neutralize or destroy Axis airbases and to disrupt communications in Sicily and between Sicily and Italy.

On D day, some 4,000 aircraft were to support the two task forces, their main tasks being:—

- (a) Fighter protection for the convoys and support of the airborne forces.
- (b) Strategical Air Force to isolate the battlefield by attempting to prevent the movement of reserves to the assault area and to continue the attacks on Axis air bases.
- (c) Tactical Air Force to provide direct support to the assault forces.

The Tactical Air Force was divided into two task forces to facilitate support for both the Eighth Army and the Seventh United States Army. Command and communication arrangements provided for the concentration of both forces against any one target area.

Final Preparations and Assembly of the Assault Forces

During the final phase of preparations, large scale rehearsals were carried out. 13 Corps made practice landings in the Gulf of Akaba and the Gulf of Suez, 30 Corps carried out similar landings in North-West Africa, while 1 Canadian Division completed its training and rehearsals in the United Kingdom. Many lessons were learnt, particularly with reference to signals communications, fire support, and administrative organization of the beaches.

General Montgomery visited all formations to give his customary pre-battle pep talks, and Eighth Army Headquarters moved to Malta where the Naval and Air headquarters were already established.

The Commander-in-Chief's personal message was read to all troops, and one by one the convoys sailed from their embarkation ports for the rendezvous area south of Malta, where they assembled during 9 July. In the afternoon the force of the wind began to increase causing heavy seas which made many of the troops seasick and threatened

to make the assault operations a hazardous undertaking. By five o'clock in the afternoon a gale was blowing. At this late stage postponement was not feasible as it would have caused more disruption than the adverse weather conditions. It was decided to continue with the plan.

In the early evening the airborne forces took off from their Tunisian bases and during the night the seaborne forces reached the transport areas from which the assault craft were to be launched. The wind had now begun to slacken and it was hoped that landing conditions would be reasonably favourable.

The Assault

The dropping of 1 Airlanding Brigade did not go as planned due to the high wind, bad navigation from over Malta and inexperience on the part of the glider pilots who cast off too soon and too far out to sea. Of the 137 gliders only 9 per cent landed on the correct zones, 50 per cent landed on the island and got their teams down intact although up to 40 miles from their destination, the remainder dropped into the sea up to seven miles off shore.

However, the small force of some 70 men secured the bridge south of Siracusa and held it until mid-afternoon the following day (10 July). They had just been overrun when the situation was restored by the arrival of the leading elements of 13 Corps who were some eight hours overdue.

The glider teams which had landed in the wrong areas attacked every Italian post found and contributed greatly to the disorganization of the coast defence forces.

The seaborne assault was more successful. The first waves achieved tactical surprise and caused great confusion among the Italian defences which did not offer any form of organized resistance. By first light on 10 July successful landings had been made on all the beaches.

Resistance in the 30 Corps sector was negligible and by evening the assault troops had secured the peninsula. Large numbers of prisoners had been taken and the Pachino airfield was ready for use.

13 Corps had a little more difficulty but by the same evening 5 Division had relieved the gliderborne troops at the Ponte Grande bridge and had taken Siracusa where the port was found to be undamaged. On the other flank 50 Division had secured the southern end of the plateau north-west of Noto.

Thus at the end of D day all the Eighth Army initial objectives had been taken, casualties had been very light and the landing of troops and stores had continued throughout the day in spite of a fairly heavy surf. No German forces had been encountered and the Italian opposition had been practically non-existent, the troops of the coastal divisions preferring to surrender rather than fight.

The Seventh United States Army had not been so fortunate. Soon after landing the assault troops had been counter-attacked by German armoured forces and some stiff fighting took place about Gela. The situation had, however, been restored with the assistance of close range support from ships of the United States Navy.

Securing the Bridgehead

During the second day of operations (11 July), 13 Corps was directed on Augusta while 30 Corps took over the 13 Corps bridgehead and advanced on the main axis Palazzolo-Vizzini. Also on this day contact was made between 1 Canadian Division and the Americans near Ragusa.

The following day 13 Corps advanced on Augusta. German tank counter-attacks were beaten off with the assistance of co-operating naval and air forces and the port was secured during the night. By the end of the same day, 30 Corps was established on the line Sortini-Palazzolo-Ragusa-Scicli.

Thus by the end of 12 July, after three days and three nights, the Eighth Army was firmly in possession of the south-east corner of Sicily, including the ports of Siracusa and Augusta and the airfields near Pachino and Cassibile. Although the discharge of craft and ships at Siracusa and over the beaches was going satisfactorily, no troop-carrying transport had yet been landed. Thus the troops had to march long distances in the hot sun to take advantage of the ineffectual opposition offered by the Axis forces. The Italians continued to give only token resistance while the German formations had not been able to concentrate or co-ordinate their operations.

Comments on the Eighth Army Assault

The reasons for the immediate success of this assault operation may be summarized as followed:—

- The Axis forces had failed to defend the beaches. This was due to a combination of three factors, namely, low Italian morale, lack of troops and failure to appreciate the Eighth Army's intention with even reasonable accuracy.
- The absence of any major Axis counter-attacks. This was no doubt due mainly to the effects of difficult terrain plus the heavy air attacks which helped to isolate the assault area and make the early concentration of Axis reserves virtually impossible.
- The effect of the Allied cover plan which apparently confused the Axis command, and resulted in considerable uncertainty as to where the assault would be launched.
- Almost complete Allied air and naval supremacy which reduced shipping losses to insignificance and prevented interference with the assault and subsequent exploitation.
- The intimate co-operation between the navy, army and air forces during and after the assault. This was made possible by sound planning, good signal

communications and the functioning of the three service headquarters as one team at Malta.

● The high morale, physical fitness and fighting qualities of the assault troops which were due in no small degree to the complete faith of all ranks in their commander-in-chief and the intense and realistic training carried out prior to the assault.

Among the many lessons derived from these operations the following are probably the most important:

In spite of the short approach from the ports of embarkation to the assault area, tactical surprise was achieved.

Naval bombardment was proved effective.

The landing ship, tank, was an effective means of getting tanks, vehicles, guns and other heavy equipment ashore quickly.

These comments are not intended to indicate that the assault went entirely according to plan or that the technique for an assault on a defended coast had been perfected. To quote General Montgomery's Chief of Staff (Major-General de Guingand), "We thought we knew all about amphibious warfare. Within four months I was to realize how wrong we were."

Firstly the Axis resistance had been so weak that many aspects of the assault technique had not been tested thoroughly. For example, the necessity for the landing of strong tank forces with the leading assault waves to assist in the defeat of opposition from beach defences was a lesson of the future. In this operation the assault infantry had little assistance from their heavier close support weapons in the initial stages and were fortunate that resistance from the beach defences was negligible.

Again, a very high proportion of the landing craft were stranded on or near the beaches while the heavy swell caused severe delays in ship to shore movement

and upset landing schedules. There is no doubt that if the initial fighting had been heavy, the assault forces would have been greatly embarrassed by the delay of follow up waves and by maintenance difficulties.

These problems were, of course, solved later by the use of special equipments such as amphibious vehicles, amphibious tanks and close support craft.

A third problem worthy of mention at this stage was the shooting down of friendly aircraft by naval anti-aircraft fire, a problem which may be illustrated rather bluntly by statements made at inter-service conferences after the Normandy assault, some eleven months later.

"Don't fly over our ships and we won't shoot you down. The risk of a single bomb in a vital place from a low flying unidentified aircraft is too great."

"How can the pilot of a crippled aircraft always avoid flying over a ship? In spite of all directional aids and routing plans, it must be accepted that aircraft will occasionally fly the wrong course."

These illustrations are mentioned purely to indicate the complex nature of an operation such as HUSKY and to stress the necessity for meticulous planning and co-ordination together with painstaking preparation. Further it should be realized that this was the Eighth Army's first large scale combined operation involving an assault on an enemy-held coast line. It has been a great success and the experience gained was to be of immense value in the planning and execution of subsequent operations of a similar nature.

The outstanding features of the airborne operation were the surprise and confusion caused by the appearance of even small bodies of airborne troops in the midst of defences which were neither well organized nor manned by determined troops and, secondly, the value of

these forces to secure key points which are not within immediate reach of the seaborne assault forces.

The most important lessons in technique were:

That pilots of glider towing aircraft required a very high standard of morale and training to carry out their tasks in face of enemy anti-aircraft fire and adverse weather conditions and to identify correctly the points of glider release.

The necessity for great care in the planning, indication and following of air routes to the landing zones.

In this operation the force followed a wireless directional beam to Malta. This excellent check point was lit up like King's Cross and six searchlights pointed skywards. From Malta the force had to fly 60 miles to Cape Passaro and from there it was thought that the obvious coast line, black hills and white towns plus Siracusa itself in the distance would provide adequate landmarks. Obviously these assumptions were proved incorrect.

The Advance to the Plain of Catania

Immediately after the landing, General Montgomery moved his headquarters to Sicily where he decided that the immediate aim of operations must be to secure the main centres of road communication. In this way the enemy's power of manoeuvre would be limited since movement off the roads and tracks in the rugged country was very difficult, and often impossible.

On 12 July, 13 Corps was ordered to advance on Catania and 30 Corps by the axis Caltagirone and Enna to Leonforte, the latter being the main road centre to the west of Mt Etna.

The following day progress was slower as the leading troops were tiring and the weather was very hot. To speed up the coastal advance it was decided that commandos and airborne troops would be used to seize the key

approaches to the Plain of Catania, namely the bridge north of Lentini and the Primasole Bridge over the Simeto.

The commando was to land west of Agnone during the night 13/14 July to secure the first bridge, while 1 Parachute Brigade (1 Airborne Division) was to land near the Primasole Bridge, capture it, establish a small bridgehead on the north bank and then make contact with the commando troops to the south. The main thrust on Catania was to be developed by 50 Division.

The commando operation was successful, the southern bridge was captured and the demolition charges removed. Subsequently the commandos were forced to withdraw from the bridge while 50 Division was held up in the difficult country by enemy forces covering the approaches to Lentini. It was not until the afternoon (13 July) that the main body was able to force its way forward through the town and reach the bridge.

The Parachute Brigade was routed via Malta, then 10 miles east of the Sicilian coast to turn in at the mouth of the River Simeto. During the coastal approach several aircraft were shot down by naval anti-aircraft fire and in addition only about half the parachutists were landed on the correct zones. In spite of these difficulties, the Primasole Bridge was secured and the charges removed. During the day (14 July) the paratroops withstood a series of infantry and tank counter-attacks. Towards evening they were forced to withdraw to high ground immediately south of the bridge but retained control of the southern approaches until they were relieved by the armoured brigade operating with 50 Division in the early hours of the next day. The bridge was still intact.

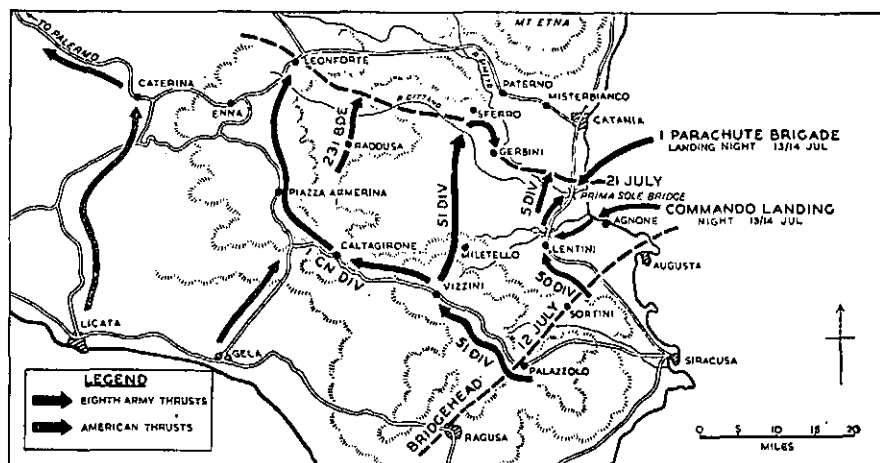
The rearguard operations of the Axis forces south of the River Simeto had made it possible for them to organize defences north of the river and the fate of the vital bridge hung in the balance until 16 July when after very bitter fighting a bridgehead was established on

the north bank. During the night 17/18 July, 50 Division launched a strong thrust northward in an attempt to break out, but Axis resistance was firm and very little was accomplished. Here 13 Corps was to be held up for some time.

To the west 30 Corps had continued to advance in face of stiffening resistance from German armour and parachutists. Apparently these forces were attempting to hold routes open for the German troops opposing the Seventh United States Army in the west and were taking full advantage of the rugged terrain to delay

had crossed the River Simeto near Sferro and 1 Canadian Division had captured Piazza Armerina. Meanwhile the Seventh United States Army was advancing on Caterina.

By this time the pattern of the Axis operations was reasonably clear. The Catania-Etna area was being used as a pivot for the withdrawal of the German forces into the north-east corner of the Island and it was apparent that every effort would be made to hold Catania, deny the use of the airfields in the Plain of Catania, and impose the greatest possible delay on the American and



MAP 4

the British advance. 51 Division took Vizzini on 14 July. At this stage the Commander-in-Chief ordered 1 Canadian Division to take over the advance on Leonforte and two days later 51 Division swung north to advance on Paterno with the dual object of clearing up the area between the two main thrusts being delivered by 13 Corps in the east and 1 Canadian Division in the west and assisting 13 Corps to overcome the opposition to its advance on Catania.

Thus on night 17/18 July, 13 Corps was north of the Prima Sole Bridge, while on the 30 Corps front, 51 Division

British advances towards the Leonforte-Caterina area. Most of the Hermann Goering Armoured Division was now in the Plain of Catania, troops of the crack 1 Parachute Division had been flown into north-eastern Sicily by night from Italy, and 15 Panzer Grenadier (armour and motorized infantry) Division was moving into position north-west of the Plain of Catania.

Following the unsuccessful attempt by 13 Corps to break out from the Prima Sole bridgehead during the night 17/18 July, 5 Division was used to broaden the front

of the 13 Corps attack and was directed on Misterbianco.

By 21 July, 50 Division had made little progress, 5 Division had crossed the River Simeto but was unable to make further progress until proper crossings for supporting arms could be made. 51 Division was immediately south of the Gerbini airfield which it had lost to a German counter-attack the previous day, 231 Infantry Brigade, which had been committed between 51 and 1 Canadian Divisions, had crossed the Dittaino north of Raddusa, and 1 Canadian Division had taken Leonforte after severe fighting.

Meanwhile, the Americans had been driving northward through Caterina and on 22 July reached the coast road near Termini to cut the island in half. By the same time other American thrusts directed north-west and west had led to the capture of Palermo and the clearance of western Sicily.

Comments on the Advance to the Plain of Catania

The outstanding feature of this phase of operations was the struggle for control of centres of road communication such as the Primasole Bridge and Leonforte. As is usually the case in operations fought in mountainous or rough country, these points were vital to both the attacking and defending forces for without them the Eighth Army or the Axis formations would be denied the use of the main road axis upon which they relied for movement and maintenance of large bodies of troops. Thus to the Eighth Army, the rapid seizure of these points meant flexibility; the ability to move or regroup. To the Axis forces the loss of these centres entailed loss of flexibility in defence and consequently, loss of security and mobility.

A second important feature was the use of commando and airborne troops by the Eighth Army to secure the Lentini and Primasole bridges, so ensuring that the 13 Corps axis of advance (the Catania road) would be available for immediate use and denying to the enemy the use of

these defiles as delaying positions. These operations also illustrate two other lessons. Firstly, there is a definite limit to the time for which these special troops can hold their objectives. Therefore their tasks must be very closely related to the advance of the main forces. Secondly, the Axis failure to destroy the bridges before they were captured proves the necessity for great care in the planning and execution of major demolitions.

The third important feature of this phase of operations was the effectiveness of the German rear guards which made full use of ground favourable for defence to slow down the British advances and thus gain time for the re-organization of their main defences on the general line Primasole Bridge-Leonforte-San Stefano. Proof of the value to the enemy of the time so gained lies in the stiffening of Axis resistance all along the northern fringe of the Plain of Catania.

Fourthly, it is important to note the use of 51 Division and 231 Infantry Brigade in the central sector. The two main thrusts being delivered by 50 Division in the east and 1 Canadian Division in the west were diverging from the initial bridgehead area towards the main centres of communication. This left the greater part of the Plain of Catania in the centre and it was here that 51 Division and 231 Infantry Brigade were committed to form a strong central pivot and thus provide balance and security within the Army.

Finally the parachute brigade operation, as in the case of the air-landing operation near Siracusa, proved that very great care is necessary in the routing of airborne forces to their dropping zone. Once again the navigational task proved to be too difficult.

Allied Preparations to Break the German Defence of North-East Sicily

The formations of the Eighth Army in Sicily had been constantly engaged since the landing and were showing definite signs of fatigue. No fresh troops were

available on the Island although 78 Division was moving from Sousse. Further, General Montgomery was faced with a difficult situation on the 13 Corps front where it was apparent that the Axis forces were prepared to hold Catania to the last. To persist with the direct advance on this front would obviously entail heavy casualties.

In view of this situation the Commander-in-Chief decided, on 21 July, to change the main axis of attack to the 30 Corps front with the object of advancing on Adrano, swinging north around Mt Etna to take the Axis forces holding the Catania area in the rear.

Accordingly 78 Division was allotted to 30 Corps which was ordered to advance east from Leonforte to capture Adrano and then Randazzo, the key centres of communication.

13 Corps and 51 Division (30 Corps) were ordered to assume a defensive role but to maintain aggressive raiding and patrolling activity to pin the Axis forces to their front.

The target date for the 30 Corps advance on Adrano was fixed as 1 August by which time it was anticipated that 78 Division would be ready for action. In the meantime 30 Corps advanced from Leonforte to within striking distance of Adrano.

Meanwhile to the north-west, the Seventh United States Army was re-grouping for the drive on Messina which was also to be launched on 1 August from the line Nicosia-San Stefano.

The Advance from Leonforte

The Eighth Army thrust towards Adrano was made by 1 Canadian Division along the Leonforte road and by 78 Division via Catenanuova.

Both divisions made good headway in face of stiff German opposition, and by 3 August 78 Division with the assistance of heavy artillery and air support had captured Centuripe. This town was situated on the top of a pinnacle hill to which the only approach was a single

steep and winding road. It seemed an impossible objective but there was no alternative since it controlled the approaches to Adrano.

Also on 3 August it became clear that the Axis command had realized that the 30 Corps advance threatened the rear of the Catania defences and the withdrawal of troops from the 13 Corps front had begun. This enabled 13 Corps to resume the offensive, and in spite of Axis demolitions and rearguard operations in difficult country good progress was made.

The Fall of Catania and Adrano

On 4 August the Eighth Army was advancing in all sectors. In 13 Corps 50 Division was directed on Catania, and 5 Division on Misterbianco; in 30 Corps, 51 Division advanced on Paterno while 78 and 1 Canadian Divisions closed in on Adrano.

The next day Catania, Misterbianco and Paterno were captured, the main Axis forces withdrawing to the east of Mt Etna. To the west, Adrano was subjected to a relentless pounding from the air while 78 and 1 Canadian Divisions crossed the Simeto and continued to advance in face of strong resistance. 78 Division entered Adrano on 6 August and on the same day the Americans captured Troina.

The main defences across north-eastern Sicily were now broken. The Axis forces were withdrawing along the whole front and the key communication centre of Randazzo was threatened by 30 Corps from the south and by the Americans from the west. However, the Eighth Army advance had slowed down due to the Germans' skilful use of mines and demolitions together with the effects of the Allied bombing attacks and the extensive lava belts.

At this time consideration was being given to the assault on the Italian mainland which was scheduled to take place at the end of the month. General Montgomery's plan was to release Headquarters 13 Corps together with the divisions to be used in the assault

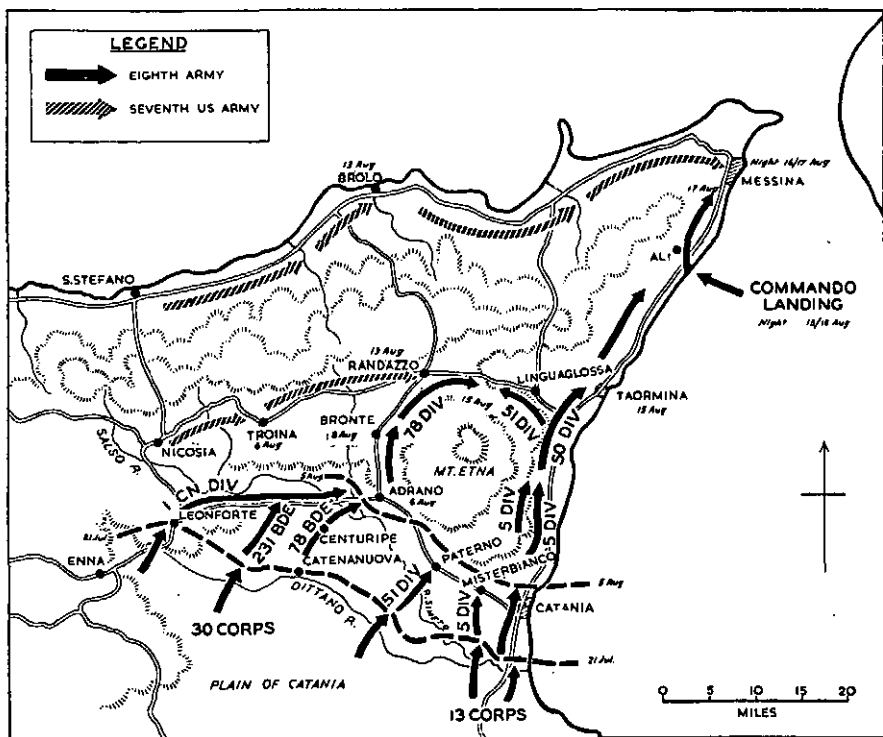
(1 Canadian Division and 5 Division) as soon as possible to enable them to start their planning and preparations. On 4 August orders were issued for the withdrawal into reserve of 1 Canadian Division and 5 Division. Thus it was the intention to finish the Sicilian operations with 30 Corps, consisting of 50, 51 and 78 Divisions, as soon as the 13 and 30 Corps thrusts around Mt Etna met in the north.

The Fall of Randazzo

On 8 August, 78 Division captured Bronte but progress continued to be very slow. To the north-west the American advance on Randazzo was also encountering hard going in rough mountainous country and was delayed by Axis demolitions.

East of Mt Etna 13 Corps was advancing along the coastal road with only 50 Division forward, since 5 Division was in reserve preparing for the invasion of Italy. It was now apparent that the Randazzo operation was going to take some time and that the German forces in this sector were being reinforced from the east coast sector. It was essential, therefore, that the 13 Corps advance east of Mt Etna be speeded up, and 5 Division was ordered forward again to broaden the corps front to a two divisional thrust.

On 11 August, with the target date for Italy (now 1 September) only three weeks away, General Montgomery ordered further regrouping; 51 Division to relieve 5 Division and 30 Corps Headquarters to take over the responsibilities of 13 Corps Headquarters.



MAP 5

The American forces captured Randazzo on 13 August while 78 Division was still fighting south of the town, and by the next day the Axis forces were again withdrawing along the whole front.

The Final Phase

By 15 August 50 Division had taken Taormina, 51 Division secured Linguaglossa, while 78 Division had advanced east from Randazzo to clear the road to the coast. Meanwhile the Seventh United States Army had advanced along the north coast road to Brolo having carried out two amphibious hooks to speed up the advance and cut off the retreating Axis forces.

The next night a British commando supported by tanks made a landing at Ali but the Axis forces had already withdrawn on Messina. One night later (16/17 August) American troops entered Messina from the west.

What happened to the Axis forces which withdrew into the north-east corner of the Island? A large proportion of them were ferried across the Straits of Messina by small craft operating at night. Although considerable damage was inflicted by Allied submarines, motor-torpedo boats and small ships, the air forces were greatly hampered by concentrations of Axis anti-aircraft guns which meant unacceptable losses to aircraft operating sufficiently low to effectively engage the small targets.

A similar problem confronted the Eighth Army when the German forces were retreating across the Seine in 1944.

Comments on the Operation from Leonforte to Messina

The most interesting feature of these last phases of the campaign is the degree of success achieved by the Axis defensive and rearguard operations or, alternatively, the slowness of the Eighth Army advance. Although the British forces held the initiative, had the advantage of almost complete air

superiority, much greater artillery support and considerable superiority in numbers, it took the Army some 24 days to advance the 35 to 40 miles from the Dittano River to the line Taormina-Randazzo.

The overall slowness of the advance may be attributed to four factors.

The high fighting morale and determination of the German troops, particularly the parachute units flown in from Italy.

The very difficult going which confined the British forces to the main roads and severely restricted manoeuvre.

The skilful use of ground and demolitions by the Germans.

The physical tiredness of a large proportion of the Eighth Army troops.

This answer is, however, incomplete because it does not explain the reasons for the switching of the main axis of attack from the coast to the inland flank. Why was the 13 Corps advance on Catania abandoned and can any justification be found for the consequent delays?

In the first place, it was apparent that the area including Catania and the nearby airfields was the most important, and therefore the most heavily defended area on the Island. To continue the thrust towards Catania from the Primasole bridgehead must have meant heavy casualties, and in view of the unfavourable terrain and strong German resistance, there was no guarantee that such an attack would be successful. Furthermore, the invasion of Italy was less than a month away, and General Montgomery did not wish to "blunt the weapon" when it was clear that much hard fighting lay ahead on the mainland. Again, in accordance with basic principles, it was better to use 78 Division to reinforce success in the west rather than the, at least temporary, stalemate in the east. In any case it was probable that a drive directed around the west of Mt Etna would produce the quickest results.

The slowness of the British advance must also draw attention to the physical

state of the troops. There can be no doubt that, although the troops were in good condition when they landed on the beaches, they were very tired by the time they had reached the line of the Dittano 11 days later. This fact was obvious in the attack on Centuripe when the fighting power of the fresh 78 Division contrasted with the tired state of the other leading divisions. The lesson is not so much the effect of hot weather, rough country, and limited transport facilities, or stiff fighting, but rather the axiom, "don't overload the willing horse".

Any commander is naturally inclined to rely on the formations which have served him best in the past, and to be inclined to lack the same confidence in those he knows little about. Some of the Eighth Army Divisions in Sicily had been on the move continually from El Alamein to Tunis and had been involved in heavy fighting even before El Alamein. Had fresher troops been available for the initial thrust towards Catania it is probable that the advance may have been speedier.

Another major question which arises is, was the Seventh United States Army given an unfair share of the fighting? On the surface it would appear that the American advance northward through the centre of the Island and their occupation of the west and north was a much greater achievement than the Eighth Army operations in the south-east and east, but the following facts prove this assumption to be faulty:

- The American advances in the centre and west met only mediocre opposition, mainly from Italians, while the country was also less difficult.
- During the American thrust along the north coast on Messina, the country was again less difficult than farther to the south, but German instead of Italian opposition was met. In this case the advance was much slower.
- Finally, in the American thrust on Randazzo both the country and the opposition was similar to that met by the Eighth Army in its attacks on the

Catania-Mt Etna area. In this case there was no difference in the speeds of advance of the two armies.

The conclusion then is that although the Americans had a more difficult start and fought with great determination, it is unlikely that they would have achieved in the east better results than the Eighth Army. The answer to the question is a decided NO and the criticism bears a marked resemblance to a similar one levelled against General Montgomery concerning the British operations at Caen during the breakout from the bridgehead in Normandy.

Finally, a brief review of the air picture can also reveal several interesting problems. Since very powerful air forces were available to provide ground support and retain local air supremacy, the limiting factor was not what air support was available but rather how could the available support be usefully employed. Once the situation on the Eighth Army Dittano front became sticky there was little Axis movement to provide good air targets. Moreover, tree-lined roads and movement by night made suitable targets difficult to find. Heavy bombing attacks were made against towns which the axis forces were holding and which blocked the Eighth Army axis of advance. For example, many tons of bombs were dropped on Centuripe and Adrano on the 30 Corps front. The benefits derived from these attacks are difficult to assess for, although the towns were demolished and casualties inflicted, it took many hours to clear a road through the resultant rubble and debris, and thus any prospect of immediate exploitation was impossible. On the other hand, what would have been the psychological effect on the troops had these requests for air support been refused? It should be remembered that most of the Eighth Army troops were, at this stage, tired and faced by many difficulties. The natural answer to these difficulties on the ground was to ask the air to "blow the enemy position to bits".

This same question of how to use air power to destroy enemy opposition and

yet not hinder their own advance was to confront Allied commanders again many times in Italy and Western Europe.

Administration in the Sicily Campaign

The campaign had been a very short one but many of the administrative problems were both new and extensive. This was the first occasion in which large forces had been maintained over open beaches for any considerable period. In spite of all previous doubts it was proved that, given adequate resources and reasonable weather, this form of maintenance was possible.

Another problem new to the Eighth Army was the control of the loading and despatch of convoys carrying reserve and build-up formations. In the first place, a plan covering this aspect of the invasion had to be made before the assault, but it had to be sufficiently flexible to meet many changes necessitated by the current operational situation. It was essential that supporting troops, reserves, equipment and stores be ferried forward in the order required. To handle this problem an inter-service priority committee functioned in Malta and met daily to decide in what order various units, vehicles, equipments and so on should be sent to Sicily. This committee known as the "Ferry Control" (later called Build-Up Control) was provided with special wireless communications to the movement control staffs at the ports of embarkation in North Africa.

A third major problem concerned the control of the Eighth Army's lines of communication. The Army forward base areas and embarkation ports were too far away both from Army Headquarters in Malta and Sicily and GHQ Middle East Forces in Cairo for adequate control to be exercised, particularly as wireless was the only means of communication. To overcome these difficulties a special administrative headquarters called FORTBASE was used as part of the Army administrative machine.

This organization had been set up in Tripoli to play a similar part during the latter stages of the Eighth Army operations in North Africa when the problem of the control and organization of lengthy lines of communication had arisen in a much milder form.

The operations subsequent to the assault, posed several major administrative problems. Firstly, in the desert there had been few limitations on the number of routes available to vehicles, but in Sicily the situation was very different. Roads were scarce, narrow and tortuous, and therefore resulted in the institution of special measures to control the movement of convoys and to limit the number and type of vehicles on each road. These road movement problems were further complicated by civilian traffic. The experience gained in Sicily in coping with these problems was to stand the Army in good stead in its campaigns in Italy and Western Europe.

The need for foresight in planning was well illustrated by the bridging problem. Difficult terrain greatly complicated by extensive Axis demolitions required large quantities of bridging materials, but fortunately plans had provided for this on a generous scale and large quantities of Bailey bridging were landed early in the operation.

The prevalence of malaria, particularly in the Plain of Catania, caused yet another problem. This too had been foreseen and although all possible steps were taken to provide the necessary drugs and equipment, casualties from malaria still exceeded battle casualties.

Conclusion

The fighting in Sicily had lasted 38 days and the Allied forces now looked across the Straits of Messina towards the toe of Italy, while plans and preparations were completed for the next phase of operations. These were to carry the Allied armies from the Sicilian springboard into the mainland of Hitler's Europe.

Armoured Support

in

Forest Country

Condensed from *Current Reports from Overseas*
May, 1945

This account of armour operating in support of infantry in the Reichswald Forest, written by the commander of a battalion of Churchill tanks, should be read in conjunction with the article "Fighting in Forests" published in Australian Army Journal No 2 (Aug-Sep, 1948).

General

The battalion has now fought in many different types of forest and the operations in the Reichswald reminded us once again that the close co-operation of tanks and infantry in thickly wooded country is not, as might have been supposed, entirely different from similar operations undertaken in more open country. We found that the general rules and principles of co-operation still held good, though they had to be adapted to suit the conditions imposed by limited visibility and restricted manoeuvre. These two factors, besides imposing many restrictions on the fighting troops, made it extremely difficult for the commander to influence the battle once he had launched his troops into the attack.

Training

As in all operations training by the tanks and infantry together should take place on ground similar to that over which the battle is to be fought. The battalion had approximately one week's training in the forest before the operations in the Reichswald, but when possible I think that at least a fortnight should be allowed.

Types of Forest

Our experience of forest fighting has taught us that whereas it is practicable for tanks to support infantry in forests where the trees are more than twelve feet high and three feet apart, it is not practicable in young plantations, because tanks are blinded and consequently unable to keep in touch with the infantry; neither can they defend themselves against Bazooka teams.

A coniferous forest provides less opposition to the passage of tanks than does a deciduous forest; a Churchill tank will knock down a coniferous tree two feet in diameter, and a Stuart, a tree one foot in diameter. The tree is usually broken off at the base, though sometimes—more particularly by Stuarts—it is uprooted. The reason for this difference is that the Stuart tends to ride up the tree before pushing it over, whereas the Churchill with its flat forward plate produces a more horizontal push. In the Reichswald, which on the battalion front was for the most part a deciduous forest, we found that trees were invariably uprooted and that the size of the trees that could be pushed over largely depended on the consistency of the soil. But as a rough guide the

Churchills could not deal with trees more than nine inches in diameter. It is not feasible to crash through trees at high speed, since the shock of impact breaks off the tops of the trees which then fall on the head of the tank commander.

Co-operation with Infantry

Since the vision of tanks in forest country is limited, we made it a rule that infantry should precede the tanks in all advances, whether by day or night, and no matter whether the axis of advance lay down the tracks or through the forest itself. The infantry moved about 30 yards in front of the tanks and so avoided danger from falling trees. At night, in order to ensure that touch was kept between tanks and infantry, movement was by bounds and masked lighting was used. The infantry carried some easily seen mark on their backs, and tank and infantry commanders kept close together. On one occasion the infantry, carrying white mugs strapped to their backs, advanced 80 yards at a time and signalled with red torches to the tanks behind them each time they halted. At night troop commanders often found it difficult to recognize the company which they were supporting, and it was suggested that each company should wear some distinguishing mark that would render it easily recognizable. Flank protection was provided by the infantry by day and by night.

Tank Formations

Knowing that the value of tanks in forest country is as much moral as it is material, we did our utmost to maintain the element of surprise for as long as possible. Formations and tactics were frequently varied, but visual contact with the infantry was never broken. In daylight and in open woodland, tanks within a troop were often able to deploy, but at night and in close forest they nearly always moved in line ahead, although there were occasions when squadrons successfully advanced through the forest at night with four troops up.

Commanders were governed by no hard and fast rules and at different times one squadron successfully used the following three formations in the attack: first, four troops up, with tanks advancing through the trees in line ahead; secondly, two troops up, one deployed on either side of a track used as a centre line with the other two troops following ten minutes later in the same formation, but on a parallel track; thirdly, two troops up, deployed, using two tracks as centre lines and with one troop following close behind and the other in reserve.

Although it is possible for armour to deploy into and move through a forest, we found that it imposed a severe strain on tanks and for this reason, when contact with the enemy was unlikely, tanks moved along tracks with an infantry screen in front and on the flanks.

Communications and Control

Although the No 19 set gave adequate communications within the regiment, squadron commanders found it advisable to travel well up behind their leading troops. The regimental rear link officer travelled in a Churchill, and a close liaison was always maintained with flanking units or sub-units in order to eliminate all risk of firing into our own troops.

Artillery

Self-propelled anti-tank artillery moved well forward and was able to get into position immediately an objective had been gained. Forward observation officers who accompanied squadrons were most welcome; it is hoped that they will always be provided.

Night Harbours

When an objective was reached at night the tanks were withdrawn at least 20 yards from the foremost positions, and placed where they could be adequately protected by the infantry. The ideal was for tanks to be rallied by

squadrons near the headquarters of the infantry battalion which they were supporting. But we did not entirely rely on the infantry for protection and the tanks had their own guards, armed with Stens. No movement of any kind was allowed within squadron areas, and anyone walking about there ran the risk of being shot without being challenged. In the Reichswald a German did succeed in penetrating a squadron area and shot a tank commander who challenged him from his turret.

Firing

The consumption of Besa ammunition was much in excess of all other natures, and during night attacks in the forest Besas were loaded with belts cleared of tracer and fired into the tops of trees above the heads of the advancing infantry. It was calculated that the effect would be quite alarming to any enemy who might be in the neighbourhood. During an attack it was found well worth while to maintain Besa fire into the forest even when enemy were no longer visible, because hits were obtained against unseen targets as they withdrew. High explosive from the main armament was normally fired only in clearings, for fear of inflicting casualties on our own infantry.

Recovery

Recovery vehicles travelled where they could most quickly come to the rescue of bogged tanks. Bulldozers, operating well forward, were of the greatest value in clearing tracks of fallen trees and so enabling essential wheeled vehicles to get forward.

Supplies

To bring up supplies was no easy matter and various methods were tried. Sledges towed by Churchills were not a success because it was impossible to drag them across heavy ground; the tanks could only tow with difficulty in bottom gear and eventually became bogged. Wheeled sledges were much more successful. A slow but sure way of bringing supplies forward was to load them on to the battalion headquarters tanks, but this method was only used in an emergency since the tanks were not normally available for such work. It was often possible, however, to set aside the second-in-command's and the headquarters troop commander's tanks for towing forward two 3-ton lorries. Undoubtedly the quickest and most efficient method of bringing up supplies in the forest was to use the tanks of the reconnaissance troop, fitted with special racks.

"If the aim of war be a stable and just peace, promiscuous atomic bombing cannot possibly contribute to that end" . . .

Hanson Baldwin.

Abbreviate and Waste Time

Lieutenant-Colonel L. J. Loughran
Australian Staff Corps

WHEN we think of water we think of a certain colourless liquid that we drink, wash in, sail across or hit golf-balls into. Unless we happen to be entertaining some chemical notion we don't think of it as H₂O.

Whilst the relationship between the word "water" and the symbol "H₂O" is not an exact parallel to that between an authorized abbreviation and its parent, nevertheless there is a similarity in that both are different labels for the same substance. In other words an authorized abbreviation is a symbol in its own right, replacing some long word or group of words, and it should be handled accordingly.

If we wish to speak a foreign language well we must learn to *think* in that language and not be continually engaged in translating from one tongue to the other. Similarly, if abbreviations are going to save us time we must learn to speak and write the language of abbreviations; each abbreviation must be an entity which, *in itself*, means something to us just as H₂O means something to a chemist, although the word "water" may not temporarily come to his mind. The fact that an abbreviation often bears a superficial resemblance to its expanded form is secondary. That this is so can readily be seen by examining the structure of a few abbreviations. "Lt", for example, can mean "lieutenant" or "light", depending on the context. However, in "Light anti-aircraft" (LAA) the word "light" is represented solely by the capital letter "L". Again, consider the following, watching in particular the

versatile capital "O": CO (commanding officer), COO (chief ordnance officer); RO (routine order), OR (other rank(s)); PO (post office), OP (observation post), POL (petrol, oil and lubricants); OO (operation order). Clearly, then, an abbreviation is very thinly dependent on its parent for its identity.

"But," you may say, "whilst this is true it is not new. Surely most, if not all, people who use abbreviations use them without any conscious translation into their longer form?" Undoubtedly most people do so all the time in speech or thought but not, if they are accurate, in writing.

Here is what FSPB, Part 1, Pamphlet 3, says: "... where (in an abbreviation) each letter or figure denotes a word, the plural 's' will invariably be inserted after the appropriate letter or figure, thus, AVsRE, or 2sIC". Although the pamphlet does not mention the formation of possessives one might infer that they follow a similar rule.

The conscientious writer could, therefore, lose time by playing a game of cryptograms and picking the key word. He would write, for example, "the VC'sGS lecture", "the DAQM'sG office" and the "M'sGO visit". He must watch his apostrophes to ensure that one GO'sC funds are not mistaken for more than one GOs'C funds. And, above all, he must correct his proof or draft with extra care because the typists and typesetters who can reproduce this sort of thing accurately are scarcer than commas in a legal document.

To write thus, besides being pedantic, is just as inelegant as to write "someone's else umbrella". What useful purpose can it possibly serve? Surely a reader who knows what an AVRE is will know what two AVREs are! And whoever writes of the VCGS's lecture presumably knows what VCGS stands for.

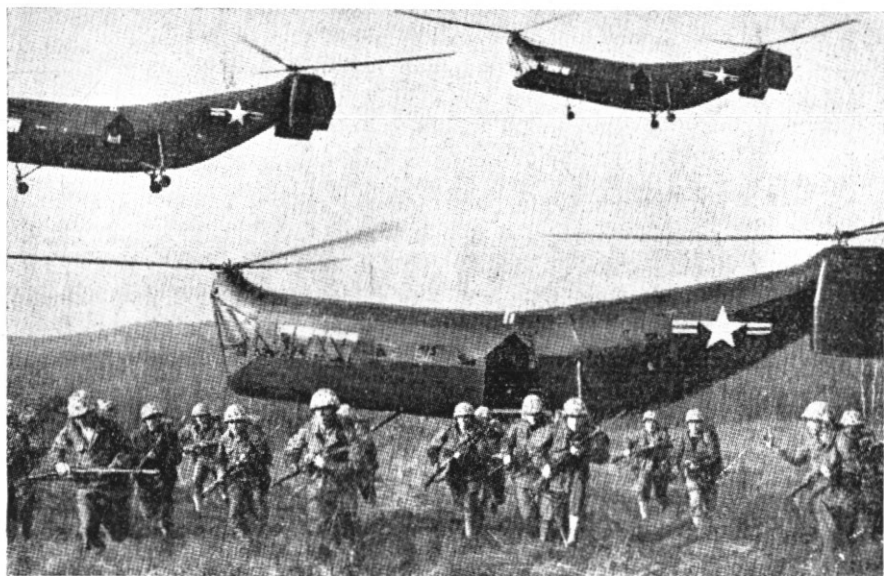
But the rule is there and there it will

doubtless remain unless we take up arms against it—perhaps even then. Still, brothers, as A. P. Herbert would say, let us sabotage this assault on our intelligence by every possible avenue. Let us agitate for the only sound solution—to treat authorized abbreviations as honest words, with their own right to possess or multiply!

"An incessant change of means to attain unalterable ends is always going on; we must take care not to let these sundry means loom with undue eminence in the perspective of our minds; for, since the beginning, there has been an unending cycle of them, and for each its advocates have claimed adoption as the sole solution of successful war" . . .

General George S. Patton, US Army.

ASSAULT BY HELICOPTER



LESS than four years after the Japanese surrender, the United States Marine Corps has nearly perfected an entirely new invasion technique. It eliminates the necessity for costly frontal assaults on heavily defended objects and counteracts the threat of atomic bomb attacks on large invasion fleets.

The technique features the use of troop-carrying helicopters protected by Marine fighter-bombers flown by pilots especially trained in tactical air support.

The advantages gained by using helicopters may be summarized as follows:

1. The invasion fleet may be dispersed, thereby avoiding the dangers of aerial attack against a concentration of ships.

2. Troops may be put ashore more quickly and at almost any point desired, rather than on the only beach which might be available for an amphibious assault.
3. Troops put ashore from carriers out of sight of the objective would have the advantage of surprise and could be supported by other troops landed in the more conventional manner and equipped with heavier weapons.

In the opinion of most Marine Corps planning officers, helicopters will replace the relatively slow, vulnerable assault boats which spearheaded the major amphibious operations of World War II.

The aircraft used in this demonstration were Marine transport-type Piasecki HRP-1 helicopters, capable of carrying 10 men plus the crew.

Russian Combat in Cities

Translated and condensed at the Command and Staff College, USA, from an article by Colonel-General Tchuikov (USSR) in *Informations Militaires*, France

WESTERN Poland and Eastern Germany contained many cities which the Germans took great pains to defend. In many instances these cities had been transformed into resistance centres which could hold out even when surrounded. These localities and other strongpoints were protected by interlocking fire. Intervals were barred by field works and the attacker was forced to penetrate several defence zones. Widening a breach in such a position was very difficult because the Germans counter-attacked vigorously from the flanks. As a result, it was generally necessary to seize two of these localities in order to destroy their system of flanking fire and to permit the movement of reserves into the breach.

The German cities were surrounded by an outer belt of field fortifications. These works, with the fortified suburbs, made a very strong defensive zone. Brick, stone, or reinforced concrete buildings were transformed into permanent-type fortifications. Public buildings and factories had thick walls and solid basements. In Berlin, even the subway and the parks had been strongly organized for defence. All these strongpoints were covered by barricades erected in all principal streets.

From the Military Review, U.S.A.

Characteristics of Combat in Cities

The battle for a city is made up of the following phases: the attack of the out-lying field positions; the capture of the outskirts of the city; and the advance towards the centre of the city. The first positions are attacked by lines of skirmishers, but the fighting on the outskirts and in the interior of the city requires other formations. The outskirts are attacked by assault groups supported by lines of skirmishers. In the interior of the city, the fight for houses or blocks of houses, parks, subway stations, railway stations, or large factories, is carried out by assault groups which have been reinforced by additional heavy weapons. Large units cannot operate in the interior of cities, as the streets and squares are swept by fire from houses and basements. Such fire is highly dangerous to infantry and tanks. Fighting here is conducted at close range. The enemy may be behind each window, corner, or wall. Such a situation calls for a great deal of initiative and determination on the part of the individual soldier.

Organization of the Assault

As forces approach a city, its defences must be reconnoitred and all fire power employed for suppressing enemy fire. The defending forces must be weakened sufficiently to permit the infantry and assault groups to approach close enough

to take the field positions. As soon as the friendly artillery lifts its fire, the attacking forces must establish themselves in the outskirts of the city. The assault groups then go into action.

In attacks on large cities, a division is assigned a section. A regiment, with its reinforcing forces, is allotted a few streets and quarters. A battalion is assigned a street or small area. The reinforced battalion is the tactical unit for combat in a city. Its commander organizes assault groups to which he gives the necessary fire support. He assigns the objectives. As the attack progresses, he organizes new assault groups from his reserves to relieve those which have been previously engaged, thus ensuring the uninterrupted progress of the attack.

The infantry battalion, when employed as an assault detachment, is reinforced as follows: a platoon or a company of engineers, one or two heavy machine-gun platoons, a detachment or a platoon of portable flame throwers, one or two companies of tanks or a battery of self-propelled guns, one battery of 120-mm mortars, one platoon of 45-mm guns, and one or two batteries from the divisional artillery. In addition, if the circumstances require, an assault battalion has one 152-mm battery, one 203-mm battery, and a battery of mortars attached to it as well.

The battalion forms three to six assault groups, and one reinforcing group from the forces which are not assigned to the assault groups. It also provides a company or platoon as a reserve. This reserve is used to supply complementary assault groups, to relieve groups which are engaged, or to exploit a success.

The assault group is formed according to its mission and objective. It may consist of a platoon or a company with half of a platoon or a platoon of machine guns, one or two heavy machine guns, one or two squads of engineers, two to five flame throwers, two or three soldiers armed with either incendiary or smoke generating equipment, four to six 45- or 76-mm guns (sometimes guns of heavier

calibre), one platoon or one company of tanks, and one platoon of self-propelled guns.

The assault group is the basic element in street fighting. It is divided into four sub-groups. The assault sub-group consists of a squad of men with rifles or automatic weapons, a few flame throwers, engineers, and smoke-producing equipment. Its armament also includes an automatic rifle, grenades, incendiary grenades, knives, and engineer tools. Its role is to penetrate into the objective and wipe out its defenders.

The sub-groups which are used for protection or for reinforcement are equipped with machine guns on carriages, heavy guns, and (or) tanks. Their purpose is to make it possible for the assault sub-groups to penetrate into the objective, to liquidate the most troublesome of the enemy's firing points, and to destroy the retreating enemy.

The reserve consists of a platoon or fraction of a platoon of rifle troops. Its purpose is to make possible the uninterrupted execution of the attack by filling in the gaps produced by losses or by providing additional assault groups.

Action of Assault Groups

As soon as portions of the outskirts of a city have been seized, the tanks, self-propelled guns, and the machine guns take the streets under fire to prevent enemy counter-attacks and to permit rapid exploitation of the success of the assault forces. Under their protection, the other guns are brought up and put into action, relieving the initial forces which continue on with the assault infantry. The guns fire at the lower stories of buildings to create breaches in them, while the fire of the machine guns is directed at the windows of the upper stories and roofs.

The assault groups, accompanied by the tanks, pass over to the attack, penetrate into the buildings through windows and breaches, and clear a

passage for themselves with grenades, flame throwers, and automatic weapons. The advance is made under the protection of machine guns installed in the lower stories of the buildings which have already been captured, after the heavy guns and the tanks have silenced the principal enemy firing points. Tanks must be carefully protected against close-range weapons. Fighting inside buildings is hard and dangerous. The least hesitation on the part of the attacker may cost him his life. One must act boldly and rapidly. Before entering a room, a grenade is tossed into it. Flame throwers are used against enemy forces hiding in basements. Before climbing a stairway, smoke grenades are thrown ahead and the stairs are sprayed with bullets from automatic weapons. The troops advance by bounds. On arriving at the next story, a grenade is attached to the doorknob. The explosion will force the door and confuse the enemy behind it. House fighting is carried on without interruption until the enemy is annihilated.

If the upper stories are cleaned out, but the enemy still remains in the basement where entrances prevent the use of grenades or flame throwers, water mains connected to the fire extinguisher system may be broken in order to drown the occupants.

A breach is blown in the wall with explosives to permit passing from one house to another.

In the intervals between fighting, the assault groups must be trained to be bold and to use initiative. During an assault, the leaders of these groups must attempt to achieve the following results:

Complete isolation of the building which is under attack, in order to prevent the enemy from bringing in reinforcements or from withdrawing.

Provide timely reinforcement of attacking forces by drawing on reserves, in order to ensure annihilation of the enemy and possession of the captured buildings.

Personally direct mopping-up operations and the organization of the assault sub-groups which are to attack the succeeding buildings.

There must be no interruption in the fighting. As soon as one building is captured, the attack is started immediately on the next to prevent the enemy from recovering from the initial shock.

Assault groups, tanks, and self-propelled guns move boldly, paying no attention to being cut off from the rear. It is the mission of the reserve to widen the base of the breach and to ensure its possession.

If large garrisons exist in solidly organized buildings, the buildings should be isolated by fire from other structures and set afire by flame throwers or projectiles. When the building burns, the enemy must evacuate it.

Tanks and Self-Propelled Guns

During an attack, tanks and self-propelled guns move behind the infantry, giving support with their fire. They deliver fire either from the halt or while on the move. Their fire is directed at windows and barricades and at all enemy firing points. As long as the enemy is covering the streets with rifle and machine-gun fire, the tanks move forward through openings made in walls and courts. It is the task of the engineers to open these paths in order to permit engaging the enemy from the flanks or rear.

At times, armoured vehicles move through the streets. In this case, one of them hugs the right side of the street, firing on the houses on the left, while the other stays close to the left side, firing on the houses on the right. A third tank, a little to the rear under the protection of infantry, covers the street with its fire.

Tanks and heavy guns, including self-propelled guns, are also kept in reserve by the commander of the assault

detachment. They are employed against structures which resist the fire of ordinary artillery.

After the resistance of the exterior belt of fortifications has been broken, tanks carrying infantry from the assault groups or the reserve attempt to penetrate into the city to disorganize its defence. As soon as the assigned objective is taken, the rifle forces dismount from the tanks and mop up the buildings. The commanders of the assault detachments throw their reserves into the passage thus opened to exploit the success. Flame-thrower tanks give valuable service in cities, opening breaches with their guns and setting fire to buildings.

A firm hold must be maintained on all captured points by occupying them with reserves.

Visibility for the attacker is very limited in cities. This difficulty is countered by the employment of numerous observation and listening posts. Liaison between these posts and the command posts of the troop commanders and headquarters is maintained by telephone, radio, runners, and liaison officers. Within the assault groups, liaison is maintained by runners and by rockets or other pre-arranged signals. All echelons of the command remain in close proximity to the engaged units.

Organization of Defence

The defence of cities is based on the defence of houses and other structures. High buildings provide a good view and a good field of fire into the neighbouring streets and constitute good strong points. The highly developed network of subterranean passages (sewers, basements, and tunnels) which can serve for shelters, command posts, and concealed movement, give a special characteristic to combat in cities. The same can also be said of the streets, squares, and courts, which make the construction of trenches and the planting of mines difficult.

In addition to the energy of the defenders, the morale factor, and the tactics employed, the organization of the defence played an important role at Stalingrad. It consisted of positions echeloned in depth, strong points, and centres of resistance. Interlocking fire covered the intervals. These anchor points of the defence consisted of one or two solid stone structures which could be defended even when surrounded, and which could block the enemy's directions of attack. They were defended by a platoon, by a company, and sometimes by a battalion reinforced with artillery and other weapons, according to the size of the building. A group of strong points, comprising a fire system and placed under a single command, constituted a resistance centre which was usually manned by a reinforced battalion.

The first position of resistance surrounding a city passes through its outskirts. It is the principal position. It consists of buildings organized for defence, with fortifications in the intervals. Up to about a mile outside of this position, a similar security position is organized.

Defensive positions in the interior of the city are constructed along broad streets, rivers, and canals. The zones of the city which contain military or industrial establishments and corner buildings from which several streets may be covered are carefully fortified. The central portion of the city, where large buildings are found, constitutes a special centre of resistance.

The defensive positions make up a zone of strong points which are echeloned in depth. These positions are situated at favorable street intersections, in squares, and inside of parks. Streets and squares are blocked by obstacles which are covered by flanking or oblique fire from neighbouring buildings or specially constructed bunkers. Subterranean passages which provide a protected passageway into the rear of the enemy are organized for defence.

In the case of a building several stories high, the distribution of fire depends on the strength of the building's construction and its situation in the street or on a square. In general, several stories of fire are established. In the basements and lower stories, enfilading fire covering the street is planned. From the upper stories, the street, courts, neighbouring structures, and distant objects are covered. Usually, direct-fire guns and machine guns for short-range fire are placed in the lower stories. The rest of the machine guns and the anti-aircraft guns are placed in upper stories or on the roofs. Troops are distributed throughout the entire building. Certain guns use direct fire. Tanks, self-propelled guns, and machine guns provide flanking fire for intervals and points of access.

In combat in cities, it is necessary that the infantry possess many automatic weapons. A network of alternate firing positions for all types of weapons must be prepared. All this requires more time than a normal organization in the field.

Particular importance is attached to anti-tank defence. It must be able to stop a massive attack by armoured vehicles by preventing them from penetrating into the streets. Those which do succeed in penetrating into the city must be destroyed. Anti-tank fighting is carried out at short range. Special anti-tank weapons and tank destroyers play an important role in this combat, being employed or operating from ambush through openings cut in walls and enclosures, ventilator openings, and doors.

The anti-tank defence must be organized in depth. It is organized entirely around the strong points. If isolated batteries are employed, they are installed as a point of resistance against tanks, principally in areas favourable to tank attacks. Mobile anti-tank reserves are maintained. Engineers must be provided with the necessary tools for cutting through whatever type of pavement covers the streets before mines can be

placed. Certain walls may also be prepared for demolition so as to fall on tanks.

Combat Formations

It is important that the defence of a city be echeloned in depth. Regiments and divisions, as well as artillery groups, form two echelons. A mobile anti-tank reserve is maintained and, at times, a tank reserve. Infantry companies and battalions form two echelons. If there are few troops, only one echelon with a strong reserve is formed.

The second echelon and the reserves are to be used to support and to reinforce the first echelon by counter-attacks in their own or adjoining sectors.

The infantry battalion defends a sector from a half to one mile wide and a half a mile deep. It organizes the strong points located in this zone. Company sub-sectors and special strong points are formed. At times, the battalion is able to defend a single resistance centre or even a single strong point that is particularly important. The battalion reserve is composed of a platoon or company. The battalion resistance centre should cover the most important direction of attack and it must be organized for all-around defence.

The infantry company is assigned several blocks of houses, divided by two or three penetrating streets and two transversal streets. The area is usually divided up into platoon defence zones. The company front is from 300 to 500 yards in width, with a depth of from 150 to 200 yards. At times, a company has only one strong point to defend, such as one or two especially important houses or a large factory.

The infantry platoon defends a group of houses. Its front may be 200 yards wide and 100 yards deep. It may also be assigned the mission of defending a single house which forms a strong point.

All units making up the garrison of a strong point or resistance centre are provided with machine-gun pistols, flame

throwers, machine guns, engineers, anti-tank rifles, mortars, and larger guns and tanks, if necessary. They are supported by artillery fire from defiladed positions. The commander of the infantry unit commands the strong point.

Conduct of the Battle

Personal reconnaissance by commanders of all grades has a large influence on the conduct of the battle. It requires a great deal more time than for an operation in the field.

The infantry regimental commander specifies the front limits of the defence position, the system of strong points, the resistance centres, and the principal strong points of the individual companies. He determines the demolitions which are to be carried out and the obstacles to be established. He organizes the fire support in front of the outer defences, the points of contact between battalions, the eventual direction of counter-attacks by the reserves, and the measures for ensuring the movement of the reserves.

After conducting their own reconnaissance, commanders of infantry battalions and companies organize the defence of their strong points, resistance centres, and intervals. They determine the forces which are to occupy the various positions, assign missions, indicate the positions which the machine guns and heavier guns are to occupy for direct fire, and fix the routes for counter-attacks.

Each resistance centre and strong point is given a plan of defence, which indicates its mission, its fire plan, its all-round defence, the mission of adjoining units, and the artillery plan. The defence plan specifies the organization of counter-attacks, the measures to be taken in case of the loss of a few strong points, the distribution of forces, and the measures to be taken in case of attack. Fire power for the defence of the strong point is also indicated. The fire that will be used to cover intervals, co-operation with adjoining strong points,

and the measures to be taken in case the enemy penetrates one of the strong points, are also planned in advance.

Employment of Supporting Arms

Engineer forces have varied and important missions. They participate in the organization for defence, particularly in preparing concrete works, in camouflaging important points, in providing water, and in constructing substantial shelters for headquarters, hospitals, and reserves. Engineers prepare for the eventual demolition of electric power plants, bridges, telegraph or telephone stations, depots, water mains, and factories. They assist in the construction of anti-tank and anti-personnel obstacles, mine fields, barricades, traps and wire entanglements, either in front or inside of the position. They ensure the destruction of certain buildings, the electrification of certain obstacles, and the establishment of passages and screens.

The artillery increases the strength of the strong points and supports counter-attacks. Small-calibre and anti-tank guns are located between strong points. Artillery units are at the disposal of the strong-point commander and are kept in readiness to manoeuvre with their fire or by a change of position.

Artillery assigned to the strong points or resistance centres is under the command of the latter and is used in direct or point-blank fire. An artillery officer is designated to command it, and he is the potential replacement for the strong point commander.

All anti-aircraft guns are kept in readiness to fire against ground objectives.

Tanks and self-propelled guns reinforce certain strong points and resistance centres, co-operate in counter-attacks, and form a reserve which is at the disposal of the troop commander of all the various arms. These weapons are employed against both enemy personnel

and material. They are placed in battery in shelters or in tank trenches, and several positions are provided. They may be used by themselves as mobile fire points.

Flame throwers and other incendiary devices are employed as reinforcements for anti-tank and anti-personnel defence or for demolitions.

Smoke-producing devices are employed for screening the movements of reserves, for launching counter-attacks, or for screening bridges or certain passageways on the edge or inside of the city.

Conduct of Defensive Combat

The defence of a city must be aggressive. Attempt is made to inflict losses on the enemy from the very beginning by use of artillery, aviation, and obstacles. Effort is made to destroy the enemy forces in one swift operation. The defenders of Stalingrad made many counter-attacks in the approaches of the city. In this way, they weakened and troubled the Germans considerably, often forcing them to make new plans for counter-attacks. Every penetration of the enemy into the city, as a rule, should be liquidated by vigorous counter-attack. The defence of Stalingrad was marked by the following measures:

- Careful preparation of every sort of fire system for repulsing the attack

and for destroying the enemy forces which were concentrated for the attack.

- Organization of the defence in depth. This permitted quick reaction against enemy forces which had succeeded in effecting penetrations and facilitated attacks against the assailant's weak points, particularly when gaps or open flanks developed.

- Employment of two echelons and the reserves to re-establish a previously held position and to retake lost points. Support is provided by tanks, heavy guns, and flame throwers.

- Lastly, extensive use of infantry fire by picked marksmen, of machine guns, of artillery in direct fire, of demolitions, and of groups operating against the enemy rear.

Morale is of great importance. Morale makes it possible for garrisons of only moderate strength to resist for a long period when encircled, thus inflicting severe losses on the enemy and breaking his spirit. The defenders must take advantage of this and carry out successful counter-attacks. Again, Stalingrad provided an example. Its defenders followed an unwritten rule that no strong point or portion of a house which had been lost was to be abandoned without orders, even in case of destruction by the enemy. It was tenacity which gave victory.