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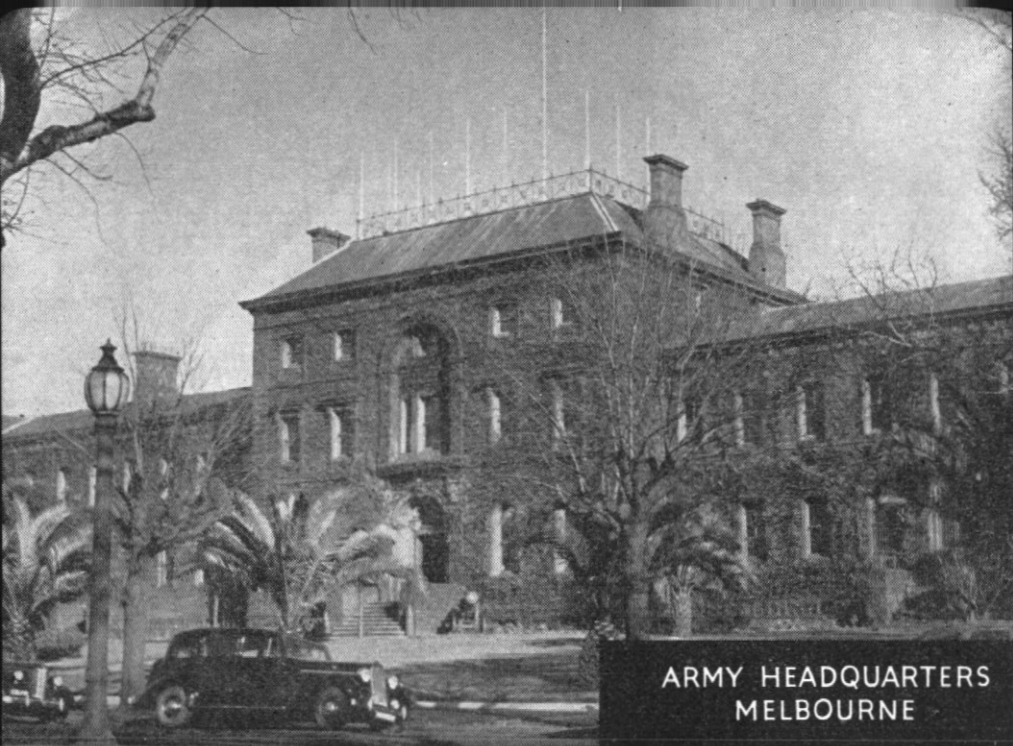
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AUSTRALIAN ARMY JOURNAL

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"NO STRINGS"

● *A Study of the Place of the Divisional and Corps Regiments RAC in the Army Today.*

Major C. J. Miles,
Royal Australian Armoured Corps.

THE British Army, and, as far as possible, our own, have been reorganized recently to the extent that the anti-tank regiments of the corps, the armoured division, the airborne division, and the infantry division have been replaced by the corps and divisional regiments RAC respectively. These regiments are equipped with tanks of a somewhat heavier nature than those of the standard armoured regiment, but are organized in a very similar way.

Armour, excluding reconnaissance units and "funnies," is thus to be found in formations as follows:—

Corps troops—a corps regiment RAC.

The armoured division — an armoured brigade and a divisional regiment RAC.

The independent armoured brigade—on the scale of one to each corps.

The infantry division — a divisional regiment RAC.

The airborne division — a divisional regiment RAC.

With these facts in mind it is of interest to study the Soviet and US Armies to see how their armour is distributed.

In the Soviet Army:

The tank division—three medium tank regiments and a heavy tank/SP regiment.

The mechanized division—a medium tank regiment, a heavy tank/SP regiment, and three mechanized regiments each containing a medium tank battalion.

The rifle division — a medium tank/SP regiment of 52 tanks and 16 SP guns.

The U.S. Army follows a not dissimilar pattern:

The armoured division—three medium tank battalions, and one heavy tank battalion.

The infantry division—one heavy tank battalion as divisional troops and one heavy tank company organic to each infantry regiment.

The airborne division—two heavy tank battalions.

The US and Soviet armies would appear to have a hard core of armour throughout their armies, but their organization does not allow them to reinforce their infantry or armoured formations with additional armoured units without breaking up other formations.

The British organization would appear to have the advantage of having this hard core of armour throughout the Army with the additional advantage of the great flexibility conferred upon it by the independent armoured brigade.

The case for the introduction of the new regiments appears to be:—

- (a) Infantry commanders are assured of tank support at all times.
- (b) The balance of armour to infantry in the armoured division is further weighted towards armour, which, in the case of an armoured division, is scarcely an illogical step.
- (c) The anti-tank gun is generally a one-purpose weapon. When the state of a campaign is such that it has few opportunities to perform its primary function then it is of little further use. On the other hand the tank is a versatile weapon capable of either offensive or defensive tasks.

The case against their introduction is that a nation's capacity to put tanks in the field is limited by its ability to build them and to keep them running. It seems to me that in insisting on having this leavening of armour throughout the Army we shall merely reduce the number of armoured formations that we have or, perhaps worse, re-

duce the number of tanks that we have in them. Some tanks must be available to fight with infantry formations, but it is doubtful whether we can afford both the organic regiments and the independent armoured brigade. Of the two the latter is much to be preferred as it can be split up if necessary, used as a brigade with an infantry formation or attached to an armoured formation if it requires extra armour.

No such flexibility exists with the organic regiments. A statement by General Manteuffel, who commanded a panzer division in Russia and later the Fifth Panzer Army in the West, is of interest in this regard.

"In 1941 the Russians found themselves faced with the same problem as we had from 1942 onwards — their infantry insufficiently equipped with means of anti-tank defence could not hold on without the help of mobile anti-tank defence — i.e., without the support of tanks. As a result armoured combat teams had to be attached to the infantry—which is fatal to the effectiveness of armoured forces as it entails splitting them up in small packets." (The Other Side of the Hill—Liddell Hart.).

The British policy of having organic units implies acceptance of the fact that infantry cannot hold their localities without tanks being split up in small parties to assist them. A tank is surely an expensive weapon to use to do a task that can be done by an anti-tank gun of some sort well dug in within an infantry locality. Infantry have some guns of their own, but if these are insufficient let them have

more—they are cheap weapons, and with the adoption of new principles should become cheaper and easier to produce.

I feel, therefore, that the introduction of the organic regiments into the corps, infantry division, and airborne division is scarcely a sound proposition—it violates the principle of economy of effort if you wish to be academic about it. In the armoured division it should prove a great success if only as a roundabout way of adding another regiment to the division.

If we are to have these regiments (in spite of my protests!) let us then make the best of them. My remarks so far have been based on one fundamental principle which should be obvious at this stage and that is that the new regiments should be employed as tanks and not as rather elaborate anti-tank guns. The substitution of an armoured regiment for an anti-tank regiment within a division has not altered the characteristics of the armoured regiment and has in fact placed in the hands of the divisional commander a weapon of great power and flexibility. Any artificial strings attached to this acquisition would be broken by a realistic commander as soon as he was faced with a situation in which he could make use of the all-round fighting ability of the regiment. If this is so why bother to attach the strings.

The armoured division will now be enriched by one armoured regiment equipped with tanks mounting a somewhat heavier gun than most of those in other regiments. There is a good case for the addition of a proportion of tanks capable of slugging it out with the enemy

heavies, whilst other tanks manoeuvre for favourable positions. The divisional regiment provides the element that was previously missing and increases the mass of tanks available to the commander. If the infantry brigade is unable to render itself reasonably secure from enemy armour then some detachment from the armoured brigade will be necessary—this should not be a common eventuality in mobile operations, but must be accepted as an inherent weakness of the present organization. When the infantry brigade is operating in other than a defensive role the presence of the tanks operating with the brigade should ensure its safety.

It is in the predominantly infantry formations that we shall be faced with a somewhat new problem. Within a corps we shall have at least three regiments with the addition of another regiment for each additional division in the corps, and another four regiments, if, as will often be the case, an independent armoured brigade forms part of the corps. A large corps could then have up to nine regiments within its organization. Of these regiments five (Corps regiment RAC, and armoured brigade) can readily be sent wherever they are most required within the corps sector. A division might, therefore, have six regiments under certain conditions.

It might be worthwhile at this stage to make a quick survey of the various phases of war and see how this armour might be used in a divisional sector.

In defence the problem is to destroy the enemy's tanks and infantry before and whilst they are attacking the positions we have

chosen to hold. Our means are:—

Aircraft

Artillery

The anti-tank and small arms weapons of the infantry, minefields and other obstacles.

Our defences are sited in depth. Aircraft attack the enemy before he comes within range of other weapons and for as long afterwards as they can with safety. The enemy is then progressively engaged by artillery, tanks or other long-range or anti-tank weapons, and finally by small arms weapons and short range anti-tank weapons. The enemy's advance is continuously hindered by obstacles sited in depth. Any penetration he may make we hope to limit by our defences in depth and finally turn to our own advantage by counter-attacking and destroying those forces that have penetrated.

The part that units of the independent armoured brigade play in this plan is well known. They form the basis of counter-attack forces at various levels and are used also in a counter-penetration role. I feel that it is not necessary to make a clear distinction between these two roles. On the surface counter-attack involves an attack launched to regain an important piece of ground and to destroy the forces that have occupied it, whilst, on the other hand, counter-penetration means that our tanks engage with fire enemy tanks and infantry before and, if necessary, after they have penetrated the FDLs. This latter role often involves the manoeuvre of our tanks so that they can be properly placed to bring fire to bear on the enemy whilst they themselves are

exposed as little as possible. If an enemy penetration is made with infantry alone the obvious courses are first to attempt to destroy the enemy by fire, and if this does not prove successful then attack them directly with armour—the orthodox counter-attack. If, as is more usual, the enemy penetrates with a mixed force of infantry and armour there is little point in applying old-fashioned naval tactics, such as ramming or ranging up alongside and boarding. Our aim must be to first destroy his armour from covered positions within effective range—modern naval tactics if you like. This is in fact a counter-penetration task. Once his armour is destroyed his infantry will not be very difficult to account for. I suggest that in either of the two cases I have outlined the action of the tanks amounts to counter-attack, the method being varied to meet the circumstances, but in both cases involving fire and manoeuvre by tanks. The ability to manoeuvre depends on having certain fixed pivots on which to manoeuvre. These pivots usually take the form of well-sited infantry localities.

That is the contribution that armour makes to the conduct of a successful defence. The divisional and corps regiments are armoured units and should therefore operate in this way.

To gain the maximum benefit from the divisional regiment it should be fought as a regiment under divisional control and only decentralised when one of the following conditions apply:—

- (a) The presence of tanks from the divisional regiment is vital to ensure reasonable security

for forward battalion areas. This condition must not be assumed to apply merely because a threat of a tank attack exists.

- (b) The terrain does not allow tanks to operate in large numbers.
- (c) The presence of an adequate divisional reserve of armour allows for decentralising tanks to brigade sectors.

One or more of these conditions will often apply and it will be quite usual for a brigade to have a squadron under command. Within a brigade sector the brigadier should allow his squadron to fight as a squadron. The ground and the state of the battle may dictate that the squadron fight from one, two, or three battalion areas, and positions should be reconnoitred and, time permitting, prepared in those areas, but it should be most unusual to allot a troop to an area with orders to stay in that area come what may. To do so would weaken the squadron and cause such tanks as are detached to be used in a static role. The tank which is not permitted to fight and manoeuvre with its fellows is of little use unless directly attacked—unlikely if the enemy knows his business.

Within a brigade sector tanks should be sited initially in an area or areas from where they can cover at long range the approaches to the FDLs. Depending on the way the battle goes they should later be moved back to an area or areas from where they can cover the extension of those approaches. A squadron should be able to manoeuvre as a squadron or as troops under squadron direction to bring

the fire of their guns to bear anywhere in the sector that it is required. If actual physical counter-attack is necessary to destroy enemy infantry there is no reason why tanks from the divisional regiment should not be used in the same way as tanks from any other source. I say physical counter-attack because the first task of tanks in defence must be to destroy enemy tanks by fire—to attack before this is only to play into the hands of the opposing armoured commander.

The corps regiment should be employed in the same way. It should be free to fight as a regiment anywhere in the corps sector. If other armour is operating under corps command the corps regiment should fight under the command of the senior armoured commander. It will often be necessary and desirable to sub-allot the whole or portion of the corps regiment to divisions. This will allow the divisional commander to retain a more powerful reserve or to make a greater allotment to brigades.

Thus it is plain that there are two types of defence each supplementing the other—an infantry defence consisting of mutually supporting localities protected by minefields, artillery, small arms weapons, and anti-tank guns, and a mobile defence conducted by armoured units supported by artillery.

An attack by armour involves manoeuvre to gain tactical features from where the tank guns can be used with effect against both the enemy's armour and his infantry. In mobile war tanks are often able to do this largely unaided by infantry. When the enemy disposi-

tions, the state of his defences, and the presence of obstacles make such manoeuvre impossible it is the task of infantry to break into the defences to restore to armour its ability to manoeuvre. In the first case we are in the sphere of the armoured division. In the second case armour is subordinate to infantry and its task is to support the infantry forward over the obstacle and into the enemy defences. To do this armour is superimposed on top of the attacking infantry and fights its way forward by its own methods ready always to engage the target that is causing trouble. The divisional regiment should fight as though it were a normal armoured regiment and provide the most effective support that conditions allow. It may either be used to fight its way forward with the infantry or to provide covering fire. In either case it will have a secondary task of anti-tank defence. I feel that to hold the regiment back primarily for protection of the FUP and the flanks of the advance ready to move forward for re-organization, as one would employ an anti-tank regiment, is uneconomical. The necessary firm base should be formed either by the guns of the holding units or, if necessary, by the guns of the attacking units.

The corps regiment is a reserve to be used where it is needed most. Even if no outside armour is allotted the corps has at least three regiments of its own and full use should be made of these regiments where they can be most effective.

If we regard divisional and corps regiments as armoured regiments their employment in the other phases of war is apparent. In the advance they provide the necessary

stiffening to enable opposition to be overcome quickly. In withdrawal they provide the mobile defence that covers the withdrawal of the infantry mass and they provide the armoured component of forces used to hold intermediate positions.

Two objections that I have heard to the general utility use of the corps and divisional regiments are worthy of some investigation.

This first is that the heavy gun tank is entirely a specialist weapon carrying a small amount of ammunition and designed solely for the destruction of enemy tanks. It should not be used therefore for other tasks. The same argument could be applied to any earlier type of tank. Neither the 20 pounder nor the 2 pounder could be said to be ideal weapons to use against infantry. They were designed to destroy tanks and have merely become outmoded. If we had wished to have guns for use primarily against soft targets our tanks would probably have mounted some gun such as the 25 pounder or the 75 mm gun. I do, however, feel that there is place for two types of gun at present. One that will destroy most types of tank, but for which a reasonable amount of ammunition can be carried for other purposes and one capable of dealing with all types of tank, but still able to be used for other tasks within the limitation imposed by the amount of ammunition it can carry.

The second objection is that raised by infantrymen who like to feel that tanks sited in their localities can be counted on to stay and fight it out from there. First I would say that infantry localities should be secured by other means, and

second, there is no point in a tank staying on a piece of ground when such ground ceases to be useful. It ceases to be useful when the enemy tanks get to ground where they cannot be engaged effectively, but from where they can readily hit our own tanks. Our own tanks must be free to counter this threat by moving to more favourable ground.

My main conclusions from the

argument I have set out are that the introduction of the corps and divisional regiments is a step to be viewed with some suspicion, but as they have been introduced they must have the best possible use made of them. To make the best use of them they should be used as the tanks that they are and not as static anti-tank guns to be parcelled out as inconsequential scraps all over the battle area.

The theory of war was not more familiar to the camp of Caesar and Trajan than to those of Justinian and Maurice. The iron of Tuscany or Pontus still received the keenest temper from the skill of the Byzantine workman. In the construction and use of ships, engines and fortifications the barbarians admired the superior ingenuity of a people whom they so often vanquished in the field. The science of tactics, the orders, the evolutions, the stratagems of antiquity, were transcribed and studied in the books of the Greeks and Romans. But the solitude or degeneracy of the provinces could no longer supply a race of men to handle those weapons, to guard those walls, to navigate those ships, and to reduce the theory of war to bold and successful practice.

—Gibbons, *Decline and Fall of the Roman Empire.*”

MASS, QUANTITY and QUALITY

Lieutenant-General Kurt Dittmar,
German Army.

AS universal conscription represented the highest point of development in the organisation of military affairs in the European continental States throughout the entire 19th century so there was never any doubt as to the significance of the role played by the massed armies, for which it provided the basis, since they alone seemed to fulfil completely the desire of the old marshals for "stronger battalions." The First World War placed the validity of this concept in doubt. When, at the end of the twenties, Colonel-General von Seeckt advanced the ideal of the small army of quality against that of the traditional massed armies he gave voice to a generally felt dissatisfaction in regard to the development which had evolved over a period of more than one hundred years. Of course, even Seeckt did not consider the complete abandonment of mass-training as possible.

Thus, in addition to a professional army designed for mobile warfare,

—From *Irish Defence Journal, Eire.*

and highly qualified from the point of view of technique and morale, the size of which, consequently, should be very limited, he advocated the conscription of a force which should be a kind of militia intended to defend the native soil and to provide replacements for the regular army in wartime. But in doing so, he advocated a dualism which was not wholly desirable. Thus it was natural that those proposals had no practical results in spite of the widespread theoretical acceptance of the fundamental concept.

Nevertheless, the Second World War, at least in its initial stages, confirmed Seeckt's ideas to a certain extent. In the early campaigns, the strategic, and even the tactical, decisions lay predominantly in the hands of the relatively few, but highly mobile, armoured and motorised formations which were extremely effective in combat, and in those of the air force co-operating with them, while the bulk of the infantry of the old type was confined to subordinate action. This was the case at least on the German

side. The small army of quality of the type recommended by Seeckt seemed to have become a reality.

From the beginning of the winter the Russian campaign radically altered this picture. When the thrust of the assault formations was exhausted, leading to defensive action in the zone of attack and deadlock in the theatre of operations, the old law of the weight of the mass gained a new and decisive significance. The extent of the areas to be covered and the inexhaustible enemy reserves made it clear that, in case of need, an offensive based on initiative and the constant, skilful alternation of the points of main effort, can afford to forego the proportionate relationship of numerical strength on both sides, but that the same cannot be said of defence. The initial material superiority of the smaller German forces was quickly lost. Under the constant pressure of numerical superiority in men and weapons the German Army of the East also lost, in the end, its original moral superiority.

Has, therefore, the idea of the pre-eminence of quality in warfare really been reduced to an absurdity? Is it a fact that mass, to quote Goethe's words, can only be overcome by mass? Conclusions of this nature do not seem to be justified. Above all it must not be overlooked that, in this war, the longer the conflict between quality and mass went on the more deficient the former became since those characteristics which were best in the German Army had been largely nullified under Hitler's influence. The only thing of which we can be sure is that there is no qualitative dis-

parity so great as to reduce the manpower strength to a "quantité négligeable." The restricted size of an army, as called for by Seeckt in the interest of superior quality, must therefore remain a very relative concept just as, on the other hand, the striving for the greatest numerical strength possible, at least one which is "proportionate," can never be identical with mass-training. What then, in these circumstances, are we to understand by mass?

If we look at Seeckt's arguments again we shall see that immobility and consequent inability to operate are the distinguishing characteristics ascribed to mass. Mass must, accordingly, always be available wherever the technical, spiritual and moral qualities (which are prerequisites for the conduct of warfare and of which the concept of operations only represents a fruitful form of expression) are deliberately neglected for the sake of greater numerical strength. Korea, where on the Red side the missing qualitative pre-requisites were to be compensated for by the mass-employment of manpower in combat (and were actually so compensated for in part), shows clearly what mass is, what it can achieve, and what must, of necessity, lie outside its range of capabilities.

What the mass is capable of, even today, was expressed by Seeckt when he said: "The mass can only . . . overwhelm." It can only be robbed of this last capability, which it still retains, by a combination of quality and numerical strength. To create a combination of both factors, without neglecting one in the interests of the other, means that the

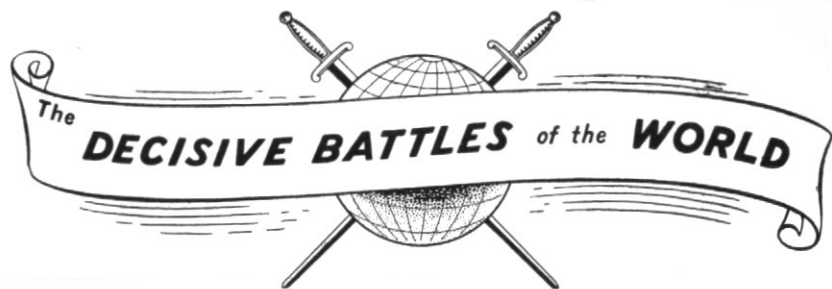
real problem is one of concrete military organisation.

There is no doubt that quality, in the technical as well as in the spiritual and moral sense, and numerical strength may easily be brought into conflict with one another. Today, especially, the tendency, so desirable and so necessary, towards the achievement of the highest possible technical development and equipment can all too easily be advocated, even on the battlefield itself, at the expense of a sufficiently broad manpower basis. Here only the happy medium can lead to a

solution which satisfies both needs; that which is essential rather than that which is desirable, must be taken as the standard in matters concerning technical equipment and in the spiritual and moral sphere, in particular, the selection and training of leaders must always be provided for on a sufficiently broad manpower basis. Within the qualitative limits so established there will be no place for the mass. It will, nevertheless, be possible to take adequate account of the striving after "the stronger battalions," as justified today as in the past.

What part should reading play in our lives? It should certainly not be a substitute for action, nor for independent thinking, nor for conversation; but it may be a help and stimulant to action, thought and talk; and it is capable of providing almost infinite pleasure.

—Field Marshal Lord Wavell.



WATERLOO, 1815

THE turbulent period of European history which began at the battle of Valmy in 1792 and ended at the battle of Waterloo in 1815 falls naturally into two divisions — the French Revolutionary Wars, from 1792 to 1801, and the Napoleonic Wars, from 1801 to 1815. The causes of the conflict and the issues at stake were fundamentally different in each case.

The European monarchs and the aristocratic classes which surrounded them saw in the French Revolution a threat to their own authority and the privileges they had so long enjoyed. Acting on the principle that—

“A little fire is quickly trodden out,

Which, being suffered, rivers cannot quench.”—

they resolved to crush the Revolution and restore the power of the French monarchy by force of arms. Their first attempt was defeated at the battle of Valmy (See AAJ, No. 35). The result of this battle gave the French Revolutionary Government time to consolidate its position, to restore order throughout

the country, and to re-organize its military forces.

It soon became apparent that the sovereigns of Europe had not accepted Valmy as final. New coalitions were formed, new threats directed against France. The French Government saw clearly that this state of affairs would continue until it had been decisively demonstrated on the field of battle that the Revolution could not be broken by force of arms. They saw, too, that the point could most effectively be driven home by offensive action, and that the future safety of France would rest upon the restoration of her old secure frontiers on the Rhine and along the Alps.

Thus, in the first phase, the political object of the French Government was purely defensive. It aimed at nothing more than the security of the new regime and the restoration of militarily sound frontiers. That it set about securing these objects through a series of vigorous military offensives in no way invalidates the essentially defensive nature or the legitimacy of the political aim.

However, in the second phase of the struggle—1801 to 1815—France, under the leadership of Napoleon, attempted to extend her frontiers and become the dominant power in Europe. Indeed, her ambitions extended far beyond Europe; she dreamed of a vast colonial empire as well.

Thus the political object of France underwent a radical change. From being purely defensive in nature it became aggressive, and aimed at nothing less than world hegemony.

From first to last Great Britain was the heart and soul of the successive coalitions formed to destroy the new France. In the first instance she was actuated by no better motives than those of the other powers — the suppression of the Revolution and the restoration of the Bourbons. Later, however, the astonishing successes of French arms and the direction of Napoleonic policy gave a different character to her political aims. In accordance with her traditional policy she now strove to preserve the balance of power by saving Europe from falling under the dominance of a single power. At the same time, French efforts towards overseas expansion collided with British colonial interests, which at that time were on a purely commercial level. Britain fought for empire as well as the restoration of balance in Europe.

Throughout the struggle Britain held command of the sea. This advantage secured her against invasion, and gave her freedom of action in the development of her colonial empire and overseas trade. It also enabled her to move her armies to attack any selected points on the

periphery of Napoleon's continental domain.

If Britain was supreme on sea France was, for the greater part of the struggle, supreme on land. In campaign after campaign Napoleon smashed the successive alliances formed to oppose his ambition of making himself master of Europe. As fast as he smashed them Britain patiently built them up again. At length, weakened by the long and ruinous campaign in Spain and his disastrous attempt to conquer Russia, he was forced on the defensive on land. But he gave up his dream of dominating Europe too late, and in 1814 had to negotiate for peace from a position of extreme military weakness. Well aware of the desperate nature of his military situation, the allies forced his abdication and retirement to the island of Elba.

Had the allies exercised a little common sense and properly appreciated the character of the new France, the struggle might have ended there. They very foolishly attempted the impossible feat of putting the clock back by restoring the despised and hated Bourbons to the throne of France. While the Bourbons were showing the French people that they "had learnt nothing and forgotten nothing" the allies proceeded to a prolonged and involved argument about the division of the spoils. While they were still squabbling and intriguing over the lines of the new map of Europe Napoleon suddenly returned from Elba. The French people, disgusted with the actions of the Bourbon king, received him with open arms. Without the slightest difficulty Napoleon re-occupied the throne.

The allies refused to place any

credence on Napoleon's protestations that he now sought no more than sovereignty within the original boundaries of France. Rightly or wrongly they felt that the man had to be crushed once and for all, a sentiment powerfully reinforced by considerations of the material gains which each of them expected to secure at the interrupted Congress of Vienna.

Return of the Emperor.

On the evening of the 1st March, 1815, the allied plenipotentiaries in Vienna, at the end of an exhausting day of open argument and back-room intrigue, faced an equally exhausting night of another of the interminable entertainments arranged for their amusement by their host, the Austrian Emperor. In Paris, Louis XVIII conferred a few more unearned privileges on his greedy courtiers, grumbled over his gouty feet, and went to bed. In the Mediterranean a small vessel carrying the exiled Napoleon and a little band of followers sailed from Elba to the southern coast of France.

Napoleon landed in France with less than 1000 men, most of them dismounted cavalry with their saddlery on their backs. Energetic police action by the local authorities could easily have ended his bold attempt to regain his throne. But the local authorities, disgusted with the government imposed upon them by allied bayonets, gave him their immediate and unqualified support.

And so it was throughout France. Military forces sent to arrest him threw away the Bourbon standards and returned to their old allegiance as soon as they saw the lone grey

figure standing up in his carriage. Every mile added to his strength, his march became a triumphal progress. By the time he reached Paris on 19th March practically all the military garrisons and field formations which had heard of his return had declared for him. Louis XVIII hastily packed a few personal belongings and fled to Holland. Napoleon was once more Emperor of the French.

When they recovered from their panic the potentates of Europe declared Napoleon an outlaw. They refused to accept the new French constitution as evidence that henceforth Napoleon would rule as a constitutional monarch, and ordered the mobilization of powerful armies to effect his overthrow.

By the 1st of June Napoleon, by prodigious exertions, had succeeded in organizing an army of 290,000 men. But half of this force had to be employed on the eastern and southern frontiers, only 124,000 men and 370 guns could be concentrated for employment in the northern theatre.

The allied forces immediately available were the Anglo-Belgian and Prussian armies occupying Belgium. 150,000 Russians and 200,000 Austrians were in full march towards the Rhine, but they could not reach that river for some considerable time.

Once the approaching Russians and Austrians had effected a junction with the Anglo-Belgians and Prussians, Napoleon's position would be hopeless. Although more time would have enabled him to increase his resources, he appreciated that his only chance lay in defeating his

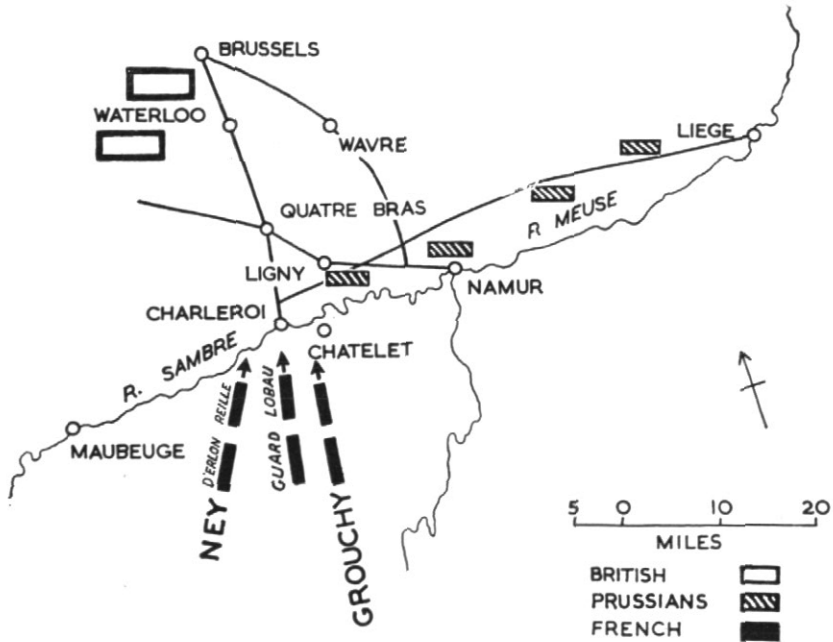
enemies in detail before their concentration was complete. He resolved, therefore, to move immediately against the nearest of them—the Anglo-Belgians and the Prussians.

The Adversaries.

The French Army, so far as the regimental officers and the rank and file were concerned, was one of the finest that Napoleon had ever commanded. Most of the troops were experienced soldiers who had remained with the colours during the Bourbon interregnum or had been recalled to them since the Emperor's return. They were highly-trained, they knew each other and knew the general "form." They were full of ardour, and confident in their Emperor's and their own

ability to reverse their defeats of the previous year.

The French generals, on the other hand, left much to be desired. Napoleon had no longer at his side the group of marshals who had seconded him in earlier campaigns. The absence of Berthier, the brilliant chief-of-staff; Murat, perhaps the greatest cavalry leader the world has ever seen; Lannes, Macdonald, Marmont; was to be keenly felt in the days ahead. Davout, the ablest of the available marshals, had, in the absence of anyone equally competent, to be made Minister for War. Soult, an extremely able field commander, had been made chief-of-staff, a role to which he was completely strange and in which he was unable to do either himself or his commander justice.



Map 1.

The Anglo-Belgian forces of about 100,000 men under the Duke of Wellington, were stationed south and south-west of Brussels. (See Map 1). The British troops were not the veterans whom Wellington had led to victory after victory in Spain. For the most part they were young and inexperienced men. The senior officers, however, were nearly all competent and experienced soldiers. The Hanoverians and Brunswickers were solid, reliable troops. The Belgian component was badly trained and of doubtful loyalty.

The Prussian Army of 120,000, under Field Marshal Blucher, was a homogeneous fighting force of veterans, devoted to its chief, and officered by competent regimental and formation commanders. The Prussians lay along the Meuse and Sambre from Liege to Charleroi.

Wellington received his supplies from Ostend and Antwerp. The Prussians were based on Cologne by way of Liege.

Opening Moves.

On the 1st June the troops Napoleon intended to employ were scattered in a wide arc between Lille and Metz. By the 13th they were all concentrated a little to the south of Charleroi. News of the concentration was carried to the allies by a treacherous French general.

Napoleon had three choices. He could go to the north and strike at Wellington's communications; he could go to the east and strike at Blucher's communications; he could advance on Brussels with the idea of separating his opponents and beating them in detail.

Napoleon chose the third course,

but by suitable dispositions he led Wellington to believe, right up to the day of the battle, that he was going to strike at the British communications.

On the 15th June the French crossed the Sambre in three columns as shown on Map I. The right column was commanded by Marshal Grouchy, the left by Marshal Ney, the centre was under Napoleon's direct command.

Blucher, learning of the French advance, ordered his army to concentrate at Ligny to check it. Wellington, fearful of his communications, began tentatively to concentrate south of Brussels. Had it not been for the initiative of a divisional commander there would have been insufficient troops at Quatre Bras to oppose Ney's advance on Brussels.

Napoleon's orders for the 16th directed Grouchy to destroy the Prussians, and Ney to advance to Brussels. It would seem that Napoleon did not expect Ney to encounter strong resistance.

Grouchy began his attack about 2 p.m., but found the opposition stronger than had been expected. Late in the afternoon Napoleon ordered D'Erlon's corps from Ney's column to move against the Prussian right flank. The inexperienced staff officer who carried the order gave it direct to D'Erlon instead of transmitting it through Ney. D'Erlon's corps appeared on the horizon, and then suddenly turned around and disappeared in the direction from which it came. The flank attack now had to be abandoned. Napoleon launched the Guard in a murderous attack on Ligny and drove the Prussians from the field.

It was a defeat, but not a rout; the Prussians withdrew in good order and reformed around Wavre.

Meanwhile Ney had encountered constantly increasing opposition at Quatre Bras. When he ordered up D'Erlon he learned that that corps was on its way to Ligny. Knowing nothing of Napoleon's instructions he sent a peremptory order to D'Erlon to return. D'Erlon complied, but arrived too late to enable Quatre Bras to be carried that day. Thus, through bad staff work, D'Erlon spent the day marching to and fro and rendered no assistance to either wing of the army.

The result of the day's fighting was indecisive. The Prussians had been defeated, but not broken. Ney had been checked at Quatre Bras, but had prevented Wellington from going to the assistance of Blucher.

On the morning of the 17th Wellington ordered his forces to fall back on Waterloo, where they took up a defensive position across the Brussels road at Mont Saint Jean.

Napoleon ordered Grouchy with 30,000 men to follow up the Prussians, whom he thought were retreating towards Liege, and complete their destruction. Grouchy moved slowly, his cavalry served him badly, and he sent in inaccurate reports of the Prussian movements. Napoleon, with the central column, joined Ney in front of Wellington's position. Appreciating, from the information at his disposal, that the Prussians, even if they eluded Grouchy, could not arrive for two or three days, he resolved to attack Wellington the next morning.

Blucher, in fact, was at Wavre with the bulk of his army. During

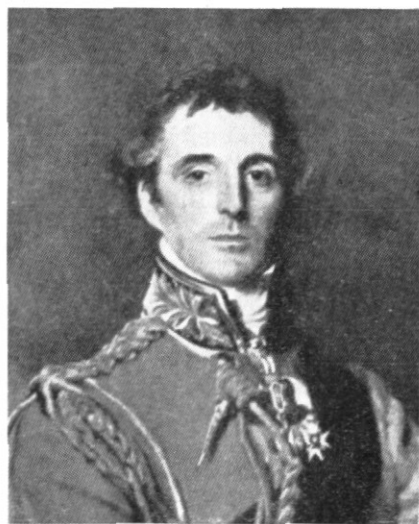
the night he got in touch with Wellington and promised to support him in the impending battle.

The Battlefield.

The battlefield of Waterloo is situated in undulating country. At its highest elevation it is 460 feet, and at its lowest 360 feet above sea level. (See Map 2).

The armies faced each other across a shallow, slightly undulating valley. Wellington's troops were deployed along the sunken road which runs along the ridge bordering the northern edge of the battlefield. The French occupied the opposite ridge on either side of La Belle Alliance.

The sunken road bordered by thick hedges gave Wellington a natural entrenchment. It provided



Wellington, 1814.

From a portrait painted by Sir Thomas Lawrence, President of the Royal Academy.

him also with a formidable obstacle to cavalry. It was here that Wellington stationed on the left and centre the greater part of his Hanoverian, Dutch and German infantry. On the right, where he expected the heaviest attacks, he placed half his British troops. He massed his reserves behind his centre and right, and strengthened his left with two cavalry brigades.

Wellington occupied his position in a manner quite different from all that European generals had done for nearly a century. He disposed the elements of his army so as to make the very most of their fire. The troops employed at each point were exactly apportioned according to the effect to be produced. Every effort was made to protect them from enfilade and to obtain cross fire whenever possible.



Napoleon.

From a portrait by an Englishman; considered by the Bonaparte family to be the best likeness of the Emperor.

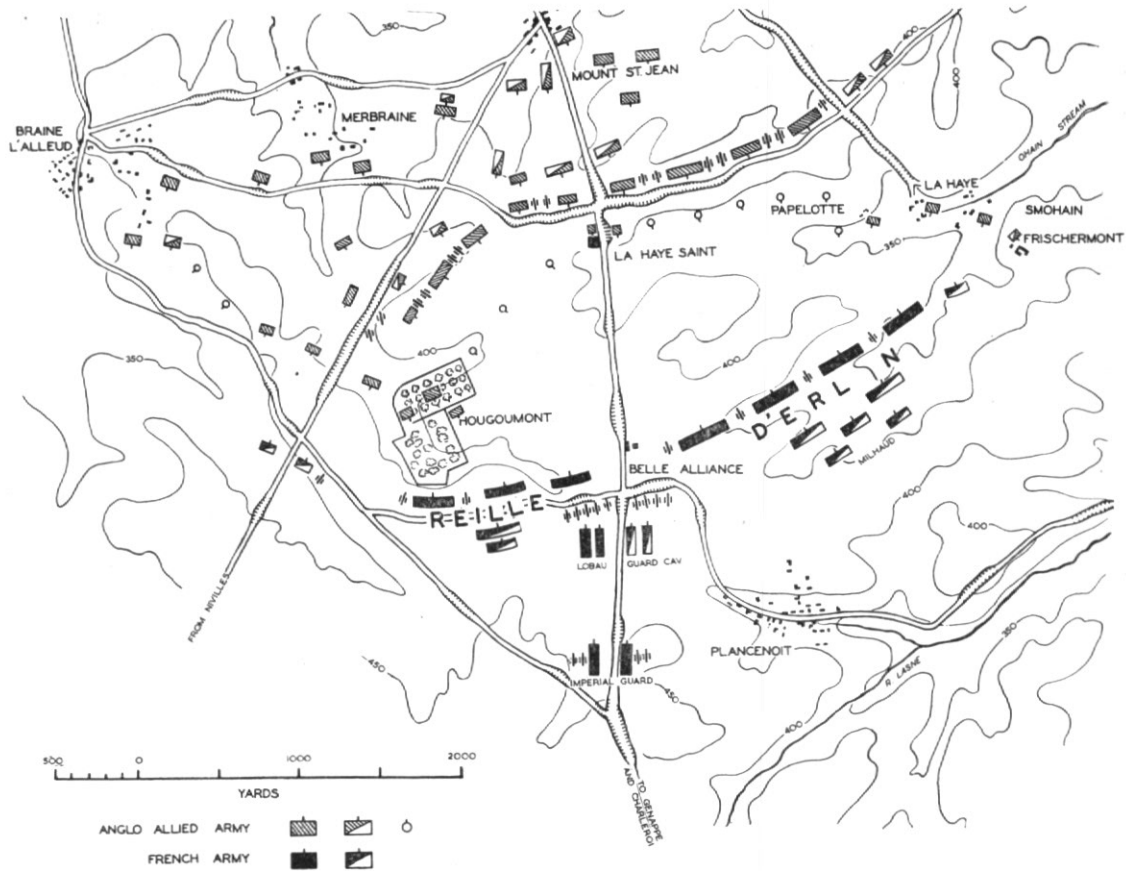
The batteries were posted just far enough forward to be able to see, but were concealed as much as possible. The guns were mounted behind the slopes and hedges and embrasures made. The infantry was stationed behind the crest, sheltered from the French fire, and was not to come up to the sunken road until required. A continuous line of skirmishers was posted about 300 yards in front.

In front of his right Wellington occupied the orchard and chateau of Hougoumont with three battalions, two of which were British Guards, and covered its flanks with batteries posted in rear. In the centre he occupied La Haye Sainte and the sand pit behind it, and covered the approaches with suitably positioned guns. On the left he allotted a brigade to hold the buildings and orchards of Papelotte, La Haye, Smohain and Frischermont.

Wellington intended these advanced posts to break up and disorganize a French assault on his main position.

When his dispositions were complete Wellington had 68,000 men on a frontage of about 4,400 yards. A large part of this force was held in general reserve behind the ridge out of sight of the enemy.

Napoleon arranged his army in two strong wings, a centre, and a powerful reserve. On the right D'Erlon, with 16,000 men, extended east of the Charleroi—Brussels road nearly to Frischermont, while Reille on the left with 15,000 men carried the line from La Belle Alliance westward. Lobau's corps formed the centre, while the Imperial Guard, 12,000 strong, formed



Map 2. Battle of Waterloo. —Position at the beginning of the battle at about 11 a.m.

the general reserve under the Emperor's personal command. The bulk of the cavalry was stationed behind either wing. The artillery was massed in three huge batteries, fifty guns directed against Hougoumont, eighty along the ridge east of La Belle Alliance, and ninety with the reserve.

The Battle — First Phase.

It had rained heavily during the night and Napoleon had to wait all the morning for the ground to dry out before beginning his attack. At 11.30 a.m. he ordered Reille to attack Hougoumont so as to draw the enemy's attention towards the west. He then intended to launch his main assault against Wellington's centre, on the right of the Charleroi—Brussels road.

Reille entrusted the attack on Hougoumont to Jerome Bonaparte, but apparently failed to fully instruct him as to the real purpose of his operations. Consequently that officer pressed his attack far beyond the point necessary to achieve his purpose, and drew in more and more troops in fruitless and costly assaults on the stubborn defenders. Before Reille regained control his corps had been considerably weakened by what should have been no more than a strong holding attack and demonstration.

Between 12.30 and 1.0 p.m., Napoleon ordered the attack on Wellington's centre. Immediately afterwards he learnt that the head of a Prussian column was approaching and was then only about five miles from La Belle Alliance. Napoleon thus had at the most only two hours in which to defeat Wellington be-

fore the arrival of the Prussians. This fact, ascertained at the very moment when the main attack was about to begin, was probably the cause of most of the subsequent French mistakes, and of the use of brute force to the exclusion of all manoeuvre.

Napoleon entrusted the great attack to Ney, but forgetful of the calibre of his subordinate and his past performances, he failed to arrange for methodical progress and proper co-ordination. Left to himself Ney launched his infantry directly at the main allied position in a massed formation, which the French had not used for twenty years. In each division the eight battalions were deployed in line one behind the other, forming a compact mass of men counting 160 from right to left and 24 from front to rear. It was impossible to split up, deploy, or manoeuvre such a mass as this. The four divisions (14,560 men in all) marched in echelon at intervals of about 440 yards, the left leading.

Although suffering severely from the allied guns, the French right division swept over Papelotte and reached the road. The two divisions of the centre reached and crossed the road. The left division drove the enemy out of the sand pit and surrounded La Haye Sainte, but could not break into the farm.

Wellington now hurled portion of his reserve against the French divisions which had crossed the road. The French tried to deploy, but their massed formation impeded free movement. Suffering enormous losses, they were forced to withdraw.

Wellington's infantry counter-attack on La Haye Sainte encountered and was overwhelmed by a brigade of cuirassiers, which Napoleon had sent forward from his general reserve. The British commander on the spot responded with a local counter-attack by two bodies of cavalry. One threw back the cuirassiers just as they climbed out of the sunken road. The other charged the massed French infantry, which, seeking in vain to deploy, withdrew in confusion.

The British horsemen were in turn charged and thrown back by a cavalry brigade which issued from behind the French right wing.

The great infantry attack had failed. In a short time D'Erlon's corps had lost a third of its men and 20 guns.

During the action in the centre, units from Wellington's right had counter-attacked at Hougoumont. Practically all of Reille's infantry became involved in the prolonged dog-fight which ensued.

Meanwhile Napoleon had sent two cavalry divisions to delay the Prussians, and had deployed Lobou's corps across the valley from Planenoit towards Papelotte to protect his right flank.

Second Phase.

About 3.30 p.m., Napoleon resumed his attack on La Haye Sainte, which he wished to occupy before renewing his assault on the British line. Under an intense bombardment by the big battery just west of La Belle Alliance the farm buildings were set on fire.

Meanwhile Wellington filled up the gaps in his line and advanced

three brigades of Guards from the reserve to the crest of the ridge.

Ney now turned to his cavalry and deployed the whole of Milhaud's cavalry corps on the low plateau west of the Charleroi—Brussels road. This mass of horsemen masked the French guns engaging La Haye Sainte, and forced them to cease fire.

As Milhaud's cavalry trotted forward between La Haye Sainte and Hougoumont the British infantry formed squares, sixteen all told, to receive them. The British gunners maintained a steady and destructive fire until the French squadrons, crossing the sunken road, charged the squares. A desperate struggle ensued; the French cavalry charged again and again, but were unable to make any appreciable impression on the British squares. Finally they were counter-attacked by British cavalry and driven back to the foot of the slope. Ney, instead of directing the fight as a whole, reformed the squadrons and led them once more to the charge.

Thus it came about that Ney's infantry received no orders to support the cavalry. Some of them were still engaged at La Haye Sainte, but the rest remained inactive, watching the struggle from afar.

The second assault succeeded in breaking one or two squares. Seeing this, Napoleon, although regretting the premature use of the cavalry against unshaken infantry, felt that his only hope was to seize the chance by supporting Ney as quickly as possible. Since his infantry could not arrive in time, he hurled forward Kellermann's corps and the cavalry of the Guard. But

it was no use; the British infantry, although nearly exhausted, held firm.

At last Ney remembered his infantry, and, finding a few intact battalions in front of La Belle Alliance, he led them forward to a successful assault on La Haye Sainte. Possession of this important feature enabled him to mount a battery within 330 yards of the British squares, and to push sharpshooters to within less than 100 yards. Covered by this fire the debris of D'Erlon's corps advanced, crossed the sunken road, and established themselves in the heart of Wellington's position. Ney appealed frantically for reinforcements.

Napoleon still had 14 battalions of the Guard in reserve. It is possible that had he launched them in support of Ney he might have driven Wellington from the field. But at that stage—about 6 p.m.—the Prussians were pressing in strongly on the flank and were attacking Plancenoit. If Plancenoit was lost the French position would become untenable, and the reserve would be required to cover the withdrawal. Napoleon considered, therefore, that he could not use them until he was sure that his impending counter-attack had secured the village. Five of the reserve battalions had to be used for this operation.

Meanwhile Wellington had re-organized his troops and counter-attacked the French who had gained a footing in his position.

Third Phase.

It was now after 7 p.m., and Napoleon made the last great effort

of his career. With his flank temporarily secure, he ordered the last nine battalions of the Imperial Guard to move against the British line.

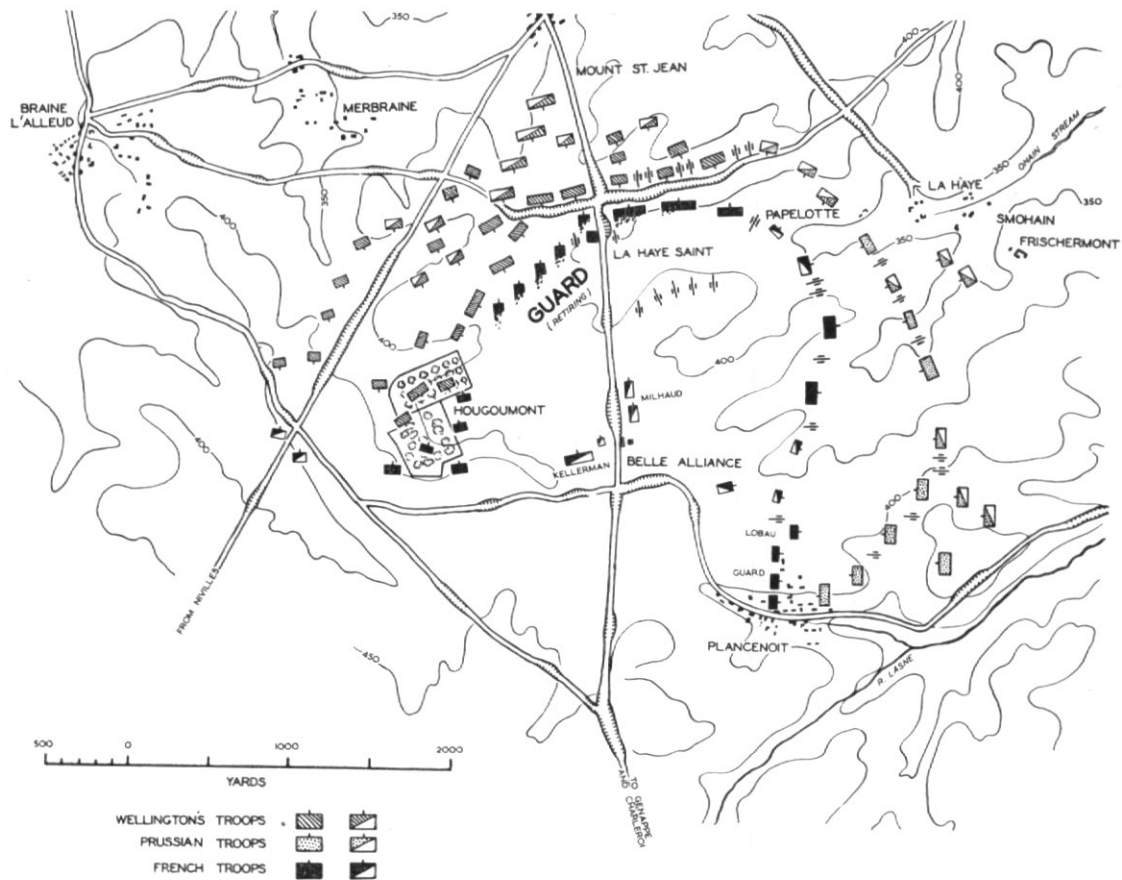
The soldiers of the Guard were too experienced to have any illusions about what lay ahead of them. Yet they moved as if on ceremonial parade, proudly, with magnificent precision. Throughout their advance their ranks were torn and blasted by intense artillery fire. They closed up the gaps and marched steadily on, past the troops falling back in face of Wellington's counter-attack.

As the Guard cleared the crest of the ridge they were met by a volley at close range from the British infantry. The shock brought them to a momentary halt. Wellington seized the opportunity and ordered his whole line to charge. The Imperial Guard, having already lost half its men, was scattered and hurled back in disorder, carrying with it all that remained of D'Erlon's corps. At the same time the Prussians broke through on the flank.

All was now over. The French army dissolved in headlong flight. Only two squares of the Old Guard stood firm, and with them Napoleon slowly quitted his last battlefield.

Comments on the Operations.

In moving to attack the allies at the earliest possible moment, Napoleon took the only course of action likely to be successful. The speed with which he assembled the scattered components of his army south of Charleroi gave him the advantage of concentration, whilst his adversaries remained dispersed. It would have given him the ad-



Map 3. Battle of Waterloo.—Position at the end of the battle at about 7.45 p.m.

vantage of surprise as well had it not been for the treachery of highly-placed officers, a contingency very difficult to guard against.

From first to last the French operations were characterized by lack of co-operation, some of which was due to the faulty staff work which persisted throughout the whole period. Soult, although a fine commander, was quite untrained and inexperienced in staff duties. Consequently he was unable to translate Napoleon's terse orders into workable operation orders or instructions, and he neglected elementary precautions to ensure that orders reached their destination. To make matters worse, most of the staff officers who assisted him were also inexperienced.

However, a fair measure of the responsibility for lack of co-operation rests with Napoleon himself. In view of the close approach of the Prussians, everything depended on the success of the great attack east of the Charleroi—Brussels road. It was vitally necessary to ensure that the action of infantry, cavalry and artillery was properly co-ordinated. Yet Napoleon left all arrangements except the initial artillery preparation to an officer whom he knew from past experience to be an indifferent tactician though a magnificent fighting man. As a result a powerful force of cavalry watched the infantry attack in the worst possible formation. Then the infantry stood idly by and watched the cavalry make a separate and unsupported attack on the unshaken British squares. In operations of this nature impetuosity is seldom a successful approach to the solution of the problem. The reduc-

tion of La Haye Sainte was a necessary preliminary to a successful assault on Wellington's centre. Had Ney made sure of this important tactical feature at the beginning instead of towards the end he might have been more successful.

Reille seems to have lost control of his share of the battle at an early stage. He allowed his corps to be drawn in piecemeal to the fighting around Hougomont. Consequently he accomplished nothing.

Grouchy's pursuit of the Prussians after Ligny was dilatory in the extreme, and many precious hours elapsed before he realised that at least one of their corps was at Wavre. By that time the prolonged and heavy cannonade at Waterloo should have warned him that a major battle was in progress on his left. He should have taken energetic steps to find out what was happening, and should have directed at least portion of his force to interpose itself between the Prussians at Wavre and the battle which was obviously taking place. Napoleon's order for him to return never reached him because the staff sent it by only one messenger in a situation which clearly required the despatch of such an important order by different routes. Thus Grouchy, with 30,000 men, neither held the Prussians, nor joined Napoleon, notwithstanding the fact that "When in doubt march to the sound of the guns" was standing operational procedure in the French Army.

Some critics maintain that Napoleon himself was responsible for Grouchy's absence from the battlefield in that he started him off in the wrong direction in the first place. There is much truth in this

argument. After Ligny Napoleon seems to have assumed, without any supporting evidence, that Blucher would retire along his communications towards Liege — and away from Wellington. This assumption persisted up to the moment when he learnt that the Prussians were approaching his flank. Blucher's orderly withdrawal from Ligny should have shown Napoleon that the Prussians, although defeated, were still formidable, and he should have maintained close contact with them until he was sure of their movements. Once effective contact is broken the enemy is liable to re-appear anywhere, and confound all your assumptions.

Close co-operation was evidenced throughout all levels of the allied armies. After his defeat at Ligny Blucher took a risk with his communications in order to keep his army close to that of Wellington (Concentration). Had he retired towards Liege, Wellington would, as he at that time feared, have been compelled to abandon Brussels and withdraw behind the Schelde. The allies would have become widely separated and open to defeat in detail. It was Blucher's assurance that the bulk of his army was at Wavre and that he would co-operate on the morrow, that led Wellington to fight for a decision on Mont Saint Jean.

Tactical co-operation between arms is shown in Wellington's careful dispositions, which provided for the closest co-ordination of the action of artillery, infantry and cavalry both in the defence and in the subsequent counter-attack. Through the unusual arrangement of his troops and their concealment,

Wellington achieved tactical surprise.

Throughout the battle the British subordinate commanders showed initiative and skill in mounting local counter-attacks. And at the end of the day Wellington still had in hand a substantial general reserve with which to drive home the decisive blow. The blow was perfectly timed. It was delivered at the moment when Napoleon was fully extended, when all his reserves were committed, and when his army was recoiling from the last unsuccessful assault.

The greatest credit for the victory, however, must go to the steadfast British infantry, who resolutely held their ground when pressed almost to the limit of human endurance. When discussing the battle later Napoleon said, "If Murat had been there we should have won. For what did we require? To break four or five British squares. Murat would have done it." Whether Murat would, in fact, have done it is a different matter.

Results of the Battle.

After Waterloo the allies marched straight on Paris. Napoleon's resources were exhausted, and he surrendered to the British, who sent him into permanent exile to the island of St. Helena.

It is too soon to make a proper assessment of Napoleon. Our libraries still contain too many accounts influenced by the writings of men of both sides with an axe to grind—with personal or national conduct to explain. In history time is required to give perspective.

At present all we can say with certainty is that Waterloo restored, temporarily, the balance of power

in Europe, and secured for Britain freedom of action to extend and develop her overseas empire.



In the introductory note to this series of articles we defined the type of decisive battle we intended to describe as one "of which a contrary result would have essentially varied the drama of the world in all its subsequent scenes." (See AAJ 21, Feb 51).

With this definition in mind we consider that we must conclude the series with the battle of Waterloo. Great battles have been fought since then, but we cannot yet be certain that any one of them has had the effect described in the definition. Time, a great deal of time as we normally count it, is required to enable us to see whether the result of a battle has had a permanent or merely a temporary effect on the world's history.

For example, in 1918 we thought that our success in World War I had finally put an end to Germany's ambition to achieve world hegemony. Within the short space of 21 years Germany had renewed her attempt, and came nearer to success than she did on the first occasion. In World War II we defeated her as crushingly as any nation has ever been defeated. Yet with the echoes of that conflict still ringing

in our ears we find that international developments have created a situation in which Germany could, within a few years, regain the power we thought had been crushed for ever. Today each of the two great power groups in the world is manoeuvring to revive German military strength, partially at least, and harness it to its own purpose. We are not here concerned with the merits or demerits of German re-armament, the point is that Germany's recent defeat may not have been decisive in the terms of our definition.

Nevertheless, in concluding the series we should note that we are now engaged in a struggle which bears all the historical characteristics of decisiveness. Clearly the result of this struggle will have tremendously important effects on the future of the human race. When and how the final decision will be obtained no one can say. However, this much at least is certain. Unless each and every one of us takes a little more than his just share of the strain, unless we all do a little more than we are officially required to do, victory could quite easily crown the undoubtedly enthusiastic efforts of our enemies.

ARE YOU A MEDIOCRITY?

Lieutenant-Colonel F. P. Serong,
Royal Australian Infantry.

OVER the last two decades, which undoubtedly will be known to the school children of 2052 as the Age of Assisted Self-Revelation, countless reams have been printed on the location, analysis and remedy of "What Ails You."

"Have you an Ulcer?"

Of course you have. Who hasn't these days? But you can't be quite sure until you have checked yourself by Our Handy Guide — two points for a "yes," one for a "maybe" and minus two for a complete blank. If your total score is more than seven you have a hole in your duodenal tract in which a thousand sail could ride in perfect safety.

"Does the moon affect your nerves?"

"Do you rate well as a tennis partner?"

Yes! No!

So it goes on. Day after day, month after month, the wretched homo sapiens 1952 is discovering more about himself and is being bedevilled with the most helpful hints on what to do about it.

Unofficial access to certain partly digested data of the Bureau of Statistics of Common Well-Being has brought one face to face with the tragic realization that, along with ninety-four in every hundred of his fellows, the writer is a potential

mediocrity. One hesitates to divulge in full the harassing process through which this demoralizing knowledge was acquired, but, briefly, it runs like this:—

Mediocrity (Army Officers' Section)
Answer faithfully the fifteen questions below.

Give yourself 2 points for every "Yes."

Deduct 2 points for "No."

If undecided, add 1.

1. Do you ask yourself less frequently than once a month, "What have I done this month that has brought forward the preparation of the Service for war?"

2. When a problem arises within your sphere of activity, do you hold a conference of your subordinates to discover a solution?

3. When asked a question by a superior, do you give some answer, and then go back to your own department and adjust matters there to make the circumstances fit the answer given?

4. Do you dislike, even just a little, being presented with a new idea which might upset current methods and organization?

5. Does the presence of a bright subordinate make you uncomfortable?

6. Do you resent criticism?

7. Are you unwilling to change your mind for fear it will be thought weakness?

8. Do you accept the opinions of seniors as axiomatic?

9. Do you expect juniors to so accept yours?

10. Have you never said, or thought, of a junior: "He shows more promise than I did at his age?"

11. And thereafter taken some positive step to help him develop it?

12. Do you confine criticism to points of detail?

13. Do you, less frequently than three times a year, initiate and see to completion some project that goes beyond day-to-day routine?

14. Are you concerned about seniority?

15. Do you believe that truth always lies midway between two extremes?

Now add up your score and:—

If it is 30 you are really plumb-
ing the depths.

If it is 20 or greater you are sunk
without hope.

If it is from 10 to 20 you have a
reasonable prospect of reconstruc-
tion.

If it is under 10 you are fairly
decent material.

If it is zero you are juggling with
the truth.

Let us assume that most fellow
test victims have been honest and
finished in the 20-30 group. Here
we are, a large group of unhappy

beings who don't figure in society's
5 per cent. "creative minority."

But be of good heart, all is not
lost. Having subjected ourselves to
the inquisition, we are now to be
repaid by being handed, in crystal-
lized form, the result of years of
observation and study in "How to
Achieve Success though Mediocre."

The problem, superficially in-
soluble, on examination proves to
be no problem at all, for mediocrity,
far from being a social stigma, is
the thing that makes us kin. Are
you a mediocre captain? If you
are, don't worry. Ninety-four
chances to a hundred your major
is mediocre, too. And so it goes on.
"But," you say, "that doesn't make
sense. How did he become a major?"
The answer is simple. He found,
as you will, that his best interests
remain protected by a solid weight
of opinion formed by people of the
same mental calibre as himself, ex-
pressed in ordinance, act, custom
and protocol. He followed these
few simple rules:—

1. Don't rock the boat! If, in
spite of yourself, you feel arising
within you a thought that is off
the beaten path, ruthlessly suppress
it. It is better not to disturb.

2. If circumstances force you to
take a decision, postpone action un-
til your decision has been sanctioned
by higher authority.

3. If that is not possible, place
the onus squarely on the shoulders
of one of more subordinates.

4. Stick to the things you know.
You are on good, solid ground here,
and with a little luck and forceful
presentation, you could easily de-
velop a reputation for being "sound."

5. Be a "seconder." If a "sound" man gives tongue — in an appropriate audience of course—be quick to leap to your feet and agree.

6. Be conspicuous. Be seen often in the right places. Cultivate some mannerisms.

7. In any group discussion say nothing until the end. Then take the floor and "sum up," thereby giving the impression that you

really had all the ideas all the time. (That one is for advanced students, but there is no harm in beginners having a try.)

8. And most important! If, in spite of all this advice, you do happen to do something and it goes wrong, don't lose heart. Time is a great healer. No matter what your blunder, in the days to come you will still be there, ready to make another, a bigger and a better one.

From the beginning of the formation of national entities until the present time the idea of popular uprisings to repulse foreign invaders has ever been a universal conceit, an incredible vanity that neither the erosion of ages has erased, nor the deluge of blood issuing from them has washed away. Yet, while there exists not an age that has not resounded with the triumphant hoof-beats of invading armies, the truth is there is not a single instance in the whole military history of the world where the mobile armies of a warlike race have been destroyed or defeated by the popular uprisings of a militarily decadent state.

—Homer Lea, in *"The Valour of Ignorance."*

THE PRESENT YUGO-SLAV ARMY

The Major Preoccupation of Western Europe

Translated and condensed by the Military Review, USA, from an article by General J. Breuillac in "Review Militaire Suisse" (Switzerland), July, 1951.

AS soon as Serbia had acquired her independence, after more than 400 years of Ottoman occupation, the first concern for the new state was the organization of its army. Because of the country's location—at the crossroads of Central and Southern Europe and at the frontiers of the European and Asiatic continents — the Serbian people concentrated all their efforts on their national defence.

It was a matter of safeguarding an independence which was in danger of becoming a pawn of interests, which, if not hostile to one another, were at least divergent.

Therefore, a large part of the country's budget was allocated to training and equipping its armed forces.

A Peoples Army.

The Serbian population was, for the greater part, composed of small land-owners (about 80 per cent.), firmly attached to the soil and ready to defend it. This explains the high percentage of peasants and moun-

taineers among her soldiers, as well as among her junior officers and generals.

Because of this, the Serbian Army has, throughout its history, been intimately linked to the mass of the population. This particular characteristic always has played an important role in the Army.

It was during the course of the Balkan War (1912-13), and later in World War I (1914-18), that the Serbian Army acquired its greatest prestige in the eyes of the European people. When France, in accord with her allies, decided to form a new front in South-eastern Europe—the Salonika front—in order to ease the Austro-German pressure, the Serbian Army went into action and gave proof of the highest military qualities. Its officers and men displayed a rare spirit of sacrifice and bravery in the fighting in this theatre of operations.

However, to be able to form a reasonable opinion of the value of this army and the possible sense of its eventual intervention in a con-

flict with the Soviet Union, it is necessary to go back to the beginning of the century and examine the influences which have affected its formation and the events which gave rise to its evolution, with reference to the internal political crisis of the country and the recent world tension.

Foreign Influence.

With the ascension to the throne of King Peter I of Serbia, in 1903, the influence of the French military schools made itself felt in the Serbian Army, and increased from year to year.

Peter I, a former student at Saint-Cyr and a volunteer in the French Army during the Franco-Prussian War (1870-71), always had a great desire to train his army in accordance with French methods.

The formation of the Salonika front contributed toward the rapprochement of the two armies, and the two peoples, which were fighting for the same cause.

With the foundation of the Kingdom of Yugoslavia, in 1918, by the union of Serbia, Montenegro, Bosnia-Herzegovina, Croatia, and Slovenia, the fraternity of the two armies was extended to the entire kingdom.

King Alexander I, who succeeded his father in 1921, reinforced still more this traditional feeling (he sent a considerable number of Yugoslav officers to specialized military schools in France, as well as using French weapons and equipment in the Yugoslav Army).

The French influence finally found its confirmation in the signing of the

Franco-Yugoslav Treaty of Military Alliance and the formation of the "Petite-Entente" — Czechoslovakia, Rumania, and Yugoslavia

It can be said that these results were the direct consequence of the high qualities of the Yugoslav Army and its officer personnel.

In 1938, on the eve of World War II, and, particularly, after Munich, the Western European powers based great hopes on this army. If they were not realized, the principal reason for it was the internal discord which destroyed Yugoslav unity to the advantage of the governments of Rome and Berlin.

When, in 1941, Yugoslavia openly declared itself on the side of the Allies, in spite of the repeated threats of Germany and Italy, France already had undergone a year of German occupation.

Only Great Britain resisted in Europe. The United States had not yet entered the war, and the Soviet Union still respected the treaty of alliance signed by Ribbentrop and Molotov. Under these conditions, the Yugoslav Army, isolated as it was, could not, in spite of its courage, have resisted the attacks of the German "Wehrmacht" and its satellites: Italy, Hungary, Rumania, and Albania.

One of the great dates of Yugoslav history is 27 March, 1941; the date when a bloodless "coup d'etat" overthrew the pro-Axis Cvetkovitch government. On 6 April, German troops attacked Yugoslavia, and, by 17 April, the entire kingdom was under the Nazi heel. The recently formed government had fled the country, with its young king and a

part of the air forces, to take refuge in the Middle East.

A few days previously, the chief of the Ustachis, Ante Pavelic, had declared the independence of Croatia, but, in the Serbian territory, a staff colonel, Draza Mihajlovic, already was organizing the resistance movement.

Guerrilla Warfare.

The movement spread rapidly throughout Serbia, Montenegro, Bosnia, Dalmatia, and Croatia, and assumed all the characteristics of modern guerilla warfare.

Draza Mihajlovic, an instructor in the staff school, had been the only one to maintain that the Yugoslav Army could not resist the German military power and he had taught the manner in which small, regular units should be trained for partisan warfare.

A plan for the organization of the Yugoslav Army for this new type of warfare even had been submitted by him to the Ministry of War. However, this plan, which had been very badly received, was rejected immediately.

While Draza Mihajlovic organized the resistance movement against the enemy, Ante Pavelic, with his Ustachis, undertook the extermination of the Serbs, who were still inside the frontiers of the new independent state of Croatia.

It was a period of misery, terror, and moral prostration. According to the official records of the present Yugoslav Government, at least 750,000 Serbs were victims of the merciless blows of the Ustachis.

While the executions of the Ser-

bians were in progress, Germany attacked the Soviet Union, who thus passed over to the camp of the Western Allies.

It was at this moment that the first Communist resisters appeared in Yugoslavia; first, in the eastern part of Montenegro; later, in Chumadija, the most important of the Serbian provinces. In the beginning, this Communist resistance remained camouflaged. At times, it continued the national aims of Yugoslavia; on other occasions, it propagated socialistic theories for the equal partitioning of the land. Any friction with the peasant classes, which at all times had been hostile to Communism, had to be avoided.

However, in spite of all this, the peasants' hostility forced the Communist resisters to leave Serbian territory towards the end of 1941, and move to Croatia. Here the persecuted Serbian population sought refuge in the ranks of the Communists who fought under the Yugoslav banners.

Simultaneously, with the first skirmishes between the troops of Draza Mihajlovic and the Communist resisters, both the press and the communiques began mentioning the name of Tito, who had hitherto been unknown.

Arsa Juanovich.

In 1941 and 1942, the Communist partisans, who were entirely untrained, took almost no part in the national resistance movement. At their head were Mosa Pijade, Peko Dapchevich, Sreten Zujovich, Milovan Djilas, Josip Broz Tito, and other partisans of the Marxist doc-

trine. However, the real organizer of Tito's units was Arsa Juanovich, monarchist, former frequenter of the Royal Court, and one of the best officers of the erstwhile Yugoslav staff. Scion of a poor family of Montenegro, but ambitious and industrious, he studied at the Ecole Militaire of Belgrade, and, later, at the Ecole Supérieure de Guerre, where he distinguished himself. While there, he was the pupil of Draza Mihajlovic, who taught him his guerrilla methods.

When, at the beginning of 1942, Arsa Juanovich met Tito, he was preparing to leave Serbia and go to the western part of Bosnia, where his units were being pressed by those of Draza Mihajlovic. From that moment on, and up to the conclusion of the hostilities, the two men never parted.

Almost immediately, Juanovich was appointed as chief of staff. Al-

though he was not a Communist himself, he was influenced by his wife, who, unfortunately, was a member of the Party, and was well known in the country for her sanguinary acts.

It was with Arsa Juanovich that the military communistic movement was to attain its full development in Yugoslavia, under the orders of Josip Broz Tito, at that time appointed marshal, with the assent of Moscow.

Toward the end of 1943, Tito turned again to Serbia. Arsa Juanovich found himself, with his men, face to face with the troops of Draza Mihajlovic at Kolinovik in eastern Bosnia. From the very beginning of the battle, Draza realised that he no longer was dealing with badly organized or poorly trained bands. He perceived that the hostile units had been trained by his former pupil Juanovich. He lost this battle,



A Group of Yugo-Slav Soldiers—Men and Women—in Trieste in 1945.



Yugo-Slav Partisans Resting During Wartime Operations.

known under the name of the "Fourth Communist Offensive." It should be stated, for his exoneration, that the Communists had a vastly superior force; 40,000 men compared with Draza's 16,000 men.

With the hostilities terminated, the communistic regime was installed in Yugoslavia, with the assent of the Western allies and with the military aid of the Soviet Army. Arsa Juanovich retained his title of Chief of the General Staff until the end of 1946. He, nevertheless, remained in the shadow. It is a known fact that he made several trips to the Soviet Union and that he obtained the rank of general of the army. Suddenly, in 1946, he was replaced as Chief of the General Staff by Kocha Popovich.

During the night of 11-12 August, 1948, after the unexpected split between the Cominform and the Belgrade Politburo, Arsa Juanovich

attempted to escape and cross the frontier in the direction of Rumania, but he was surprised by the frontier guards and shot.

Kocha Popovich.

Kocha Popovich's mediocre qualities do not explain his tenure of the important post of Chief of the General Staff. Scion of a rich industrial family of Belgrade, he conducted his studies in Switzerland with the Dominicans, and speaks French fluently.

Kocha Popovich was a member of the Communist Party before the last war, but, because of his background, he always was regarded as a "middle-class Communist."

The Yugoslav Army.

In the present world crisis, as in the period just after Munich, great importance is given to the power of the Yugoslav Army.

It is certain that the present Yugoslav Government makes the Army one of its chief concerns, but, because of the scarcity of information regarding it, it is difficult to determine precisely its combat value in the event of another war.

About the only information that is definitely known about the Army is that (1) it has great numerical strength, possibly 1½ million troops on mobilization; (2) the troops are robust, courageous, and disciplined; and (3) the officers and non-commissioned officers are energetic, the majority of them having been trained during the course of a merciless partisan war.

Combat Training.

This partisan war was carried on in very rough terrain and in extreme climatic conditions. The region, which is poor even in normal times, had been systematically devastated by all the forces that had fought there. On some of the axial routes, for example, it was possible to travel 60 or 70 miles without finding a building with its roof still intact.

The medical service out of supplies and equipment, could only deplore its helplessness. Many wounded men could not be cared for or restored to duty. The number of amputees was frightful.

It is easily understood how the men and women (there were many women fighting in the ranks of the partisans, with the same status as the men) after going through the military training are marked by it and solidly tempered for the rest of their lives.

The great commanders all distinguished themselves during these years of trial. A few of them, really a very small number, came from the former Royal Army, from which they transferred a few traditions to the new army. The others, the great majority, received their first military training in the international brigades in Spain.

Partisan warfare has no secrets for them.

War Material Varied.

Their material is extremely varied. It came, for the most part, from repaired weapons and equipment, and the spoils of war (German and Italian stocks taken during hostilities, and American, British and Soviet equipment obtained by Tito). The latter, however, are in small quantity, especially as regards aircraft, armoured vehicles, and artillery weapons.

The heavy industry and establishments capable of manufacturing arms and ammunition are still insufficient to supply the needs of a war. Nevertheless, the armament is being modernized and the infantry is being reorganized. Little by little, the artillery is being motorized. The Army now possesses about 100 heavy tanks, built by national industry, after the pattern of Soviet tanks.

On the other hand, the number of planes is insignificant. The fairly ambitious 5-year plan, which had been adopted with a view to the establishment of a war industry, has not been very successful, because of the difficulties arising between Yugoslavia and the Soviet Union.

Finally, the general equipment of the country is very rudimentary, in spite of the efforts made since its liberation. Nevertheless, despite the grave economic situation into which the country has been plunged, the soldiers of Tito's Army are suitably equipped, well clothed, and their food is sufficient.

Political Influence.

Although the majority of the Yugoslav Army is composed of men belonging to the peasant class, hence, in the main, hostile to communism, the officers are obliged to be members of the Communist Party.

The officers must attend military schools, but it appears that the results have not been outstanding.

Moreover, the Yugoslav Army, like the armies of the satellite countries of the USSR, has been given a thorough political education. It has been indoctrinated with Marxist ideology, with the view of using it, above all, for the defence of the Government rather than for the defence of the country. It is subjected, the same as in the Soviet Union, to severe surveillance by "political commissars."

Likewise, still following the example of the USSR, special courses in military education precede the obligatory military service, both in the cities and the small villages.

Summarizing, it may be said that the Yugoslav Army:—

1. Is the strongest army in the Balkans, both in numbers of combatants and in the ability of its officers and enlisted personnel.

2. Is well suited for partisan warfare.

3. Could not hold up under the weight of a major conflict, except within the framework of a coalition capable of furnishing it the arms and equipment which it lacks. This must be done continuously, even before it enters into the campaign.

With the exception of its special aptitude for partisan warfare, this verdict resembles that made, in 1939, of the old Yugoslav Army. Nevertheless, in 1941, one was surprised to see this army defeated in a week's time, not only because of a lack of material, but, perhaps, because of the absence of cohesion resulting from the Serb-Croatian differences.

This distressing story has no place here. However, one has the right to wonder if the present Yugoslav Army does not suffer also from a lack of cohesion comparable with that which was fatal to the Royal Army in 1941, and whether, on this account, it might not, in the event of another war, fall victim to a similar fate.

To be completely objective, we must call attention to still another weakness. Yugoslavia belongs to the Mediterranean basin by virtue of its Adriatic coast. This coast line is difficult to defend because of its length. The Yugoslav Navy is composed only of Italian vessels turned over as war reparations. In addition, the USSR, which has had naval bases in Albania for several years, maintains a permanent submarine force there. Thus far, Yugoslavia has devoted its efforts to build up the size of its merchant marine. The presence of Soviet naval units up and down the Adriatic coast, therefore, would constitute a grave danger in case of a conflict.

However, this danger is not the only one. In the present situation, three causes of discord reduce the value of the Yugoslav Army. These are:—

1. The differences between the Croats, Serbians, Macedonians, and Montenegrins.

2. The differences between the present directors of the country and their political opponents.

3. The differences between the partisans of Marshal Tito and those of the Cominform.

The Yugoslav Mosaic.

The Serbs continue to be embittered, for, up until 1941, they occupied first place in the country. They regarded Macedonia as being Yugoslav, calling it, at that time, "Old Serbia." Their fathers had conquered it in 1912, and it was, moreover, the cradle of the ancient Serbian Empire of the Middle Ages.

In addition, Yugoslavia in its entirety (which many Serbs would have desired to transform into "Greater Serbia") was the fruit of the heavy sacrifices of the Serbian Army from 1914 to 1918.

Today, Yugoslavia is split up into a federation of independent states with equal rights: Serbia, Croatia, Slovenia, Bosnia, Montenegro, and Macedonia.

Serbia has, therefore, lost its place of pre-eminence in the country, and it is now Marshal Tito, a Croatian, who governs.

Hence, the traditionalistic Serbians (and, aside from the Communists, they are almost all of that kind) are displeased with this new situa-

tion which has been created. It seems to them contrary to their best interests.

Their discontent is the more bitter because the attitude of the Croats in 1941, may be considered, as mentioned previously, as one of the causes of the disaster.

On their part, the Croats complain of having been persecuted from 1918 to 1941 (burdened with taxes, kept out of all important posts, and treated as suspects because they were ex-subjects of the Hapsburgs).

Their grievances, constantly kept before them during the period between the two wars by German, Italian, and Hungarian propaganda, drove them into committing anti-Serbian acts in 1941 and during the entire existence of the independent state of Croatia.

However, this deep-seated enmity of the Croats has been somewhat smoothed by Marshal Tito, thanks to:—

1. The federative form of government which he has given to Yugoslavia.

2. The care which he took to prevent any settling of accounts between Serbians and Croats at the time of the liberation.

Without question, the old quarrels are not yet forgotten. However, they are less talked about, for the people have other worries. In addition, the new generations, subjected as they are to official propaganda, nurse, a little less the pre-war grievances.

As for the Montenegrins and the Macedonians, they lose no oppor-

tunity for revenging themselves of the guardianship which the Serbs imposed on them.

The Montenegrins, generally speaking, are extremely pro-Russian and have rallied in great numbers around Tito since the beginning of his struggle for liberation and for the establishment of the Communist regime. Thus, some of them have ensured themselves of choice positions in the new army and government, which, obviously, antagonizes the Serbs.

The Macedonians show themselves openly hostile to the Serbs, who established themselves in that country after 1912. They still entertain the hope of forming some day, with Bulgarian Macedonia and Greek Macedonia, a "Greater Macedonia," entirely independent of Yugoslavia. They count on the rivalries which divide Belgrade, Athens, and Sofia to bring this about.

There is no need to stress the complexities of these problems. However, the firmness of Marshal Tito has prevented any of them from becoming acute.

Tito and the Cominform.

To the Western world, the differences between the partisans of Tito and those of the Cominform would seem to be a doctrinal quarrel. However, as a matter of fact, this is not the case with the majority of Tito's partisans, who know little of the Marxist doctrine.

These people follow the movement because of the promises which have been made to them of better standards of living for themselves and

their children. However, they are hostile to all outsiders—even though they be Russians and Communists—who come into their country and meddle with their affairs. They approve, therefore, of the firm attitude of Marshal Tito.

Naturally, these things are not viewed in the same light by the intellectuals. Their Communist training is thorough. They are strong converts of the Soviet Union; it is she who taught them the doctrine. However, with few exceptions they have remained loyal to Tito.

The political figures who are regarded as the most important workers in the field of communism in Yugoslavia—Mosa Pijade and Edvard Kardelj—have done likewise. In the Yugoslav Government, only two ministers, General Jujovich, Minister of Finance, and Hebrang, Minister of Industry, have declared themselves for the Cominform. Their arrest provoked no reaction. In the High Command, only General Arsa Juanovich deserted. When he was killed at the Rumanian frontier, he was in the company of Colonel Darchevich, brother of one of the most dynamic generals in the new Yugoslav Army. This general did not waver.

More astonishing, the High Police, although originally trained by Moscow and still making use of strictly Soviet methods, have employed themselves very diligently in unraveling all the intrigues of the agents of the Cominform.

In any case, the command controls remain firmly in the hands of Marshal Tito and his immediate companions, and no wavering ap-

pears to be feared, for the moment, among the subordinate officials.

Conclusion.

What conclusion are we to draw from this study?

Since his accession to power, Marshal Tito has had to face numerous difficulties. He has solved, or at least surmounted, all of them with rare skill and unflinching energy. Today, he is fighting against destruction and want. Doubtless, he will succeed in triumphing over these if the Western nations will but trust him.

To be sure, the situation is still extremely unstable. One weak point, a serious incident, or a false move, would be sufficient to throw everything into disorder again.

However, if this risk can be avoided, the new Yugoslav Army will constitute an instrument of war of undeniable worth, and, provided the West is able to supply the arms and equipment that it needs, it should play a leading role in the Balkans.

However, some individuals, finding that the present regime was established in Yugoslavia without true popular consultation, question whether the interests of the government and those of the people would coincide in the event of a war, and whether, on this account, the fight-

ing spirit of the soldiers would not waver. In short, would the Yugoslav Army oppose an invasion by Soviet or satellite troops with an effective defense or a solid front?

In our opinion the answer is yes!

After the painful experience suffered by Yugoslavia at the time of her "liberation" by the Soviet Army, it is certain that the Yugoslav Army would resist violently the Communist invaders—even though some of its officers, members of the Communist Party, revealed themselves, at that moment, as partisans of the Cominform.

The Yugoslav people are deeply attached to their soil; sentimental and faithful to their friendship with France. They retain the lively memories of the sufferings endured in common at the time of the trials of 1914-18, and have faith in the peoples of the West.

If the allies are capable of freeing them from their misery, of opening up vistas of more comfort and happiness, they will take their stand like a powerful barrier before the Communist tide.

Their army will be the pillar on which will be anchored the defense of the European Southeast, and the rampart which will halt the Soviet drive toward the Western Mediterranean.

ANTI-AIRCRAFT

in the

FIELD ARMY

Major V. M. Higgs, Royal Canadian Artillery.

A REQUIREMENT for anti-aircraft defence in the field army was appreciated even before the First World War. During that war, as has been the case ever since, equipment to cope with developments in aircraft and operational techniques lagged behind. Between the two major wars very little was done to improve anti-aircraft equipment until the German Air Force came into being and began to assume alarming proportions. About 1935 steps were taken to improve the situation and some advances were made. The 3.7-inch heavy anti-aircraft gun was developed, and Sweden began production of the 40-mm light anti-aircraft gun, better known as the "Bofors." These two weapons formed the basis of our anti-aircraft equipment during the Second World War.

This paper is intended to discuss the use of anti-aircraft (AA) in the past war, partly in the light of official reports and partly from the writer's own experience. Some

suggestions as to what the future may hold will be put forward.

Equipment.

Mobile equipment, as required by the field army, was of two basic types: Heavy Anti-Aircraft (HAA), for defence against high and medium level attack, and Light Anti-Aircraft (LAA), for defence against low level attack. Each type had its own fire control instruments, which in the case of HAA included predictors, plotting equipment, and later on as they were developed, radars. Predictors were developed for use with the Bofors (LAA), but, while they were efficient on static positions, training exercises soon proved that they would not stand the rough treatment of bad roads and cross-country travel. They were deleted from the LAA mobile establishments.

Other weapons used were searchlights, balloons, AA smoke, small guns of 20-mm. size, and, in the early stages, such weapons as the Lewis machine gun.

Two types of radar were developed. One was a long-range set capable of giving approximate target data which was transmitted by telephone to the control room. The second was a fire control set producing accurate information continuously for feeding directly into the predictor.

In addition to the towed version of the Bofors, a 40-mm Self-Propelled (SP) equipment was produced. It was well liked by all units, as it was much more mobile and did save considerable road space when at times this was at a premium. Personal experience indicates its greatest lack was the absence of a winch gear.

Many minor developments and modifications to equipment were made. Some were as a result of reports from users in the field and others purely to effect economy in production.

Perhaps the greatest single advance in AA ammunition was the introduction of the VT fuse. This was invaluable against air targets, and its use for air burst against ground targets was soon exploited.

Separate types were developed for the AA and ground role. The AA type was more sensitive and designed to function when it passed within 60 feet of an aircraft.

These fuzes eliminate the necessity for fuze setting and thus the normally expected errors arising therefrom.

Only a small percentage of AA type failed to function properly, but care had to be taken not to shoot too near any obstacle which would actuate the fuze.

The performance of the ground type was tremendously affected by weather conditions. In dry weather about 85 per cent. were found to function properly, while in a heavy rain and largely due to random bursts, only 30 per cent. correct results were obtained.

Employment.

It is the job of AA in the field army to ensure that enemy aircraft do not interfere with the plans of the Commander, to assist the air force to keep the air and to assist in the maintenance of fighting forces by protecting base supply ports and lines of communication from air attack.

A few examples of the protection tasks provided by AA are beach areas in the assault, base ports, base and advanced airfields, Line of Communication (L of C) tasks, field gun areas and infantry forming-up places.

As in other types of artillery, there are normally too many tasks for the number of guns available; the temptation to disperse the AA in "penny packets" has to be resisted and the tasks must be considered in order of priority. The best results are obtained by strong protection of vital areas of the highest priority and not by defending all vital areas with a sliding scale of AA according to their importance.

The AA organization is based on the principle that the AA tasks are of an area nature and all units can be moved independently of other formations to any area they are required. For example, to combat the flying-bomb menace in England they

were moved from all over the country and concentrated on this one priority task. At one stage in the battle a total of 536 HAA guns and 900 LAA guns were deployed. Again, 54 Bofors and twenty-four 3.7-inch guns were deployed for the protection of one bridge over the Volturno river when this was the only bridge in use.

The air defence of any area is an inter-service responsibility. The weapons are the fighters of the air force and the AA guns of the army. The degree of responsibility of each will vary, on the different levels, from Army Group down to Division. Rules and regulations, known as "Operation and Procedure Instructions," must be worked out in conjunction with the air force formation concerned. These instructions dictate the policy for the use of AA and the over-riding operational control must be exercised by the air force Commander.

At Corps and Divisional levels, AA comes under the direct command of the artillery adviser to the formation Commander concerned. Whenever possible, these AA units should be linked up with any other air defences in the area and actual fire control exercised from a central control room.

After the D Day landings, the main use of HAA in its primary role was the protection of the beaches, ports and key centres. A typical example is the defence of the port of Antwerp. Here, five HAA regiments, 10 United States AA gun battalions, along with 40 searchlights, were deployed. This layout was supplemented with a number of LAA batteries and had an early warning system which ex-

tended, in the later stages, as far as S'Hertogenbosch in Holland and Aachen in Germany.

Up to the time of the battle for Falaise, LAA units did a reasonable amount of AA firing. Several enemy fighter and reconnaissance planes were shot down over the Normandy battlefield, and during construction of the bridge over the Orne river at Caen a LAA barrage was set up, designed to prevent enemy night reconnaissance of the site. It succeeded in driving the aircraft up beyond the range of the guns. In organizing this barrage, the greatest difficulty was one of inadequate communications. The R 109 receiver was unsatisfactory for picking up broadcasts from the control room.

After the battle of Falaise very few enemy aircraft were seen until the appearance of the jet-propelled fighter late in the fall of 1944. First attempts at engagement of these very fast targets were apt to make LAA gunners despair and imagine that the days of the Bofors were over. However, experience showed this was not the case if conditions favoured the gunners. The writer personally saw a jet fighter shot down by a LAA gun. On being engaged, the aircraft turned to dive on the gun position and in so doing approached at such an angle as to make engagement with Bofors possible. However, the times when these circumstances will occur are very few in number and should be regarded as the exception rather than the rule. The great lesson learned by the gun detachment was that, given favourable circumstances, their gun could cope with jets.

In circumstances where air superiority has been established and there is consequently a surplus of AA guns, they can provide a useful addition to the fire power of corps and divisional artillery.

A ground role for HAA had been envisaged before the Normandy invasion, but it was then expected that units would only be called on to do simple tasks and would be under the command of a field or medium regiment. This did not turn out to be the case and many units were actually asked to undertake all the tasks of a field or medium regiment. Sometimes they were the only artillery in support of operations. This necessitated, insofar as was possible, an adoption of field artillery procedure. The only major differences were due to differences in equipment.

The use of AA guns against ground targets evolved as the air battle went into its dying stages. The 3.7-inch gun proved completely successful in this role and no trouble at all developed in the equipment. It was soon discovered that the sighting arrangements were not suitable and field artillery dial sights were fitted. These proved satisfactory, simplyfying the laying of the gun and saving a great deal of time in shoots controlled by an Observation Post, since orders from the OP could be passed direct to the gun. The only difficulty was in the additional training required by the layers for this role and in providing some suitable lighting arrangement for use in night firing.

The HAA gun proved completely successful in the ground role. The most important lesson learned was that guns could not be sited to per-

form a dual role. The layout of communications and command posts is entirely different in the two roles. A HAA unit deployed in the AA role could take part in fire programmes provided ample warning was given, but could not be ready, at any time, to answer calls for fire and to engage aircraft without serious loss of efficiency in both roles and a great strain on personnel.

The possibility of using LAA guns in ground tasks, other than the anti-tank role, had not been foreseen. Thus, when the opportunity presented itself, equipment had to be improvised. The basic need was for some means by which the guns could engage targets by indirect fire, i.e., a reasonably accurate means of laying the gun for line and elevation. Most of the equipment was produced in local workshops and a good measure of success was obtained. This improvisation resulted in a great deal of variation from unit to unit and, finally, to ensure standardization, a workshop instruction was issued and stores were manufactured under Army Group arrangements. The results were fairly satisfactory, but the complete answer to the problem has not even yet been produced.

LAA guns proved effective against certain types of targets, and were often employed in the ground role. Among tasks carried out successfully by Bofors were harassing fire, destructive shoots on Observation Posts and pill-boxes, setting buildings on fire, directional fire for night attacks and participation in lightweight bombardments.

Because of the limited range and

flat trajectory of the weapon, many difficulties were encountered in selecting suitable gun positions. Guns were not normally sited closer than 3,000 yards from the target area.

For most types of target the SP guns were more satisfactory than towed guns. The SP was more difficult to conceal and more vulnerable to enemy fire, but could get into a position and out of it quickly. It was found advisable to evacuate a position immediately after a shoot, since the gun could be readily located from the tracer of the shell.

Personal experience in the conduct of several shoots has allowed the writer to draw the following conclusions regarding AA in a ground role:—

1. In directional fire tasks, some means must be developed to keep the gun on its fixed line.

2. The gun cannot be used as a heavy machine gun. This was tried near Antwerp and in 15 minutes two of four guns were put out of action by enemy fire. Of the 12 men on the two guns, five were casualties.

3. Excellent results can be obtained by shooting in the windows of buildings and through the slits of pill-boxes, but the engagement must be limited and the position evacuated immediately.

Training.

Once a unit has attained a satisfactory standard of training and has joined a field army formation, it can best maintain that standard by frequent operational shooting. If officers ensure that every small weakness is rectified immediately after a

shoot, there are scarcely any training difficulties.

When enemy targets are rare, units must be periodically withdrawn for firing practice. Targets are also needed so that they can shoot regularly from the gun positions.

Training expedients and aids can be improvised and good value obtained therefrom for HAA units, but for the LAA gunners little can be accomplished without air co-operation.

As in every other type of unit, team work is the secret of all success in dealing with hostile aircraft. Perfection in the functioning of the AA team can only be attained by regular and continuous training.

The Future.

Our potential enemy can and will make use of all types of aircraft in his attempt to interfere with the operations of the field army. These types will probably include strategic bombers capable of flying up to 60,000 feet, tactical bombers and ground attack aircraft. Either jet engine or piston engine or both types will be used. The main weight of attack by tactical bombers will probably be delivered from heights up to 25,000 feet.

To meet the threat from the types of aircraft above, it will probably require three types of AA guns—a Heavy Anti-Aircraft gun, a Medium Anti-Aircraft gun and a Light Anti-Aircraft gun. The heavy weapon would be designed to combat strategic bomber types, the medium for tactical bombers and the light weapon for use against both tactical bombers and ground attack

aircraft flying in the height band from 0 to 10,000 feet.

The Allies used both heavy and light bombers in direct support of ground forces during the last war. Thus, it is reasonable to suppose that, in a future war, an enemy who would presumably be superior in the air at the start would do the same. We can, therefore, envisage attacks on our divisional areas by

both strategical and tactical bombers.

This would indicate a requirement for something much better and much heavier than the Bofors in direct support of our divisions. One answer might be to have both the suggested medium and an improved light AA weapon organic to corps and/or divisional establishments.
