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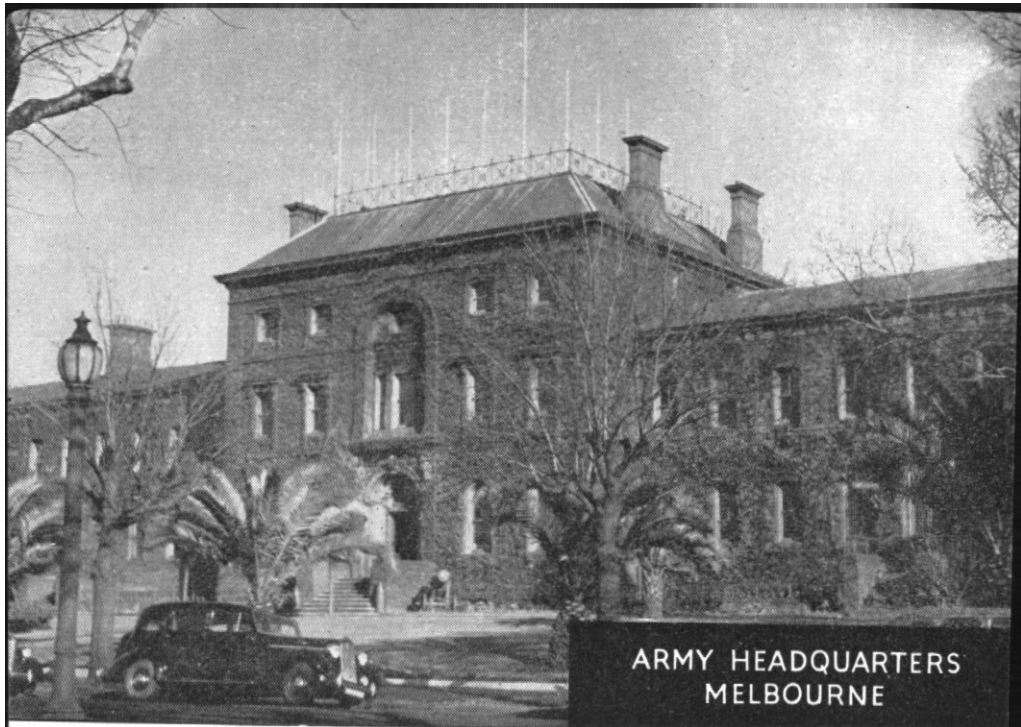
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ARMoured OPERATIONS

in

KOREA

TASK FORCE "CROMBEZ" AT CHIPYONG-NI

Lieutenant A. Argent,
Royal Australian Infantry.

Situation Prior to the CCF Attack on 13 February, 1951.

Early in February, 1951, the forward defended localities of IX US Corps, in the vicinity of Yoju, followed the south bank of the frozen Han River. The 23rd Regimental Combat Team (RCT, i.e., a brigade group) and the French Battalion, occupied the small town in Chip-yong-ni, eleven miles north of the front lines. Daily contact patrols from 3 Battalion, The Royal Australian Regiment, were made to this outpost, via Koksuri (see Sketch). The last contact patrol was conducted on the 13th February. Fighting, which had already begun on the north and west of the Chip-yong perimeter, increased in intensity by last light and by midnight the garrison was completely surrounded and being attacked from all sides. By the morning of the 14th the situation was described as "critical."

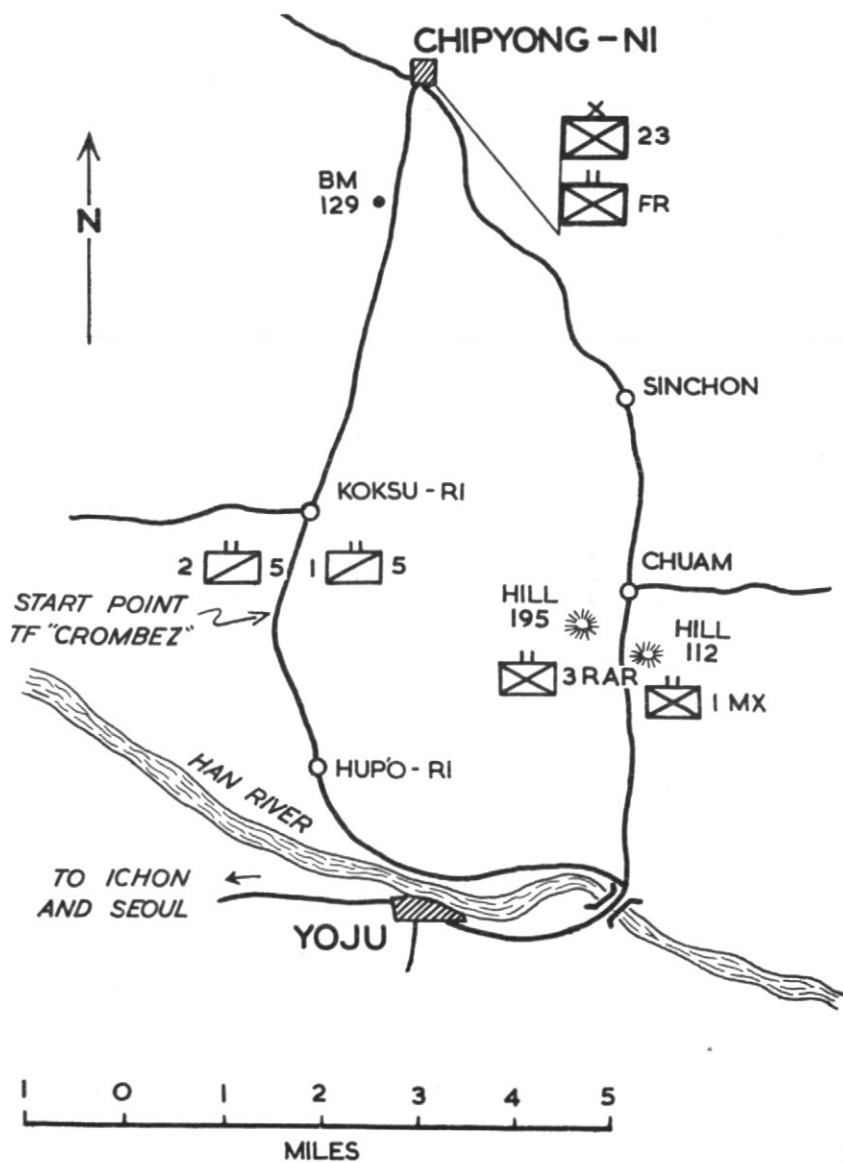
Orders for the Relief of Chipyong.

Early in the afternoon of 14 February, 27 British Commonwealth Brigade was ordered to relieve the 23rd RCT via the Chuam—Sinchon route. As determined opposition was met in the vicinity of Hills 112 and 195 (see Sketch), 5 US Cavalry Regiment—an infantry unit—were ordered from IX Corps reserve to effect the relief of the 23rd RCT, via the Koksuri route.

The remainder of the article concerns the operations of this force.

Operations of 5 Cavalry Regiment.

A night march was made by the Cavalry from the assembly area at Yoju to the vicinity of Hup'o-ri, where a destroyed bridge halted the column. On the morning of the 15th, the 1st Battalion, and later the 2nd Battalion, were committed north towards Koksuri. By 1100 hours the Regimental Commander of 5



Cavalry Regiment realised that the enemy offered too much resistance for the infantry battalions to reach Chipyeong by that evening and decided that only an armoured task force would be able to get through. When the road was clear and suitable for wheeled traffic he planned to wireless for the supply trucks and ambulances to come forward.

The Regimental Commander was in radio contact with the Regimental Commander 23rd RCT in Chipyeong, and informed him that the Task Force was proceeding without the supply vehicles. He added that these might be able to come forward later, depending on the resistance encountered by the Task Force. The Regimental Commander 23rd RCT requested that he come, ". . . trains (i.e., supply vehicles) or no trains."

Composition of Task Force "Crombez."

The Regimental Commander 5 Cavalry Regiment organized his Task Force as follows:—

The force consisted of 13 Patton tanks (D Company, 6 Medium Tank Battalion), 10 Sherman tanks (A Company, less two platoons, 70 Tank Battalion), and L Company, 5 Cavalry Regiment. The strength of the rifle company was 165, all ranks.

The Patton tanks were placed at the head of the column because they mounted 90 mm. guns, could turn about completely in their own length (an important consideration in mountainous terrain traversed by a single narrow road), and had better armour protection than the Shermans, which mounted 76 mm. guns

and were not equipped with cross drive transmissions.

No infantry rode on the leading troop of Pattons. The infantry were instructed to remain on the tanks at all times except to protect the tanks from fanatical tank hunters, or when casualties from enemy fire became too heavy. Four engineers were placed on the second tank in the column to clear mines.

Before his departure the Regimental Commander requested air strikes on known enemy positions, and that liaison aircraft cover his advance and maintain contact with his column to relay information of enemy observed along the route.

Advance of Task Force "Crombez."

At 1545 hours, 15 February, the Task Force with the Regimental Commander 5 Cavalry Regiment (Lt-Col Crombez) in the fifth Patton tank, moved north from the start point at Sangch'ohyon.

Long-range small arms fire was received from both sides of the road two miles north of the start point. Thirty infantrymen were forced off the tanks. At Koksu-ri a further one hundred of the infantry had to leave the tanks due to the heavy and accurate enemy fire. Now the enemy could be seen clearly on either side of the road. The tanks engaged them with machinegun and tank fire. Except for rocket launcher teams and satchel and pole charge groups, the enemy were occupying the high, snow-covered ridges.

North of Koksu-ri the road passed through a valley, closely following the hillside on the west. The pass

at Benchmark 129 called for close teamwork from the tank commanders since the enemy were positioned on the cliffs directly overlooking the column. Here enemy fire intensified. Rocket launchers were fired and satchel charges thrown from the heights. At the top of the pass the leading tank was hit, but not disabled by a rocket. The fourth tank was struck by a rocket which penetrated the turret and exploded the ammunition in the ready racks. Although the tank was set on fire, the driver managed to get it clear of the road and progress was not impeded. More casualties were suffered by the infantry.

Fire from the troops on the tanks was not effective as the tanks were moving over fairly uneven roads. As the Regimental Commander considered that the success of the Task Force depended on its ability to keep moving, none of the infantry forced from the tanks were picked up.

Shortly before 1700 hours the Task Force had almost reached the defensive perimeter of the 23rd RCT. At the small village of Masan, one mile south of Chipyeong, many enemy were destroyed on the low spurs and in re-entrants by the tanks, which attacked the CCF from the flank. This attack was most advantageous, as at that moment the 23rd RCT were counter-attacking to regain a 155 mm. howitzer battery that had been over-run.

When the Task Force entered Chipyeong, six miles from the start point, twenty-three infantrymen and the four engineers were still on board the tanks. Of these fourteen were wounded. However,

about one hundred infantrymen who had been forced to leave the tanks fought their way back to friendly lines.

Return of Task Force "Crombez."

At 1215 hours, 16 February, after being delayed by a snow-storm, the Task Force left Chipyeong to return by the same route to the main lines. During their return, no enemy were seen and no shots were fired.

However, the 1st and 2nd Battalions of 5 Cavalry Regiment were advancing against opposition five miles south of Chipyeong and 27 British Commonwealth Brigade was meeting stubborn resistance four miles to the east.

Discussion of Action of Task Force "Crombez" and Lessons Learned.

What was Achieved.

The 5 Cavalry Regiment was ordered to relieve the 23rd RCT at Chipyeong by last light on 15 February. Therefore the time allowed to the Regimental Commander was approximately six hours. The strength of the enemy encountered six miles south of Chipyeong and the lack of resources available to the Regimental Commander made his task an impossible one in the time allotted. On the surface, the net result of the Task Force's action was that the Chipyeong garrison was reinforced by twenty-one tanks for a period of nineteen hours. However, the Task Force killed many enemy, as the advancing Cavalry Battalions later testified, and the column had a considerable shock effect on the CCF. This probably accounts for the inactivity of the

CCF during the return of the Task Force from Chipyong.

Although the garrison was not relieved until five days later, it was not again as seriously threatened. The advance of 5 Cavalry Regiment and 27 British Commonwealth Brigade from the south precluded any further massed attacks by the CCF against Chipyong.

Use of Tank Borne Infantry.

Tank borne infantry cannot perform the role of armoured infantry. The relief of Chipyong was an ideal task for a squadron or more of tanks and a battalion of infantry in armoured personnel carriers. If required, the infantry would have been ready to fight during the advance or in Chipyong. Furthermore, no mines were encountered on either the Koksuri or Chuam—Sinchon routes. Had armoured personnel carriers, or half tracks in large enough numbers, been available losses by the infantry would have been reduced considerably.

It is difficult to fire from the back deck of a moving tank. Tanks carrying infantry through enemy territory where the riflemen must fight is not an assault formation, but a method of transportation. In this case, however, the Task Force Commander had no alternative due to the lack of armoured personnel carriers and half tracks.

Necessity for Rehearsals.

Effective infantry-tank communications and methods of target desig-

nation must be pre-arranged, and, if possible, rehearsed. Due to the time factor, this was not possible. As a consequence there were misunderstandings during the advance which resulted in higher casualties being suffered by the infantry.

Effect of Rocket Launchers Against Patton Tanks.

The CCF anti-tank teams fired both 3.5 and 2.36 inch rockets (Bazookas) against the Task Force. The 3.5 inch rocket penetrated the turret of the Patton tank. The smaller calibre rocket, which also struck a turret, did not penetrate, but caused "scaling." The launchers and ammunition were of US Army origin.

Additional Equipment Required by the Task Force.

A tank dozer and an armoured recovery vehicle should normally be part of such a column. This equipment was not available to the Task Force Commander.

Co-operation.

Throughout the advance there was excellent co-operation between the two armoured sub-units of the Task Force, although they had not operated as a team previously. At the time D Company 6 Medium Tank Battalion were Corps troops under command of 1 Cavalry Division, and 70 Tank Battalion was a unit of 1 Cavalry Division.

Can We Defend the Middle East?

Captain B. H. Liddell Hart.

FIVE years ago, Reuters—the British and international news service—when taking a photograph, put a globe on the table in front of me and suggested that I should point to the spot where I thought the next war was most likely to break out. After reflection, I placed the pointer on Korea. That photographically recorded prediction of 1946 has had much publicity since the outbreak of war in Korea. In answering a 1948 questionnaire on the risks of war, I put Korea first and Persia second among the points where “an explosion” might be “detonated.” I can only hope that the second prediction will not prove as much to the point as the first. But recent omens are more and more disturbing.

Four years ago, the Shah cleared out the Communist puppet government in the frontier province of Azerbaijan. He also suppressed the extreme left-wing Tudeh Party, the Soviet “fifth column” in Persia. For the time being, Stalin swallowed these rebuffs—to many people’s surprise. A long lull followed, although the atmosphere was tense. Then, last summer, an official Soviet-Persian reconciliation led to a deceptive relaxation of the tension, and, in November, a trade agreement was renewed. The USSR

poured in goods that were welcomed warmly by a poverty-stricken people, while the Persian Government naturally hesitated to put a check upon the accompanying inflow of Soviet propaganda. The Tudeh Party began to revive, and its leaders made a well-staged escape from prison.

The renewed Communist activity was assisted greatly by the wealthy clique of conservative politicians and landowners who obstructed, at every turn, the efforts for social reform made by the Shah and his new Prime Minister, General Razmara. At the same time, the Tudeh Party found unwitting allies in the extreme Nationalist Party that has been clamoring for the “nationalization” of the oil field and the annulment of the agreements made with the British company that developed those oil fields. As always, opposite extremes play into one another’s hands, and combine to nullify peaceable settlements.

The rapidly deteriorating situation has been capped by the assassination of General Razmara, who had been striving to pursue a middle course internally, and a policy of neutrality externally. The way is open for Stalin’s next move.

The weakness of Persia’s internal situation is accentuated by her perilously advanced position on the

Middle East board—so close to the Soviet's side. And Persia's weakness uncovers the small countries that lie behind—Iraq, Syria, Lebanon, Jordan, Israel, and Saudi Arabia—as well as Egypt and Pakistan in the rear corners.

There is, however, another and stronger piece on the board—Turkey. She stands on the left edge, and her location used to be described as the Near East. That term is still correct—geographically and strategically—because her western frontier lies in Europe, adjoining the boundaries of Bulgaria and Greece, so that she is exposed to invasion from that quarter by the Soviets and their Balkan satellites. But her eastern frontier lies in the Middle East, adjoining Persia as well as the USSR's Caucasus frontier. Her flanking position in that area is of great strategic importance and influence.

Britain and France already have a treaty of mutual assistance with Turkey. Now the United States State Department has confirmed reports that the United States of America is giving "serious consideration" to the idea of associating itself with that treaty. Admiral Carney, the American Naval Commander in Chief in the Eastern Atlantic and Mediterranean, has visited Turkey and had talks with the Government. So has Mr. Thomas Finletter, the American Secretary of the Air Force, General Sir Brian Robertson, the British Commander in Chief in the Middle East, also has been visiting Turkey.

Policy is moving fast and extending its embrace. The big question is whether it is moving too fast

and too far in relation to strategic possibilities. Last autumn, General Omar Bradley, Chairman of the United States Joint Chiefs of Staff, publicly expressed the view that America could not undertake military commitments everywhere. He underlined his meaning by indicating that Turkey and Persia were among the places he had in mind—where "local wars" might occur. Although American policy may have been changing since then, it is hard to see how any strong reinforcements could be provided while so large a proportion of America's forces are absorbed in Korea.

The burden of propping up the Middle East has rested mainly on Britain since the French forces left Syria and Lebanon—and Britain's limited resources are seriously strained. She has to face a menace at many points, and must concentrate on guarding the vital points. As the heaviest menace lies dangerously close to her heart, it becomes more hazardous for her to dissipate strength in guarding extremities.

In these difficult circumstances, it would be wise to begin an exploration of the problem by seeking an answer to the question of how important is the Middle East to us.

How Important Is the Middle East to Us?

That subject divides itself into two parts—its **strategic** and **economic** importance. But the first part also is divided into defensive and offensive considerations. Defensively, the Middle East has long been regarded as being important, above all, because it covered the

Suez Canal route to India and the Far East. Offensively, its importance lies in it being the way of approach, by land or air, to the USSR's oil fields in the Caucasus and her new industrial plants in the Urals—which together constitute the main source of her war making capacity. As for the economic importance of the Middle East, that lies mainly in the Iraqi, South Persian, and Saudi Arabian oil fields. There also is one big group of wells in Northern Iraq close to the Turkish-Persian frontier, and a still bigger series of groups around the Persian Gulf.

Let us now examine the question on these counts.

The Suez route to the East was described as "vital" to Britain before she had any footing in the Middle East, and longer still before the Middle East oil supplies were developed. Its importance naturally increased after the building of the Suez Canal. Statesmen and generals have many times described it as the "life line" of the British Empire.

It is still called "vital" on its own account. In 1946, British Foreign Minister, Mr. Bevin, gave renewed emphasis to the importance of that traffic route, and spoke of any potential foreign approach to it as a threat of "cutting our throat." As recently as August, 1950, another eminent statesman, who held high office in the war-time Government, spoke of the Suez Canal as "that indispensable link in our communications . . ."

Yet, in the last war, we were forced to abandon the Mediterra-

nean and Suez as a regular traffic route, from 1940 until 1943, and to divert our convoys around the Cape of Good Hope—even those going to Egypt with troops and supplies. Can it be true to term anything "indispensable" or "vital" when, in fact, we proved able to dispense with it during three crucial years of war? To do so would seem to be a continuance of habit, and not really justified. It would be truer to call the Cape route "vital," and the Suez route merely "valuable." Indeed, on deeper reflection, it becomes clear that even the Cape route is not really vital to the survival of Britain—not nearly so vital as the preservation of Western Europe. Its classification as "vital" has more justification if we are considering the problem of preserving the Commonwealth. Yet, in a pinch, even Australia and New Zealand might be maintained from the United States.

Next, we must examine the problem of the Middle East from the point of view of counter-offensive action in the event of war with the Soviets. It is very important to maintain the Middle East as a springboard—if we can—for it is so close to the USSR's economic-strategic "Achilles' heel." No counter-offensive from Western Europe would have so much possibility of paralyzing the Soviet's war waging power. But the possibility depends on whether we can hold the Middle East, or at least an important part of it, in the early stages of a war. For in warfare, as we have known it hitherto, any offensive or counter-offensive has to be mounted from a secure base—which also must be adequate for the development of a powerful effort.

Middle East Oil.

Then we come to the question of the economic importance of the Middle East. That is not large, apart from its oil. It is small even by comparison with Africa—where the potential resources have barely been tapped. The value of the supplies we import from the Middle East is less than a quarter of what we get from Africa, while as a market for our own goods the comparative value of the Middle East is still less.

The Middle East oil is important—although perhaps not quite as important as is often argued. The Middle East has over 40 per cent of the world's proved oil reserves, and about 12 per cent of present production. The present figure is more material to the present strategic problem—as atomic power may come to replace oil. Moreover, the defence of the West could be maintained by oil supplies from the other side of the Atlantic—and its economy, too—if necessity compelled. The loss of the Middle East oil would cause difficulty, but hardly disaster. It thus seems highly questionable whether the "Economist" was justified in describing the Middle East oil as "economically vital," as it did in July, 1950.

In any case, the war-time value of those oil supplies depends on whether we can reckon on holding them in the event of war. Here, we come to the next big question for examination.

Can We Defend the Middle East?

First, we have to consider what may be called the "local" forces. Persia stands in the front line, and much depends on her power of resistance — because her territory

forms the gateway to the rest of the Middle East. Her mountain frontier is a big defensive asset, increased by the fact that her mountain barriers extend southward in great depth. But the value of such barriers depends on having forces strong enough to hold them. That lesson was made very clear in the last war, when we saw the German panzer division sweep through the mountainous Balkans within a few days, overcoming obstacles that had been regarded as impassable to mechanized forces. Yet both the Yugoslavs and the Greeks had what were considered as strong armies, composed of tough troops. Their rapid downfall showed that the will to fight is not enough, without modern equipment.

It is only too plain that the Persian Army is weak in all respects

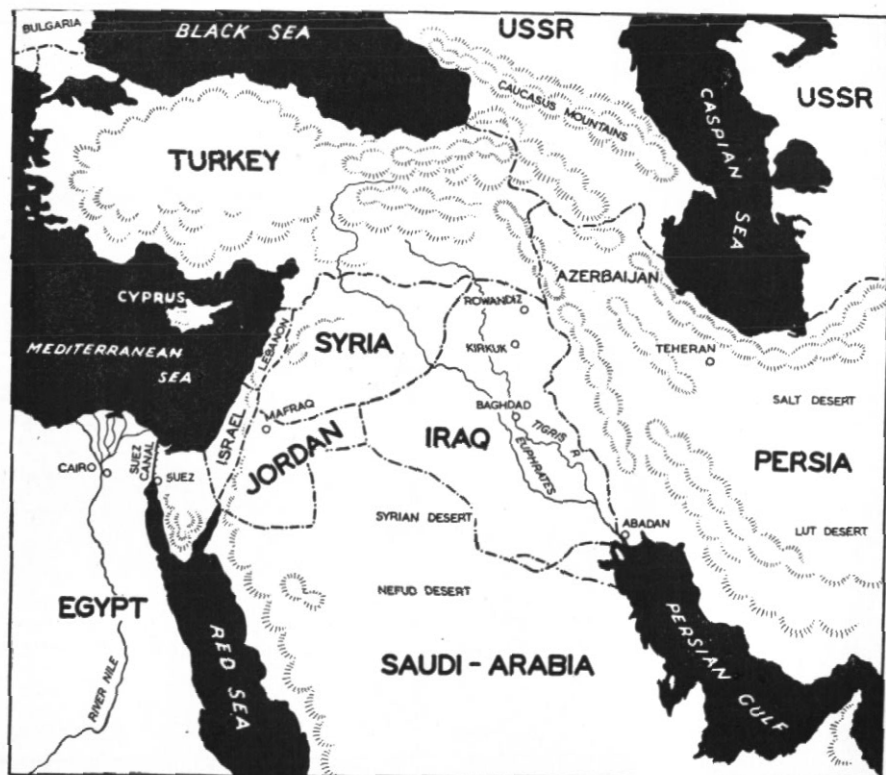


Rugged Terrain of N.-W. Iran.

by comparison with either of those armies. It has, nominally, some 10 divisions, and the equivalent of a few more in scattered units, but they are low strength divisions and poorly equipped. In the last few years, a small amount of relatively modern equipment has been provided from American and other sources, and American officers have helped with instructional guidance, but it is doubtful whether more than two divisions are yet effectively equipped. In sum, Persia's forces are tiny compared to the vast area they have to cover. Under such conditions, the best chance of putting a brake on the Soviet invasion lies in well-judged demolitions on the roads through the moun-

tains. But an extensive network of demolitions requires not only much skill, but large resources — both of which are dubious quantities in this case. It is not surprising that some of Persia's own officers, surveying the problem of defence, should have remarked that the Soviets probably would overrun the country within a week unless outside help arrives in the first few days, and on a big scale.

Behind Persia lies Iraq. The Iraqi Army numbers a little less than 30,000 men, and consists of two small divisions, and the equivalent of a third in scattered units. One division is posted on Iraq's mountainous northern frontier, facing the gate-



way through Persia. The other is stationed in the flat stretch between Baghdad and the Persian Gulf.

A Soviet invasion would be most likely to come through Persian Azerbaijan and over the passes leading to Rowanduz and Kirkuk. That is the shortest route, since it has little more than a hundred miles of Persian territory to traverse before crossing the Iraqi frontier. The Soviets might use airborne troops to open the way and keep it open. But we have also to reckon with the possibility of a Soviet out-flanking thrust into Persia from the area east of the Caspian Sea. If they quickly overrun Persia, they might invade Iraq from other points along the 600-mile stretch of frontier between Rowanduz and the Persian Gulf. That is an immense stretch to cover, even though most of it is mountainous. Iraq, south and west of the frontier, is a wonderful arena for the manoeuvre of armoured forces—but Iraq has no tanks, whereas the Soviets might pour in streams of them, once they had secured the mountain passageways.

On the western flank of Iraq lies Syria. Her army numbers only some 10,000 men, and is of little value except for one mechanized brigade. A small amount of good equipment has been obtained from France, but has suffered from rough handling, and the "casualty" rate has been high, particularly in aircraft. Syria's main defence lies in the fact that it is covered by a desert on the east, and by Turkey on the north.

Behind Syria lies Lebanon, on the Mediterranean coast. She has an army of about 5,000 men —

equipped with French weapons. The force is very small compared to the stretch of the frontier, and could hardly be expected to put up any prolonged defence — although the tribesmen from the Jebel Druse are quite good guerrilla fighters.

South of Syria lies Jordan, with a relatively narrow frontier facing east. Her Arab Legion, British trained and well equipped, is much the best fighting force in the Arab countries of the Middle East. It is not much stronger than the Syrian Army in numbers, but its effective strength is much greater. It has formed one small-scale division, and is in process of creating another.

South of Iraq, and of Jordan, lies Saudi Arabia, King Ibn Saud's territory is immense on the map by comparison with any of the other states of the Middle East. The bulk of it is desert—a handicap on the development of his nation, but a great insurance for its survival. He gained his ascendancy, and extended his domain, with the aid of his relatively large Bedouin tribal forces, well versed in guerrilla fighting. Since 1947, he has formed a mechanized force of 10,000 men, trained by a British military mission. That would be a valuable asset in mobile operations, but would hardly be strong enough to oppose a Soviet advance down the western shore of the Persian Gulf against the newly developed oil fields there.

On paper, Egypt now has the strongest army in the Middle East, excluding Turkey. It numbers about 80,000 men, and is in process of being increased to 100,000. The general staff is planning to create two armoured divisions, but at present only the nucleus is formed and

equipped—mainly with "Sherman" tanks. A small number of post-war types, including "Centurians," have been bought from Britain. The air force also has a number of jet fighters. Since the Egyptian Army's utter failure in the attempted invasion of Israel two years back, there has been an extensive overhaul of its organization and training. But it will not be easy to rebuild confidence on a firm foundation, or to develop an adequate standard of leadership, from existing sources.

By contrast, the Israeli Army has proved its quality—by the way it repelled the several-sided invasion from the Arab countries in 1948. It is, clearly, the toughest fighting force in the Middle East, with leaders who are vigorous, militarily well educated, and highly intelligent—a rare combination. Its handicaps lie in its smallness and scarcity of powerful modern equipment. Israel had 120,000 men under arms by the end of World War II, but its post-war force, on an active basis, is only about a quarter that size; providing some four mobile brigades. By improved mobilization plans, they can, however, be multiplied three or four times at short notice, while general mobilization probably would produce twice the numbers raised in 1948.

Continued tension between Israel and her Arab neighbours is an obvious handicap to combined action to meet the menace of a Soviet invasion, but it may have some compensation in stimulating efficiency all round. Even so, it is painfully clear from a survey of the "local" forces in the Middle East that these countries are not capable of defend-

ing themselves separately or collectively against such an invasion.

How to Strengthen the Middle East Defences.

That brings us to the more important question of what their Western supporters can do to strengthen the defence of the Middle East.

There is only one British division available to back up the local forces, and that lies a long way from the immediate danger points—part of it as far distant as Cyrenaica. And that is all the Western powers are contributing, at present, to the land defence of the whole area. France formerly had a strong force in Syria and Lebanon, but that was withdrawn when these countries chose a precarious independence. The United States has not sent any troops to the Middle East—merely instructors.

In sum, the present land defence of the Middle East all too aptly recalls Hans Anderson's fairy tale entitled "The Emperor's New Clothes." That was the story of how certain impostors, who knew human weakness, pretended to weave for an Emperor a new suit which, they alleged, had the property of being invisible to everyone who was unfit for his office. The Ministers and the Emperor did not care to admit they could not see it—until a little child explained: "But the Emperor has nothing on at all."

It is also difficult to see how any large reinforcement for the Middle East could be provided in the near future. The solitary British division in that area might possibly be increased to two, or even three, by a better organization of the Army

as a whole. But the figure could not be increased further without abandoning the Far East or diverting reinforcements urgently needed for Western Europe's defence—the most vital area. As for any American reinforcements that seems unlikely while the United States remains so deeply entangled in Korea.

As things stand, the main hope of curbing a Soviet advance rests, first, on the demolition of the routes through the mountain belt, and, then, on the maintenance of the obstruction by air action, strongly sustained.

The Royal Air Force has a chain of airfields in the area, the main ones being at Habbaniya, near Baghdad; at Mafraq, in Jordan; and in the Suez Canal area. The Americans have more recently established a big air base at Dhahran—on the west side of the Persian Gulf—in Saudi Arabia. Further afield, they have another big one near Tripoli and are planning several in Morocco—from which a powerful long-range bombing force could operate. At present, however, the actual strength in the Middle East is small, while the nearer bases are bound to be insecure as long as no adequate ground forces are available to protect them against a rapid drive southward by Soviet mechanized forces. Moreover, the experience of Korea has cast doubt on the ability of air power to stop a Soviet-type invasion.

There is, however, one important piece on the board that remains to be considered more fully—Turkey. Nature has provided her land with strong barricades, and these are backed by a standing army of about 300,000 men, which could be

doubled or more at short notice, while a more extensive mobilization could bring it up to nearly 2 million. The Turks have proved tough fighters in the past — and have recently shown that again in Korea. Their army is in the process of being modernized, with American aid. It suffers from growing pains, but should be capable of holding its own in defence—which has always been its strong point. Whether it could develop an effective counter-offensive outside its own borders is more dubious. A Western spearhead, of picked troops, might make a great difference to the prospect.

If Turkey could stretch out an arm quickly enough to help cover her neighbour, Persia, against a Soviet thrust from the Caucasus, it would make a great difference to the prospect of initial defence — the most important phase. Turkey also would provide a close-up base for a powerful air striking force, and it seems that such a base could be established near the south coast, behind the Taurus mountain belt.

Summary.

The conclusion from such a survey is that while the chances of a direct defence of the Middle East are at present scanty, there may be more hope in its indirect defence.

The USSR might push deep down into the central area, but it would be difficult for them to operate with large forces beyond the desert belts—where they could not "live on the country" in their usual way. Thus, there should be a prospect of holding the coastal fringe, particularly on the Mediterranean side, and keeping the Soviets contained in a

desert "sack"—an awkward situation for any invader. The possibility would depend, however, not only on the fuller development of the "local" forces, but on timely reinforcements from the West. Light armoured divisions, especially if designed to be air-transportable, would be the most promising kind of strategic reserve for the Middle East.

The Middle East offers great scope for the practice of a defensive-offensive "trapping" strategy against an invader who is lured to overstretch

himself—as has often been demonstrated in history. If the Western powers could provide sufficient forces of high manoeuvrability, those potentialities might be exploited. But the West must be made reasonably secure first.

For the time being, the main deterrent lies in the potential retort of strategic bombing against the USSR's most "vital" area, if she should invade the Middle East. The deterrent might be progressively reinforced in the ways suggested.

The tools and techniques of war change constantly, but the task of the foot soldier—to close with and destroy the enemy—never varies.

—Major-General John H. Church, US Army.

Some RESPONSIBILITIES of the PLATOON COMMANDER

Captain H. Gayst, RAAMC.

BOTH in training at home and on active service, the platoon commander is probably the officer who has the closest personal contact with the soldier. Many problems and medical situations will occur which it is his responsibility to deal with on the spot. Many medical and psychological conditions can be remedied early by action on his part, which, if allowed to develop, may reduce the efficiency of the soldier.

The "Nervous" Soldier.

Modern living conditions produce many forms of nerve strain, especially in urban dwellers. At first sight it appears that many recruits will never make efficient soldiers. They are restless and disjointed in their behaviour. Their first reactions to military life are not good. They frequently mistake orders given on parade, and are inclined to be jumpy and emotionally disturbed by trivial incidents.

It is important that recruits of this type be handled correctly, as

many of them can become good soldiers. If overburdened at the beginning of their service they may develop a form of fixation neurosis. This fixation may take one or more of the following forms:—

Anxiety Neurosis (The "No-hoper").

In its minor form this is labelled as "inferiority complex." The soldier develops a feeling of failure out of proportion to his real performance. He is suspicious and furtive in his manner, and every comparison between himself and the rest of the squad increases his demoralisation. He haunts the RAP complaining of bizarre pains and symptoms, has frequent "headaches" and complains of his "eyes hurting."

Others complain of their "heart racing," and of a feeling of sickness, not related to digestive disease.

The Hypochondriac (The "Belly-acher").

This varies from the "no-hoper" in that the soldier's gross nervousness often disappears, and is replaced by a constant set of symp-

toms such as "a pain in the heart," "a pain in the back," "a pain in the liver," etc. Often his location of his organs and pains is anatomically and physiologically absurd, but the soldier displays an earnestness and emphasis, and firmly believes in the diseased state of his organs. The explanation is that his mental conflict has resolved itself in an escape into imaginary disease, in which his ego (his self-concentration or animal element in the sub-conscious mind) has overcome his more superior nervous processes.

Both the above varieties may be combined in individual cases. The remedy for such a soldier of course depends on the severity of his nervous condition. If he breaks down completely, he must be referred for Medical Board. However, if taken in hand at any early stage many such soldiers can be encouraged and may produce a fair performance.

Suggested Remedies.

Recruits showing the symptoms described in the foregoing paragraphs should be concentrated in a special squad under your BEST instructor.

The soldier should be handled firmly, but kindly. On no account should his symptoms and complaints be pandered to. **DO NOT PERMIT HIM TO FALL OUT OF THE SQUAD FOR TRIVIAL COMPLAINTS.** To do so will only increase his neurotic belief in his symptoms. If he feels sick and says he is going to faint the instructor should fall him out to sit in the shade for five minutes, and then order him to rejoin the squad. **DO NOT SEND HIM TO THE RAP UNLESS IT IS REALLY NECESSARY.**

Many instructors lose patience and attempt to alert the soldier with loud, emphatic orders with a sarcastic or cynical undertone. This method should be strictly checked, as it only increases the soldier's unsteadiness and his sense of confusion and unworthiness. Orders should be repeated as often as necessary, and should be clear with a firm yet kindly undertone.

Care of the Feet.

Care of the feet is most important, as there may be a considerable waste of training time through soldiers falling out with sore feet.

THE ROUTINE FOOT PARADE is an important part of the platoon commander's responsibilities. If possible it should be done twice weekly, and, in addition, after a route march or a long period of drill.

What to Look For.

State of socks and boots. Torn dirty socks can cause infected blisters.

Corns, bunions and callosities are often caused by ill-fitting boots. Refer to RMO and unit chiropodist.

Tinea is a difficult problem as it occurs in a chronic form in the webs and crevasses between the toes. It will occasionally flare up into an ulcerating septic sore between the toes, spreading to the sole of the foot.

What to Do.

See that the hygiene squad provides tubs containing Condy's solution in the shower rooms and ablutions. Supervise the troops and

stress the importance of REPEATEDLY using the footbath.

Supervise the use of foot powder, clean socks and properly fitting boots. ENSURE THAT THE RECRUIT IS ISSUED INITIALLY WITH WELL-FITTING BOOTS.

Send all bad cases of tinea to the RAP for treatment.

Rheumatic Complaints.

The rheumatic conditions ("Sore back") found in young recruits are mainly centred in the muscles of the spine. These conditions are seldom severe enough for the recruit to cease training completely, but during the height of an attack he will complain of stiffness and soreness in the back, usually made worse by prolonged standing on parade.

Most cases will have to be rested for a few days under treatment by the RAP. Moreover, it is important that they be restored to physical fitness generally.

A course of graduated exercises under the supervision of the PT instructor is often the best way of getting rid of residual stiffness.

Supervision of Cleanliness.

The platoon commander should check on the personal cleanliness of the troops in his sub-unit. This should be done at regular intervals. A mere inspection on parade is not sufficient. The men should be inspected in their sleeping quarters, and all clothing in cupboards and kitbags should be turned out for inspection.

Things to Look For.

Boils and Septic Sores. These usually occur where hygiene is poor. They are infectious where men are living and sleeping in a confined space, i.e., huts, tents, etc.

Lice and Scabies. Insect infection is highly infectious. All cases should be immediately isolated and the RMO informed.

Continued study of the ground and practice in its adaptation to one's purpose is the key to tactical efficiency.

—Major-General C. H. Boucher, UK.

HELICOPTERS

in

KOREA



Major R. C. W. Thomas, OBE,
Royal West Kent Regiment.

ONE of the features of the war in Korea has been the achievements of the American helicopters, which in a short period of one year have proved themselves to be one of the most versatile military vehicles that has ever appeared on any battlefield.

In appearance helicopters have little to commend to the casual observer, for there is nothing impressive about their frail-looking narrow bodies, the iron skids which are often fitted in lieu of wheels, or the huge overhead rotor arm from which their power of movement is derived.

In most models, the pilot and his passenger have to sit in a tiny glass cockpit, open at the sides, and positioned in the very nose of the machine, and once airborne it is certainly difficult not to have the feeling of being suspended in mid-air, as if on the end of a swinging rope.

But despite their unprepossessing appearance, the capabilities of helicopters are incredible. For landing and taking off, all that is required is a narrow strip of flat ground, not more than ten yards long and six yards wide. They can fly backwards and forwards, upwards and downwards, and if needs be, hover over one spot for a comparatively long period of time. The planes being used in Korea carry no guns and have no armoured protection, and therefore they are defenceless against any form of attack, a risk which fortunately so far can be accepted in this country. However it is still an achievement that the intrepid pilots of these machines can boast that there is virtually nowhere that soldiers can reach, where helicopters cannot follow.

In Korea, a large number of the available helicopters have been modified, so that they are capable of carrying one or two stretchers.

Therefore the most valuable work being done by these machines, on behalf of all the armies of the United Nations, is in respect of the evacuation of casualties. There is no doubt that it is a great comfort to all soldiers to know that if they are wounded in some wild areas of country, it will nearly always be possible for one of these planes to come to their rescue and carry them away to safety, in an extremely short space of time. In view of these facts, it is not surprising that they are often referred to by the troops as the "Angels of the Battlefield."

However, the work being done by helicopters in Korea has not been confined solely to the evacuation of casualties. They are used extensively by commanders for reconnaissances and visiting forward troops, in preference to a jeep, as many hours of valuable time can be

saved by using these planes. They have carried ammunition to forward troops in isolated positions and laid telephone cables at a speed no ground crew could ever hope to achieve. They have been sent on missions to seek out hostile mortars hidden deep in foxholes, and to rescue air force pilots shot down in inaccessible places. In fact there is no end to the number of tasks that they can perform.

There is no doubt that the helicopter has proved itself to be a far more useful military vehicle in Korea than the light intercommunication plane, due to its extreme mobility and the fact that it can operate without landing strips having to be available. In the future it will be interesting to watch developments to see whether it can prove to be of the same value in other theatres of war outside Korea.



Air-Sea Rescue by Helicopter.

HONG KONG

Asian Outpost

Lieutenant T. A. Gibson,
The Wiltshire Regiment.

TO Australian troops passing through to Japan and Korea, Hong Kong, with its imposing waterfront, crowded harbour and bustling streets, no doubt, seems the acme of British imperial achievement. The obscure fishing village and haunt of pirates of barely over a hundred years ago is now a prosperous Crown Colony and one of the great free ports of the world. But, as the American news-magazine, "Time," has already gravely, and somewhat smugly, pronounced, is Hong Kong "living on borrowed time"? Together with the ancient Portuguese settlement of Macao only twelve hours' steaming away, the Colony rather uneasily faces the might of Mao Tse-Tung's Red China. Does Mao Tse-Tung regard it as the last foreign cancer to linger on China's soil—to be ruthlessly removed when he sees fit? This is the ever-present threat which faces troops of 40 Infantry Division guarding the Colony's frontier.

Despite the more pressing demands of the war in Korea and the bitter anti-guerrilla campaign in Malaya, the defence of Hong Kong is still a very alive and important

problem. The biggest disadvantage confronting the Colony is, of course, its great isolation. Hong Kong — "Fragrant Harbour" — lies just within the tropics, south of the mainland of the Kwantung Province of China and at the mouth of the Canton River, some 90 miles from Canton. It was originally founded as a trading depot in 1841, after one of the more sordid of Britain's colonial wars, the so-called Opium War with China, fought so that the tycoons of the East India Company could reap vast profits by selling Indian-grown opium unhindered on the avid Chinese market. In 1861, hostilities again broke out with China, which resulted in the boundary across the Kowloon Peninsula being shifted slightly northward. Later, in 1898, negotiations with the Chinese Government brought a ninety-nine year lease of the adjoining mainland beyond the peninsula, known as the "New Territories," which included some of the nearby islands, and also waters about the harbour.

Briefly, the topography of Hong Kong Colony consists of the eleven miles long Hong Kong Island, with

its city of Victoria, the city of Kowloon across the fine almost-landlocked natural harbour, and beyond, the rugged mountainous bulk of the New Territories, mostly barren, unproductive hillside except for small terraced cultivations and spasmodic wolfram mining. Towards the frontier, however, the Territories open out into the rice-growing padi-fields of Sek Kong valley, and more flat padi up to the shores of Deep Bay and the banks of the Shum Chun, the frontier river. From Kowloon a one-track railway, named in more peaceful days the Kowloon-Canton Railway, runs up to Shum Chun along the east side of the Territories via Tai Po. However, in these days of political enlightenment, the British train stops just short of the river and the passengers laboriously detrain with their belongings and walk across the railway bridge to the Communist train, which takes them on to Canton. Also, skirting the mountains in a sixty-two mile circuit, is a good motor road, called on the east side the Tai Po road and on the west side the Castle Peak road. From this main road, three recently-constructed military roads, Routes One, Two and Route TWSK, converge through the hills on Sek Kong—known in local military parlance as "Little Aldershot," because of the many camps there—to allow swift deployment of forces. Route TWSK, incidentally, takes its name from the town of Tsun Wan, on the Castle Peak road, being at one end of it and Sek Kong at the other.

Defence Plans.

In appreciating the difficulties of defending Hong Kong, it is interest-

ing to recall the experiences of the 1941 garrison. At the outbreak of war with Germany in 1939, the garrison of the Colony comprised three infantry battalions, 2 Royal Scots, 5/7 Rajput and 2/14 Punjab, and one machine-gun battalion, 1 Middlesex, with a very small amount of mobile artillery. Moreover, these battalions were on a "colonial establishment," so the poverty of their equipment can be imagined. They had hardly any motor transport, and also no experience of handling two-inch or three-inch mortars; these weapons arrived only shortly before the outbreak of hostilities with Japan. The few naval units were small ships only while a mere handful of obsolete RAF aircraft were stationed at Kai Tak airport. Anti-aircraft defences were slight.

The object of the original defence plan was to deny the harbour to the enemy rather than to retain it for the use of our own fleet; hence the bulk of the force was committed to the defence of Hong Kong Island. Only one battalion was assigned to the mainland. This battalion had the task of covering demolitions and of imposing delay.

It appears that Japanese intentions were in doubt up to the last. Optimistic signals from the British Ambassador in Tokyo were being received until late in 1951. However, the *Commander in Hong Kong* did not neglect to take precautions and our forces were deployed before the attack came. But, true to the faulty appreciation of the Japanese prevalent at the time, it does seem that the British were under certain misapprehensions about the capabilities of their potential enemy. Among the more noteworthy of

these were the old chestnuts about the Japanese aircraft and pilots being indifferent in quality, and that the Japanese soldier was not trained in night-fighting.

In mid-November, 1941, two Canadian battalions, the Royal Rifles of Canada and the Winnipeg Grenadiers, arrived to reinforce the garrison. Though these two battalions were not fully trained and had no transport with them, their arrival was sufficient to cause a change in plan. It was decided to dispose a force of three battalions on the mainland only a couple of miles up from Kowloon, where the Territories taper down to a waist of land with water on either flank. This defence line was somewhat colourfully known as the Gindrinks Bay, from the small Gindrinks Bay on its western extremity, and its front,

to be held by, left, 2 Royal Scots, centre, 2/14 Punjab, and, right, 5/7 Rajput, was about ten miles of hills steeply cut by marshy gullies. Artillery support for this mainland brigade was provided by one troop of 3.7 inch howitzers and one troop of 4.52 inch howitzers covering the centre and left battalions, one troop of 6 inch howitzers, covering from the centre of the right battalion to the extreme left and one troop of 3.7 inch howitzers covering the right battalion. The two Canadian battalions and 1 Middlesex were on Hong Kong island.

The dispositions of 2 Royal Scots, the left battalion, are rather interesting. This battalion was deployed in the area of the Jubilee Reservoir, the water supply for Kowloon, and down to and across the Castle Peak road just before



The Shingmun Redoubt—the two scarred ridges in the foreground—and the Jubilee Reservoir.

Tsun Wan. C Company were across on the far side of the road on some low hills, B Company were on a ridge on the near side of the road, D Company was in reserve south of the reservoir on a big feature called Golden Hill, while A Company were forward overlooking the reservoir in the Shingmun Redoubt. This so-called redoubt, which takes its name from the stream in the ravine running across the old brigade front from the reservoir to the Tai Po road, is a ridge honeycombed with concrete tunnels which emerge out into the open on to concreted firebays. Each tunnel in the network is named after a station on the London Underground, e.g., Charing Cross, Oxford Street. The origin of the Redoubt is obscure, except that its conception was probably very much in keeping with the Maginot Line mentality of that day.

As the firebays have an exceptionally poor field of fire due to the reservoir immediately in front, it can only be presumed that the Redoubt was built before the reservoir, which was started in 1935, or being built at the same time and nobody had the courage or foresight to stop work on it.

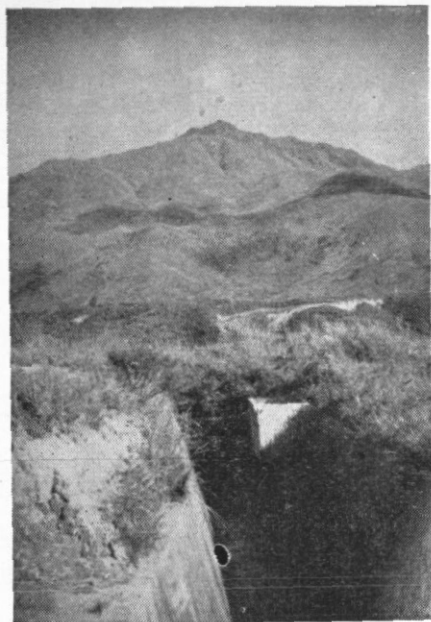
Japanese Attack.

By the fateful 7th December, 1941, all troops were deployed in their battle positions. Intelligence reports indicated the presence of three Japanese divisions near the frontier. At 0445 hours, 8th December, a Tokyo broadcast stating that war was imminent was heard. Forward demolitions near the frontier were blown, and by 0645 hours the garrison was informed that Britain and Japan were at war.

At 0800 hours that day Japanese



A Firebay of the Shingmun Redoubt.



Another firebay of the Redoubt, showing Mt. Tai Mo Shan, the highest peak in the Colony (3145 ft.).

aircraft attacked Kai Tak aerodrome, destroying or damaging thirteen aircraft on the ground. During all that day and the following night the "forward troops" in the frontier area, consisting of the reserve company of 2/14 Punjab with some armoured cars of the Hong Kong Volunteer Defence Force, and demolition parties, withdrew under pressure along the Tai Po road to the Gindrunkers Line. On the west side, demolitions also seem to have been carried out on the Castle Peak road and patrols of 2 Royal Scots to have gone as far forward as Sek Kong.

The Japanese quickly followed up the retreating covering troops. Led by local guides mostly recrui-

ted or pressed from Tsun Wan, now, incidentally, reputed to be a Communist hotbed, the main Japanese forces advanced over the hills along foot-tracks from Sek Kong and through Leadmines Pass and along the Jubilee Reservoir from Tai Po. On the night of the 9th, the company commander of the reserve company of 5/7 Rajput, which had moved in on to a hill feature to fill the big gap between the left and centre battalions, reported hearing muffled sounds of explosions coming from the direction of the Shingmun Redoubt for about an hour, then silence. Such was the inglorious end of the Redoubt and the company of troops bottled up in it.

All that night vigorous assaults came in against the sparsely-held British positions until inevitably the line could no longer be held. In the savage, often hand-to-hand, fighting both sides suffered severe casualties, though the Royal Scots were particularly badly overrun. As the left had been seriously penetrated, the remnants of the two Indian battalions retired eastwards through the hills down to the small Clearwater Bay peninsula, where they were evacuated to Hong Kong Island. A brief respite ensued until the night of the 18th, when the Japanese successfully assaulted the island with almost a division. Despite the spirited resistance of the Canadians and the Middlesex, and also the local Volunteers, the Colony finally fell to the invaders on Christmas Day.

Thus was the record of the defenders in the dark days of late 1941. Starved of up-to-date weapons, munitions and equipment,

they fought gallantly with their backs to the sea and with no hope of reinforcement by sea or air.

Present Defences.

But, now, in these almost equally-troubled days, what is the picture? Today, Hong Kong is garrisoned with almost a division which has good air and naval support. Though weak in infantry, having only two brigades, the garrison is well-provided with artillery. As well as the normal divisional field artillery, a light and heavy anti-aircraft regiment, a battery of 4.2 in. mortars, and a regiment of medium guns, step up the firepower of the defences. Armour consists of the 3rd Royal Tank Regiment, whose Comets and Cromwells have scarred almost every hill in the frontier area with their tracks. This division, 40 (Bantam) Division, and the additional units, are embodied in Land Forces, and commanded by GOC Land Forces, Major-General R. C. Cruddas, DSO.

Air support for the land forces comes from a squadron of Vampire jets stationed at Sek Kong's newly-constructed air-strip, and a squadron of Spitfires based on Kai Tak. On the sea flanks of the New Territories, the Navy contributes a bombardment force. The overall commander of the three Services in the Colony is the Commander, British Forces, Lieutenant-General Sir Terence Airey, KCMG, CB, CBE.

Life for the British soldier in

Hong Kong is fairly rigorous. The climate is sub-tropical, and, hence, for most of the year, extremely hot, humid and rainy. As most of the camps, rather spartanly and hastily built since the "big flap" of 1949, are situated out by the frontier, his amusements are confined to inter-unit sport—soccer, athletics, boxing—the district Army Kinema Corporation cinema, and his camp NAAFI, with probably a visit to the bright lights of Kowloon and Hong Kong during the week-end. Also, training in battalion, brigade and divisional exercises on the rugged hills of the Territories is hard and realistic. The best testimony to this claim was the obvious fitness of the 1st Battalion, The Middlesex Regiment, and the 1st Battalion, The Argyll and Sutherland Highlanders when they were hurriedly despatched to Korea. The hills of the New Territories of Hong Kong Colony had merely been exchanged for the hills of Korea.

At present, all is quiet on the Sino-British frontier. Chinese Communist strength between Canton and the Chum Shun varies from 20,000 to 30,000 men, generally mostly local militia. But at any time, this strength could treble itself almost overnight. Doubtlessly, the biggest deterrent to the Communists creating such a threat, other than making the implications of a third world war, is the efficiency and preparedness of the garrison. For, as Hong Kong was established by the sword, it may one day have to survive or perish by the sword.

LEAGUERING

in

Mountain Warfare



Captain J. C. Gorman,
Royal Australian Armoured Corps.

THE Korean operations changed many desert practices, and one of the most radical changes was shown in the method of leaguering. Conditions were completely different, not only topographically, but militarily as well. In the Korean War, the enemy was relatively primitive compared to the Afrika Korps, they used practically no tanks, and, most important, there was virtually no Chinese Air Force. The line was continuous, ensuring that units could not be outflanked by a large force (unless the flanking divisions collapsed) and the primitive Chinese L of C was unable to cope with long penetrations or sustained offensives. The country being very close, tanks were valley-bound, and most vulnerable to infantry ambushes. The main enemy attacks were carried out by swarms of infantry, supported by accurate mortar fire and some artillery. Thus, out of a different set of local circumstances, the 8th Army adapted itself to meet those circumstances.

The leaguer was studied, in reserve areas, and several rehearsals

carried out, and from these the new mountain leaguer was evolved. The main threat being infantry masses, the leaguer became very tight, and dispersal, to counter air attack, was not necessary. Due to the almost complete lack of cover, track discipline was important.

In action, the squadrons, all of whom operated independently, one being forward at all times, were generally busy fighting and supporting infantry attacks until darkness ended operations. The hills being alive with groups of enemy infantry, the leaguer was always as far back as possible, compatible with dawn requirements. This was about two miles in rear of the confused area, where enemy and allied infantry were somewhat mixed. Thus the leaguer was always occupied after dark. The squadron second-in-command picked the area, always dry paddy fields, and the squadron drove down to it. Tanks were guided in by the troop leaders, nose to tail, to make a complete circle, leaving an entrance, which was blocked later by the last tank. This move re-

sulted in a solid wall of bazooka plates, with about four to five feet between tanks. The guns were laid at 9 o'clock on all tanks, giving all-round defence.

The spare men in the leaguer immediately began to dig narrow pits between the tanks. These were manned, in the event of a raid, by the drivers. It was decided that the leaguer would not in any circumstances break up and spread out, as this would enable the Chinese tank hunting parties to deal with each in turn. The only tanks to move were to be those which would endanger others, i.e., on fire. The guns were loaded with HE (how useful canister would be!) and laid to strike about a hundred yards outside the leaguer. Grenades were laid on the turret roof, and the driver in his pit had a box. Bomb throwers were loaded with parachute flares, and the offensive defence was considered to be complete.

Inside the leaguer were driven generally two medical half tracks, the fitters' half track, the jeep, the two scout cars and the ARV. The tank dozer was left with the regiment, and the A1 echelon trucks drove around outside the leaguer, replenishing fuel, ammunition and food. This duty completed, all the 3-ton trucks withdrew about five or more miles. It was considered that soft-skinned POL and ammunition vehicles presented too much of a risk to be left where they could be struck by tracer bullets and possibly explode. Maintenance was carried out, the fitters working under a canvas lightproof sheet, and the crews then cooked their meal. Due to the lack of fires, this con-

sisted of a can of C rations and tea brewed on the immersion heaters in the tanks.

At no time did a squadron leaguer forward of the local infantry. It was invariably south of the infantry, but the west, east and south flanks were frequently unprotected, and as the enemy were swarming through the hills, and small parties often three miles behind the tanks these three flanks had to be closely watched. Patrols of three or four men were sent out about 200 yards, with either a long string to the sentries, or 88 wireless sets. On the approach of the enemy, they were to give the alarm, and then come in. They wore suitable identification marks.

The alarm being given, crews mounted, switched on the master switch, wireless set, generator, and power traverse. The drivers manned their holes, and the No. 2's were provided by the men from the other vehicles. The RA OP officer was in a position to call down artillery fire. 1 Troop had the responsibility of lighting the area with flares — two or three were kept continually in the air. When 1 Troop had expended its flares, 2 Troop took over and the night became as bright as day. Tanks switched on and off their big spotlights, which added to the glare and had a dazzling effect on the enemy. We sometimes "attacked" practice leaguers, and the patrols felt horribly naked in the blaze of light. The spotlights often caught patrols advancing, but the distinctive pop of a flare being fired gave the patrol time to get to ground before it burst. It is hopelessly difficult to shoot out a spotlight at

night, as we discovered in trying to sight on them.

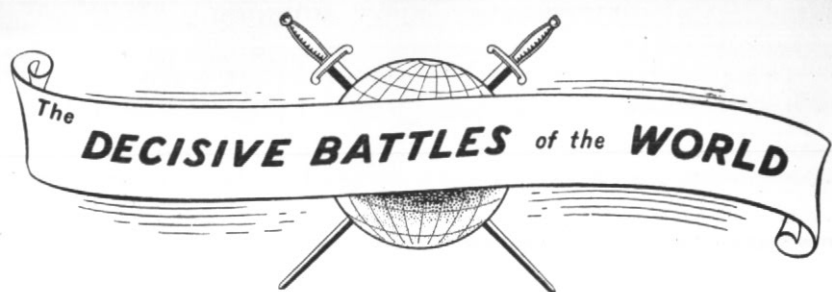
In April, 1951, we were attacked in such a leaguer. However, it was a fairly peaceful affair, the artillery breaking up the attack about four-hundred yards from the tanks. The Chinese had come around the west flank, and got between the tank leaguer and the infantry. The artillery cut the whole attack to ribbons that night.

When the tanks were in support in the line, things were not so well organized. For weeks at a time in the front line no enemy would be seen. The tanks spread themselves on one side of a road without cover, track discipline, protection or organization. The guns were sited to cover likely approaches, but the leaguer was always full of soft vehicles, visitors, POL dumps, ammunition dumps and similar supplies. Lights blazed most of the night, and thorough maintenance was carried out during the day. Patrols went out every day with infantry companies (usually a troop at a time) and the Liaison Officer, who walked with the company, calling down the tank fire by radio when enemy were encountered. A wired and mined belt extended across the front, the infantry holding the hills. The tight leaguer was only used when it was necessary, which was when the Chinese had

broken through, and the front was fluid.

It has been written in many textbooks that a leaguer should be wired in, mines and booby traps laid, and generally made impregnable. An attempt was made to follow this principle, somewhat akin to the Pacific perimeter, but in action it was immediately discarded. Tanks carried rolls of danner wire, but with the leaguer preparation, maintenance and feeding, issuing of orders and other necessary duties, crews were too tired to undertake engineer operations. The days in battle were long and very tiring. The defence was based on fire-power.

Standard warfare training does not always apply in the other types of warfare, and frequently one must discard previous training to adapt oneself to local conditions. This means that regiments, when in reserve, must work harder than in the line, rehearsing, planning and working out new methods. Korean operations are unique in themselves, and it is unlikely that a similar operation would take place elsewhere. The general training is very necessary to give a background to experiments, but methods and techniques, like weapons, must always keep changing, and the local commander must always be ready to work out his own solutions to the new problems.



VALMY, 1792

IN the introductory note to this series of studies it was pointed out that the size of a battle, the number of combatants engaged, the number of casualties inflicted, are not the standards by which we judge its importance to mankind. The action fought at Valmy on the 20th September, 1792, is an outstanding example of the truth of this statement. At Valmy the infantry never came to grips, the cavalry never exchanged a blow. It was, in fact, nothing more than a cannonade, a not very destructive exchange of gun fire. Yet the thunder of those guns sounded the death knell of a social order which had endured for a thousand years, and ushered in a new era in the art and science of war.

Although the decision gained at Valmy was a negative one, from it there flowed political and social events which had a tremendous effect on the development of Western Civilization. In the military sphere it destroyed ideas on the conduct of war so old that they seemed to be immutable, and in-

troduced new concepts which have not yet reached the peak of their fulfilment.

The French Revolution.

For the purpose of this discussion it is not necessary to go into details of the causes of the French Revolution, or the means by which the Revolution was eventually accomplished. It is, however, necessary to have a clear, though perhaps, broad, idea of the forces which brought it about.

On the eve of the Revolution the French monarchy and the aristocracy which supported it presented a striking picture of leadership run to seed. Gradually, though a long period of decay, the French aristocracy had reached a stage where it grasped with greedy hands all the privileges of birth and wealth whilst neglecting its responsibilities and duties. The aristocracy had grown away from the people. Its members lived in a world of luxury and splendour, taking all they could wring from their wretched tenantry

and giving nothing in return. Beneath them the great mass of the French people existed in poverty, degradation and despair, a vast reservoir of violently explosive material. In between, the small middle class struggled to maintain itself.

As the century advanced the misery of the masses and the discontent of the middle class began to find expression in demands for reform. Most of the leadership came from the middle class though a few members of the aristocracy devoted their lives and their fortunes to the betterment of economic conditions. From small beginnings the movement gathered strength and volume until the ruling clique began to take notice. But it was too late. Blind, callous indifference to the sufferings of the people had created a torrent which a few tardy and half-hearted measures of reform could not check. French society exploded in a holocaust of blood and hate.

The gross excesses of the Revolution should not lead us into the error of supposing that the men who inspired it were bloodthirsty beasts. On the contrary most, of them acted from the highest motives of human compassion. They fought for justice, for equality of opportunity, and for the liberty and dignity of man. Nor should the heroic manner in which the aristocracy met its end blind us to the fact that the torrent of hate which destroyed it was created by its own cruelty and indifference. Similar things had happened before, and similar things have happened since. Leadership which neglects its duties, which fails to devote itself wholeheartedly to the responsibili-

ties of its position in society, will always be ruthlessly swept aside.

From the moment when the Revolution flared up in the storming of the Bastille on the 14th July, 1789, all semblance of stability disappeared from the government of France. The king and his advisors intrigued and struggled to retain the reality of power in their own hands. The newly constituted legislative bodies, lacking the historical precedents and experience of England and America, were riven by party strife. Local authorities, notably the municipality of Paris, sought to assume much of the power which properly belonged to the central government. Scenes of violence and carnage occurred throughout the country and the machinery of government fell into a chaotic state. To add to the confusion the Austrian Emperor and the King of Prussia, urged on by the large number of French nobles who had fled their country, issued a declaration asserting that the suppression of the revolt and the restoration of the powers of the monarchy were the concern of all European sovereigns. Thus France, torn and weakened by internal strife, faced a threat by the two most powerful continental powers to restore the ancient order by force of arms.

Despite the deplorable state of the country and the army, the French Government saw in the Austro-Prussian declaration a chance to win the support of all responsible elements in the nation. Convinced that the *émigré* nobles would force war on them eventually, they considered that the sooner it came the better. They hoped that the outbreak of hostilities would divert the

attention of all Frenchmen from party strife, and rally them to the single purpose of defending their native soil and their newly won liberties. Accordingly, when Austria and Prussia formed an alliance, the French Government took the initiative and declared war.

The French Army.

The army of the old monarchy had, during the latter part of the reign of Louis XV, sunk into gradual decay, both in numerical strength and in efficiency of equipment and spirit. The insubordination and licence which the participation of many units in the first excesses of the Revolution introduced were rapidly disseminated throughout the army. Nearly all the officers, who had mostly been drawn from the ranks of the nobility, were forced to flee for their lives and joined the Austro-Prussian forces assembling for the invasion of France. The NCO's and men promoted to replace them had great difficulty in maintaining even the appearance of authority, and, as yet, the troops had little confidence in them. Morale was low and discipline scarcely existed.

Materially the army was in equally bad shape. The troops were in rags and there were grave deficiencies in weapons, equipment, ammunition, transport and supplies of all kinds. Many units, even whole formations, were composed of raw levies which not only lacked training, but were unwilling to accept the discipline essential to training.

An atmosphere of distrust and mutual suspicion pervaded the army from top to bottom. Many of the senior officers, and particularly

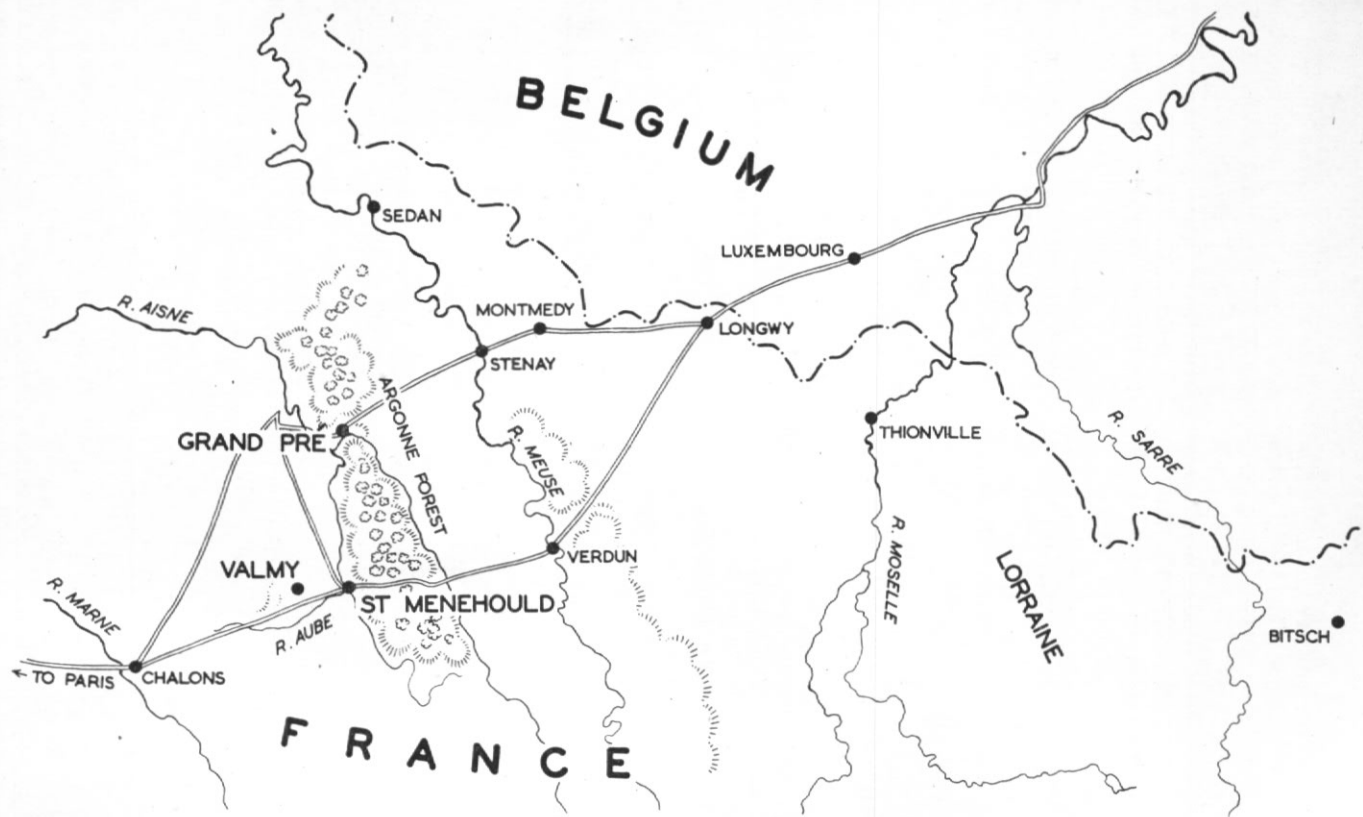
those few members of the old aristocracy who had placed their country above sectional interests, were suspected of counter-revolutionary activities by the government and by each other. Many were without experience of high command. Most of the junior officers, including a high proportion of regimental commanders, had received no training beyond that of an NCO, and had received only a limited general education.

With this unpromising material revolutionary France faced the experienced armies which the Allies were assembling for her destruction.

The Allied Armies.

The army which the Allies concentrated in Luxembourg comprised some of the best troops in Europe. Sixty thousand Prussians, trained in the school of Frederick the Great and heirs to the glories of the Seven Years' War, superbly equipped and supremely confident, eagerly awaited the order to move their disciplined array against the enemy. Austria sent a contingent of forty-five thousand picked and seasoned troops, veterans of the Turkish war. There was a strong corps of Hessians and other troops from the minor German principalities, nearly all of them well-trained regulars.

Assembling under the Prince of Condé were some 15,000 French nobles and ex-officers of the old Royal Army who had fled the country on the outbreak of the Revolution. In this corps of *émigrés* the sons of the noblest houses of France, whose chivalric trophies had for centuries filled Europe with re-



noun, served as rank and file. These men all had a personal stake in victory, for it was now clear that only by force of arms could they recover their lost patrimony. With their Orders of Saint Louis pinned to their haversacks they drilled and trained for the coming campaign in which many of them were to encounter their old units commanded by men whom they had known, at best, as non-commissioned officers.

In supreme command of this impressive array was the Duke of Brunswick, a statesman of no mean order, and an experienced soldier who had gained in the Seven Years' War a military reputation second only to that of the great Frederick himself.

In the chancelleries of Europe the result of the coming campaign was considered to be a foregone conclusion. And so it would have been if war was an exact science and if human behaviour could be accurately predicted.

Opening Moves.

On the eve of hostilities the French armies defending the northern frontier were disposed as follows:—

The Army of the North, consisting of some 43,000 men, of whom 24,000 were in the Netherlands and 19,000 at Sedan.

The Army of the Centre, 17,000 strong, lay between Montmedy and Bitsch.

The Army of the Rhine, 24,000 strong, was in Alsace.

The Army of the North had received instructions to take the offensive in Belgium. Accordingly it set

off in several columns on 18 April, 1792. Ten days later one of the columns literally dissolved in panic when a few cannon balls bounced through its ranks. Another column turned tail at the sight of the sun glinting on hostile bayonets. The Army of the North hastily returned to its camps, where the regimental commanders did their best to pull their units together. Little authority or impetus came from above until General Dumouriez arrived to take command in the middle of August. Dumouriez had been Minister for War, he felt that his loyalty to the Government was beyond question, he knew something of the character of the revolutionary levies and he was not afraid of them. He took a strong line from the outset, tightened up discipline, and improved organization. Though still far from perfect, and still completely lacking in confidence in itself, the Army of the North at least began to look like an army.

About the same time General Kellermann, who had belonged to the reform movement before the Revolution, was given command of the Army of the Centre. Kellermann was a man of strong character, afraid of no one, and a capable organizer. Acting with great energy and determination, he rapidly improved the organization of his army, and gave its units and formations some semblance of cohesion.

Meanwhile Brunswick had begun his advance, and, after very little trouble, had taken the important fortress of Longwy. From there he advanced rapidly on Stenay, while another column, moving from Thionville, approached Verdun.

On hearing of these movements, Dumouriez placed himself at the head of the troops at Sedan. Although they seemed incapable of standing up to the Prussians, he led 19,000 of them towards Grandpré and ordered other elements of his Army, amounting in all to above 13,000, to join him there. At the same time he requested Kellermann to join him with as many men as he could bring.

Brunswick and Dumouriez were now separated by the Argonne, a rugged tract of country which in those days was passable at only a few defiles. Dumouriez planned to hold the defiles with his Sedan troops while he built up a strong force in rear of the obstacle.

In the fighting for the passes Dumouriez' troops held their ground successfully at all points but one. This defile had been considered of minor importance and had been lightly manned. The Austrians forced it after a sharp fight, and, pouring rapidly through the gap, threatened to take the remainder of the French army in rear. Dumouriez just managed to extricate his troops.

Dumouriez was now faced with a difficult choice. His army was the only French force of any consequence which could directly bar the road to Paris, or even come within striking distance of Brunswick if he moved quickly. A direct defence of the road, however, would have involved a lengthy withdrawal to more favourable ground, a movement which would have precluded the possibility of a junction with Kellermann's army.

Dumouriez resolved to cling to the difficult country on the flank of

Brunswick's direct line of advance to Paris, and in a position where he could be joined by Kellermann. In arriving at this decision, Dumouriez had considered the characteristics of his adversary. Brunswick was the product of a school which tended very strongly to regard strategy as a game of chess. This school made war on a formal system of moves and counter-moves, checks and counter-checks. To them strategy had become a matter of certain fixed "rules" rather than the flexible application of general principles. Dumouriez considered that Brunswick would stick to the "rules" and would not take the open road to Paris while a strong force existed on his flank.

The risk was that Brunswick would correctly appreciate the very low offensive capacity of the French troops, ignore Dumouriez, and march on Paris. As against this, it seemed unlikely that a direct defence with the force actually available would



Dumouriez.

From an unsigned mezzotint, 1792.

be successful, while to attempt it would certainly expose both Dumouriez and Kellermann to defeat in detail.

On balance Dumouriez considered that the risk of Brunswick ignoring him was the lesser. Accordingly he moved to Saint Menehould, where he took up a strong position protected by the marches and shallows of the rivers Aisne and Aube. A little to the north-west rose a steep plateau, where he proposed to post Kellermann's army as soon as it came up.

Meanwhile Kellermann, with 16,000 men, had almost reached Saint Menehould, but exaggerated reports of Dumouriez' withdrawal from the Argonne had caused him to begin a retrograde movement. Fortunately for France, couriers reached him before this movement had progressed very far, and turned him back towards Saint Menehould.

Dumouriez' appreciation of



Kellermann.

After a painting by Assiaux.

Brunswick's probable reaction proved correct. The Allies, who were now actually closer to Paris than the French, turned towards Saint Menehould and deployed on the heights of La Lune, a chain of eminences that stretch obliquely from south-west to north-east opposite the high ground which Dumouriez held, and also opposite, but at a shorter distance from, the position which Kellermann was intended to occupy.

Battle of Valmy.

When Kellermann arrived there seems to have been a lengthy discussion, much of it at cross-purposes, between the two generals. The situation, indeed, had all the elements of fiasco because neither of them had been placed in supreme command. In the end Kellermann occupied the heights of Valmy, a position which he thought tactically unsound because it left him exposed with a dangerous gap between his troops and those of Dumouriez, who were stationed towards his rear. Before the situation could be remedied, however, Brunswick saw his opportunity and moved to seize it.

Early on the morning of the 20th September Kellermann became aware that the enemy was on the move, and drew up his own army for a strictly defensive battle. Although somewhat exposed his position was a strong one—if the troops would stand. "If the troops will stand." That question must have been hammering at his mind like an evil refrain as he supervised his deployment.

As the mists cleared the French

saw the Prussian infantry in majestic columns moving with their traditional precision and assurance across the valley which separated the heights of La Lune and Valmy. Simultaneously the Prussian guns opened their bombardment of the French position. Kellermann ordered his own guns to reply and to direct their fire, not at the hostile batteries, but exclusively against the advancing infantry.

Kellermann, riding up and down in front of his lines, knew quite well what was going on in the minds of his troops. He knew that men were casting sidelong glances to right and left, wondering which of their comrades would be the first to fly, looking for the first signs of panic. He ordered the bands to strike up the revolutionary refrain, "Ça ira," and he recklessly exposed himself to the fire that was now coming in strongly from the Prussian guns.

Encouraged by the calm demeanour of their general and the steady fire of their guns, which had now begun to take toll of the Prussian columns, the French infantry stood their ground — for the time being at any rate. Kellermann breathed a little more easily.

At this stage Dumouriez rode up to inform Kellermann of the steps he had taken to protect his flanks. The two generals and their staffs conferred on horseback in an exposed position on the edge of the plateau. This spectacle did much to raise the confidence of the troops.

Shortly afterwards Kellermann's horse was shot from under him. While waiting for a replacement to be brought forward one of the tails

of his frock coat was shot away. On mounting he gravely arranged the remaining tail in the correct ceremonial drape. A ripple of laughter ran along the ranks. Kellermann knew that his men would stand.

The slow parade-like advance of the Prussian columns made them an excellent mark for the French gunners. Brunswick was too experienced a soldier not to have anticipated some loss, but the firm countenance the French were now displaying surprised him. He saw that if his columns continued their present lines of advance they would be 'badly' mauled when scaling the heights of Valmy. Consequently he halted them, ordered his gunners to redouble their efforts, and went off to see if an alternative method of attack could be devised.

The battle now became an artillery duel in which the French gunners, perhaps to their astonishment, gave as good as they got. French confidence was rising by leaps and bounds when a Prussian shell blew up three ammunition wagons which had been placed unnecessarily close to the front. The two nearest regiments fell into disorder, the whole line wavered and recoiled. A Prussian officer on Le Lune saw the opportunity and galloped off to find Brunswick to get him to launch an immediate assault.

Kellermann now reaped the reward of his personal exposure. He was on the decisive spot, Brunswick was not. By word and action he rallied his men, while his gunners pulled themselves together and resumed their fire. By the time Brunswick got back it was too late.

At 4 o'clock in the afternoon,

when both sides had nearly exhausted their ammunition, Brunswick withdrew and interposed his army between the French and Paris. Relieved of the immediate threat, Kellermann also fell back and joined his army to that of Dumouriez in a much better defensive position.

For ten days the armies faced each other. The French, drawing in supplies from a friendly countryside, showed little concern for their communications with Paris. The Allies had all the worst of the grounds both as regards camp sites and local supplies, while replenishments from home had to come through the difficult defiles of the Argonne or by the circuitous route around its edge. The troops became weakened by hunger and exposure, and then dysentery began to play havoc in their ranks.

Early in October disease forced Brunswick to retreat. Verdun and Longwy were abandoned, and by the 23rd of the month French soil was clear of the enemy.

Comments on the Operations.

Strategically the campaign of Valmy demonstrates that war cannot be conducted in accordance with "rules." Brunswick could not bring himself to depart from the "rules" of the school, of which he was a product by leaving a hostile force anywhere near his flanks or communications. But what was the character of his force? He must have known, from deserters, from prisoners and from recent encounters, that it was incapable of offensive action, or even of a successful defence on open ground.

After making all allowance for after knowledge it does seem that a bold advance on Paris would scarcely have been risky. The country ahead was open, well stocked with supplies, and familiar to many of his officers. Brunswick could easily have spared a detachment quite strong enough to hold Dumouriez and Kellermann off while he drove straight on to Paris. Yet he allowed himself to be diverted from his arm and enticed into a battle on the only ground on which his adversaries stood a chance of success.

Dumouriez, on the other hand, correctly appreciated the character of his opponent. By uncovering the road to Paris he took a strategic risk to gain a tactical advantage, the only tactical advantage his troops were capable of using. In dealing with Kellermann, who was his equal in rank and authority and not an easy man to deal with at any time, he showed consummate tact and skill. Had he been a little less successful in this the French Government's failure to appoint a supreme commander might have ruined everything.

The engagement itself illustrates a facet of surprise not often mentioned. Brunswick was surprised by the firm stand of the French, so different from their recent performances. Expecting an easy victory, he ordered a simple, stereotyped frontal attack in a situation which allowed ample scope for manoeuvre. Here is the old, old lesson once more—never underrate your opponent.

Valmy was a triumph of personal leadership, of the steadying effect

that the example of courage and calmness can have on even the worst of troops. It was Kellermann's battle, and no man more richly deserved the honours later conferred upon him for his share of the victory.

Results of the Battle.

All hopes of crushing the Revolution and restoring the French monarchy had to be postponed until the Allies could assemble another army. By that time it was too late. Valmy had shown the French Army that it could fight without the leadership of the nobles who for centuries had provided its officers. This new-found confidence produced a martial spirit, a disciplined *élan*, before which all Europe trembled, and which in the years immediately ahead carried it to victory on many a stricken field.

Politically, Valmy gave the Revolutionary Government time to consolidate its position and to restore order throughout the country. It gave the Revolution the military character, the adulation of military glory, which a few years later was to find its logical expression in the elevation of her most brilliant soldier to the vacant throne of France.

Had Dumouriez and Kellermann

lost at Valmy the Revolution would almost certainly have collapsed. The ideas of liberty and equality which flowed from it, and the intense intellectual activity which it engendered and which has contributed so much to human progress, would have been postponed for perhaps another century.

For the fifteen centuries prior to Valmy wars had for the most part been fought by relatively small navies and armies. The vast majority of people went about their ordinary affairs. Valmy ushered in the era of the nation in arms, the era of total war. The culmination of that era has not yet been reached, and no one can say with certainty what effects its attainment will have on mankind.

The poet Goethe was present with the Allies at Valmy. After the battle some Prussian officers asked him what he thought of the engagement. He replied: "From this place and from this day begins a new era in the world's history, and you can all say that you were present at its birth."

[This is the fourteenth article in the series "Decisive Battles of the World." Next month we shall consider the battle of Waterloo in 1815. —Editor.]

AIR SECURITY of TROOPS

Translated and condensed by the Military Review, USA, from an article by an officer of the former German Luftwaffe in "Flugwehr und-Technik," Switzerland.

BETWEEN World War I and World War II, the protection of marching troops from air attacks was not given much attention. Open formations were assumed during the march principally to counter enemy air reconnaissance, rather than to give protection against air attacks. Increasing the intervals maintained by a column of troops on the march was intended to facilitate taking cover from attacking aviation and preventing the jamming of the column. Writings of that time indicate that marching troops were considered to be little affected by either the planes' weapons in low-flying attacks or by bombs released in high-altitude attacks.

In 1930, defence authorities took the stand that, from the standpoint of the fliers, it was foolish to attack marching forces. From the point of view of the ground forces, it was considered useless to resist chance attacks from the air by interrupting the march. The reasoning behind this theory was that casualties resulting from air attack were in-

significant and that the halting of a marching column indirectly made the air attack a success.

New Concepts.

These views have been completely changed as a result of World War II experience. From the Polish campaign to the Anglo-American invasion, the importance of attacking all march and transport movements of an enemy was proved conclusively. It was shown that with increasing air superiority the movements of an adversary could be crippled to an increasing degree. On the other hand, one's own movements could be executed with increasing ease and lack of interference. Mobility is the first prerequisite of operational activity. An immobilized army is no different from an encircled force. Indeed, its situation is worse. It is no longer able to break out. It uses up its ammunition, its rations, and its motor fuel, with no hope of replenishment. It can offer local resistance only for a limited time, until it capitulates or its broken up.

The Germans got into this situation in the spring of 1945 as a result of the absolute air superiority of the Allies.

The words "air superiority" do not explain everything, however. Even a weak opponent, through skillful choice of time and place in his air attacks, is able to gain temporary and local air superiority. There is also the question of whether his air arm can permanently interfere with the movements of the enemy's forces.

With the loss of one's own fighting power in the air, the ability to influence an enemy's mobility drops automatically. Meanwhile, the enemy's ability to interfere with our own movement increases. This is true if the enemy air attacks produce sufficient material and moral effects and if the attacked forces do not succeed in escaping from these effects by active or passive defence.

Just what were the effects of air attacks on ground forces and their movement during World War II?

Countless examples from all the campaigns show that those attacks which were of decisive consequence were those which were directed against motorised forces and railway transportation. Generally, the destruction of war material and transportation led to a decisive decrease in the enemy's combat ability and mobility, while personnel losses were a matter of relative unimportance.

Similarly, all campaigns showed that ground force personnel losses assignable to air attacks, whether on the march, in assemblies, or in combat, rarely reached an extent

which decisively affected combat power. Hence, with material effects negligible, the moral effects of air attacks are to be estimated more highly, and the numerous descriptions in the military press of all nations show what crushing effects air attacks usually had on ground forces during World War II.

As a result, the significance of the moral effects of air attacks are not to be underestimated, and commands must take these effects into consideration. They must give the matter due attention and take all steps possible for decreasing the material and moral effects of enemy air attacks on their troops. Measures which serve to protect ground forces in operational areas and on the field of battle are deployment, camouflage, concealment, air warning network, and anti-aircraft defence.

Assuming an open formation, even down to the rifle section, is the simplest and most common way to meet enemy fire and to avoid losses. In the past, it was infantry and artillery fire which determined the point at which deployment was necessary. Today, aviation determines when formations are to be opened up. In the present era of jet-propelled aircraft, we have to expect sudden attacks without warning at distances up to 90 miles back of the front. Therefore, the cumbersome features and difficulties of command common to open formations on the march in daylight and conditions of good visibility must be endured at an early stage. Depending on the seriousness of the air threat and the peculiar nature of the terrain, the commander will have to choose between marching over highways in

more or less open columns or marching cross-country deployed in combat formations. Even at night, the use of parachute flares may force units to adopt security measures similar to those employed during the day.

Camouflage.

Camouflage, in its broadest sense, comprises the following:—

The greatest possible blending with the terrain.

The use of natural or artificial cover for concealment.

Deception of the attacker by using dummy installations or deceptive marches.

Selection of certain colours for camouflage is of secondary importance. There is no colour suitable under all conditions. In every type of camouflage, the degree to which sharp contours, shadows, and the development of dust are avoided is a matter of decisive importance.

The forms and shadows of halted vehicles, guns, and tanks are best eliminated by the use of camouflage nets. All regular forms, especially when recurring, are noticeable and revealing, and therefore to be avoided. Vehicles standing in the shadow of buildings or in the shadow of the trees on the edges of woods or clumps of trees are less conspicuous than vehicles standing in the sunlight. Attempts to conceal guns or vehicles from aviation by attaching branches to them are impractical. As a rule, the particular equipment, imperfectly concealed, will catch the attention of a flier even more quickly. This attempted camouflage is especially dangerous when the foliage em-

ployed begins to wilt, as it does during long halts. On the other hand, this method of camouflage may be used to advantage in the case of dummy equipment.

The same means that are effective for guns, vehicles, and other apparatus are suitable for the troops themselves. All movement in the open is to be avoided, as far as possible.

If forces, because of their particular mission, are forced to move without regard to enemy air observation or threatening attack, then, of course, the same principles apply as for movements under enemy infantry or artillery fire. In such a case, taking advantage of shadows plays almost a greater role than taking advantage of the terrain. Dead angles are meaningless as cover from sight and fire, when aviation is concerned.

The most dangerous revealer of all movements is highway dust rising high into the air. With good visibility, this will reveal the presence of marching forces, with or without vehicles, at distances as great as 20 miles. Hence, dust plays the same role in the daytime as light does at night, only it is far harder to deal with. To a certain extent, though, means of combating this condition do exist, such as the use of sprinkling vehicles, though we have never heard of their being used. Oil is useful for holding dust down. On asphalt highways, dust development is much less than on macadamized or dirt roads.

Winter camouflage has its peculiarities. Snow-covered terrain offers both advantages and disadvantages as regards camouflage. With suffi-

cient care, trails left in snow may be effectively erased. Dust drops out of the picture as a betrayer. On the other hand, the smoke of campfires plays a similar role, as does also the smoke from Diesel motors. An air enemy may easily be deceived and misled by means of smoke. In this connection, it may be mentioned that poor results were obtained by the Germans from the use of smoke screens for protection against air observation. Even with the most intensive employment of smoke generating equipment, the Germans never succeeded in obtaining an effective surface screen of sufficient density, permanence, and thickness to conceal attack objectives. On the contrary, the smoke screen, like any other smoke that was developed, revealed to the attacker from a long distance that an important target was to be found there.

Darkness offers the surest protection for all troop movements. Yet, by the employment of aeroplane parachute flares and searchlights, it is possible for attacking planes to at least cause serious interference with movements on the principal highways. At night, however, one will usually succeed in keeping a steady flow of traffic in motion on secondary highways and dirt roads. Traffic control is also necessary.

It is important that the troops be made aware of the extent to which they are in danger of air attacks. Even though careless conduct must be energetically combated, it is necessary to guard against the creation of an anxiety complex on the part of the troops, as was unquestionably the case in Germany during the War. It is ridiculous, for

instance, to take a soldier to task over a lighted cigarette at night, accusing him of potentially provoking an air attack. Naturally discipline is to be required in the use of open lights and fires, and caution in all other respects is to be expected. The troops, however, must absolutely possess the confidence that they will be able to execute movements by observing safety regulations, in spite of the threat of enemy air attacks, just as they are able to execute movements under the fire of ground weapons.

Concealment.

Artificial means for concealment are applicable almost solely to positional warfare. Here the problem to be solved is not that of concealment of the troops themselves and their vehicles. Rather, the problem is one of concealing certain highway and terrain sectors, battle positions, fire and communication trenches, sections of woods, ammunition and fuel dumps, and making the evaluation of air photographs difficult or impossible. The amount of material required for this type of camouflage is enormous, since success can be achieved only by the use of camouflage nets. Frequent attempts of troops to use tree and bush foliage for camouflage purposes is quite foolish and useless, for the reasons already given. Money should be no object as regards good camouflage equipment, and this equipment should be available in peacetime, just the same as ammunition and other supplies. Good camouflage saves men and equipment.

The same can be said about deceiving the enemy by means of dummy installations and equipment,

which, in time of war, are supplemented by searchlights. In many cases, the fighting forces themselves will have to install these installations, but it is recommended that the combat forces be relieved of this task as much as possible. Camouflage units composed of older men or those unfit for field service should be used for such work. Naturally, such units, equipped with camouflage and deceptive equipment of all sorts, will soon do a better job under skillful and resourceful leaders, than the combat forces.

The handling and maintenance of camouflage and deceptive installations requires training and practice if these are to be effective and save the men and equipment of the combat units. Camouflage forces can be valuable auxiliaries of the command. At times, in Germany, up to 30 per cent. of the bombs dropped by the Allies fell on dummy installations. In England, some of the dummy installations were even more successful. In a single night during the winter of 1940-41, more than 300 planes of the German 3rd Air Command dropped their entire load of bombs on dummy installations south of Liverpool.

Deception.

Of all camouflage means, however, active deception pays the best of all. This is true both with reference to the field of battle and to all movements in the operational area.

Under the heading, we have feint marches, dummy camps, dummy positions, artificial tank tracks, the use of dummy motor vehicles, guns and tanks. Whenever possible, these measures should be associated with

anti-aircraft gun concentrations. It is important that dummy equipment should be mobile, either towed by light vehicles or drawn by a rope or cable. The employment of light and medium anti-aircraft guns in connection with all dummy installations is imperative. Since real movements are, in all cases, protected by anti-aircraft artillery, the absence of anti-aircraft artillery would be immediately noticed and would betray the dummy installations as such.

Since, finally, all movements cannot be completely camouflaged, protection against fire and bombs also plays an important role in preventing unnecessary losses. No ground vehicle can escape aviation fire by its speed. Even when columns are opened up to as great an extent as possible, individual motor vehicles are paying targets for light fighter aircraft. Hence, in the future, transport vehicles protected by light armour, as well as regular armoured vehicles, will be given greater attention. They must afford security from fire from above and from bomb fragments from the sides. Naturally, it is impossible to provide all motor vehicles with armour. But for day use, armoured protection will be imperative.

In addition to the few natural possibilities for cover, such as railway and highway tunnels, the shelter hole, both for men and vehicles of all sorts, plays an important role. Troops must become accustomed to constructing well-concealed, one-man shelter holes whenever the soil permits, even during short halts. During the longer halts, and especially in positional warfare, the construction of cover, even for vehicles,

is a matter of great importance. The cover to be found in gullies or alongside natural slopes may be employed for this purpose. Camouflage must be remembered with the removal of the first shovelful of earth. Uncamouflaged shelters of this sort are useless. Every shelter hole dug is a sort of capital investment which benefits not only the one who constructs it but also all forces which follow.

But neither camouflage nor cover are of any value unless coupled with an air warning system based on the most careful air observation.

During World War II, one of the most important lessons learned from the experiences of all powers was that the density of fire attained by the employment of all available anti-aircraft weapons did not prevent an enemy attack. The strongest concentration of weapons of all calibres was required just to interfere effectively with an air attack. This discovery is analogous to that made in connection with the employment of ground artillery. Any scattering of the employment of that arm reduces the chances of success at decisive times and in decisive places.

Only an anti-aircraft artillery command that is closely co-ordinated with the ground combat command will be able to use its equipment in such a way that its fire will effectively support the main effort. We do not deny that for a short time the employment of a single platoon or even a single gun has been of moral and even tactical advantage. But such cases are exceptional. Long-continued practice of this sort means only a waste of strength and ammunition.

Lastly in those places where the

tactical situation requires troop movements without regard to enemy air threats, it is necessary to concentrate anti-aircraft artillery of all calibres at the most dangerous places along the route. It goes without saying that every unit ought to participate with its own weapons in the fight against low-flying attacks. Even though this does not guarantee any certainty of success, it nevertheless heightens the moral effectiveness of the defence. Damage inflicted on planes, may, at least, cause the enemy planes to miss one or two flights. Fear of betraying one's position to a low-flying attacker by rifle or machine-gun fire is unfounded. The attacker is much too occupied with observation itself, during the few moments that he is exposed to the defence fire of the infantry weapons, to be able to note details. He is not attacking the individual man. He is assaulting the movement. Moreover, for morale reasons, self-defence on the part of the unit is necessary. It gives a greater feeling of security.

Conclusions.

It has not been possible, here, to consider all the problems of air security. We have been forced to limit ourselves to calling attention to their number and to indicating possible solutions. The discovery of these possibilities and their application to the needs of the urgent problems of national defence will be the task of those charged with solving the problems of the modern air security of military forces. The lessons learned in this field by all the belligerent powers in World War II bring home to them the necessity of intensifying training and practice in air security.