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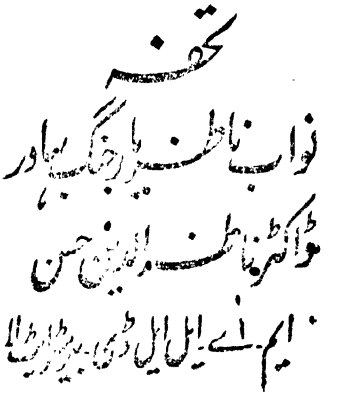
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IMPERIAL DEFENCE

A Problem in Four Dimensions

by

MAJOR-GENERAL H. ROWAN-ROBINSON



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PREFACE

WE are a vast Empire journeying through Time. Whether we endure one thousand or two thousand years depends mainly on our own efforts. "Our acts our angels are, for good or ill." We must pray for peace and seek to ensure it. We must keep watch and ward: watch lest our spirit quail and our hands lose their cunning; ward lest at a sudden blow we sink to poverty, to insignificance, to anarchy. For watch and ward, in this world of racing progress, the need is renewed and emphasized with every change of conditions.

The Empire has reached the condition of satiety. That is the danger line. Man is, psychologically, more acquisitive than retentive. The urge within him is to advance rather than to "stay put". Morally and intellectually he is more highly inspired in the planning of fresh conquests than in designs of consolidation. Moreover, the latter requires a new technique.

In the present case, it demands on our part intensive action: first, in the armouring of vital organs and, secondly, in the enrolment of flexible forces and in the strengthening of internal communications so that, far-flung as is the Empire, it may yet be possible to concentrate power upon any of its borders.

Our tendency is, however, not towards intensive action but rather towards complacency and relaxation of the grip. It is the best of all possible worlds, we say, and in it we are top dog. Why then bother?

This attitude plays an essential part in a common but avoidable cycle of affairs. The hardy and indigent

nations look greedily at the rich empires. They bring their manhood to the pitch of physical perfection. They inculcate the virtues of frugality, self-sacrifice and patriotism. Long hours they slave at the making of weapons. Then, as they reach the peak of their power, they strike. With them is the psychological benefit of attack and the advantage beyond price of the initiative. On the other hand, the possessor-nations have the compensating factor of wealth, which should enable them, given a sound spirit (and that they cannot buy), to keep such watch and ward as will deny to potential aggressors the probability of success.

It is clear, therefore, that the governments of possessor-nations bear a heavy responsibility. They must struggle continually against the inclination to apathy and must keep the spirit of the people and the national defences keyed up to concert-pitch.

Yet it is difficult for them to arouse the necessary enthusiasm on such slogans as the championing of democracy, the retention of property or the maintenance of a standard of living.

Another change of conditions is the emergence and continuance in office of dictators. Here the significant fact is not that totalitarian states are more aggressive by nature than democracies. Neither Mustapha Kemal nor Reza Khan as dictators have attempted to extend their boundaries; whereas the democracies of France and Britain, in building their empires, displayed an acquisitiveness almost without parallel. The crucial features of the totalitarian states are their efficiency for war, their power of seizing the initiative, of quick decision, of control of the whole national machine both in preparation for action and in its direction to long-considered ends. In the German invasion of Austria, what shocked the democratic countries was not the stroke itself but its unexampled efficiency.

The true instrument for enforcing the will of the

people by war is the state. In a democracy it is ruled by conference, in a totalitarian state by a commander. Now one of the oldest postulates of victory has been that command shall be undivided. Advice rendered by councils of war, plans prepared by general staffs, are the appropriate preliminaries to a decision; but, for that decision one man—the commander, must be responsible.

All attempts, such as those of the Aulic Council, to direct campaigns by conference have proved lamentable failures. It is clear, therefore, that a dictator, as the unchallenged head of a state, possesses a great advantage in this respect. He has the further advantage of being able, should he so desire, to prepare his people for war in such strength and at such time as he may choose.

These two changes of conditions, therefore, require the British Empire to face dangers which are due, on the one hand, to a natural apathy of its members caused by satiety and, on the other hand, to the extreme efficiency of such potential enemies as have adopted the totalitarian creed.

With regard to the latter point, as we have no desire to alter our political system which, except as an instrument of war, is admirable, we must, if we are to preserve it, remedy its defects in respect to defence by adjusting governmental powers so that they may acquire the capacity for quick decision without the sacrifice of parliamentary responsibility.

There is yet a third change of condition, perhaps the most important of all—namely, the entry into warfare of instruments capable of movement in three dimensions. Certain totalitarian states, which happened to be also needy states, were early seized of the tremendous powers that might be exerted by the aeroplane and the submarine, especially the former. With their amazing efficiency, they succeeded in creating great air-fleets while we, wrapped in insular complacency, were content with a few police-squadrons.

The shock of Abyssinia and its connected crisis in the Mediterranean, the shocks in China and Austria, together with the fulminations of hostile propaganda, have stirred us from our slumbers. We are now beginning to realize our peril.

At all periods, the great conquerors have said: "Ask of me anything but time." With the advent of aircraft, and to a less extent of mechanization, the value of that factor has doubled, quadrupled, become infinite. It is measured no longer by hours but by seconds. From Cæsar to Napoleon, the relations between time and space remained unaltered. Then the introduction of steam and the telegraph led to a condensation of space. The new age sees that process continued in precipitate fashion by the internal-combustion engine and by radio.

The author, therefore, while venturing to explore the dim lands of tri-dimensional strategy, has included in his title and in his thesis the fourth dimension,[1] because a full understanding of the value of time on the part of totalitarian governments and a marked failure to appreciate it on the part of the great democracies appear to him to present perhaps the greatest military danger of the day.

His book represents an attempt to point out the possibilities, the potency and the pitfalls of the new conditions of warfare and to indicate that though, in seeking solutions to the fresh problems which they create, we may have to base ourselves on fundamental and age-old principles, we must at the same time rid our

[1] *Space, Time and Gravitation*, by A. S. Eddington (Chap. III—"The World of Four Dimensions"), Cambridge University Press.

The distinction between horizontal and vertical is not an illusion; and the man who thinks it can be disregarded is likely to come to an untimely end. Yet we cannot arrive at a comprehensive view of nature unless we combine horizontal and vertical dimensions into a three-dimensional space. . . .

Similarly, by combining the *time-ordering* and space-ordering of the events of nature into a single order of *four dimensions*, we shall not only obtain greater simplicity for the phenomena in which the separation of time and space is irrelevant, but we shall understand better the nature of the differentiation when it is relevant.

A point in this space-time, that is to say, a given instant at a given place, is called an "event".

minds of a variety of thickly-encrusted conventional conceptions not only of strategy but even of life itself.

The first few chapters deal with warfare in two dimensions, that is, warfare, except as regards the mechanization of the army, as we knew it until the end of the nineteenth century; and, from that relatively ancient history, they seek signposts which may guide us in the maze of the new problems. The later chapters are devoted, under that guidance, to the study of the effect of the aeroplane and the submarine on strategy in general, in the navy, the army, the air force and on the home-front.

The thanks of the author are due to the Editors concerned for permission to reproduce " The Art of Command " from the *Journal of the Royal Artillery*, and " Some Aspects of A.R.P." from the *Royal Air Force Quarterly*, to Inst. Commander C. R. Benstead for producing the sketches, and to Mr. William Piercy for his kind advice on the subject of finance and economics.

CONTENTS

Preface *page* viii

PART I

Strategy in Two Dimensions

Ch. I. War: its Nature and Study *page* 3
II. The Principles of War 11
III. The Principles of War (*continued*) 31
IV. The Art of Command 61
V. Mechanization 74
VI. Maritime Strategy 100
VII. Co-operation 111

PART II

Strategy in Three Dimensions

I. The Submarine 119
II. The Aeroplane—Past and Present 128
III. The Aeroplane in the Future 143
IV. The Navy and the Air-Force 157
V. The Army and the Air-Force 178
VI. Co-ordination 189
VII. Anti-Aircraft Defence 210

CONTENTS

PART III

THE HOME FRONT

Ch. I. The Industrial and Economic Front *page* 225
II. Air-Raid Precautions 249

PART IV

SOME PROBLEMS OF IMPERIAL DEFENCE

I. The Army 269
II. Palestine. The Mediterranean 282
III. India. The Far East. Australasia 299

PART V

GENERAL

I. Policy 311
II. Conclusion 323
Appendix: List of Proposals 329
Bibliography 333
Index 337

PART I

Strategy in Two Dimensions

CHAPTER I

War. Its Nature and Study

The Nature of War

" War is a dreadful and impassioned drama."—Foch.

THERE are numberless definitions of war. To the ordinary man, it is an armed struggle between states on behalf of what they regard as their vital interests. The definition most quoted and most discussed is that of Clausewitz: that " War is not merely a political act, but also a political instrument—a continuation of policy by other means." He intended to convey to the mind of his readers that a government in pursuit of a policy, if unable to overcome opposition by other means, such as friendly consultation, diplomatic and economic pressure, would eventually turn to war for the achievement of their purpose. The value of the pressure applied depends on the national potential for war that lies behind the policy. A government disposing of a relatively high measure of strength, material and moral, would usually find its pressure effective without recourse to arms; for the opposing government would not expose their country to certain defeat without going at least to the limit of reasonable concession.

There is a prospect that the pressure of states, whose interests are not immediately engaged, will deflect the continuation of policy from the direction of war to that of conciliation and arbitration. To this end, the nations, harrowed by the ghastly tragedy of the Great War and desperately anxious to avoid the possibility of another

such catastrophe, created the League of Nations. For reasons beyond the scope of this book, the experiment has not proved an unqualified success; but the lessons learnt from its failures may enable the League to be rebuilt on firmer foundations and thus eventually achieve its noble aims. At the moment, however, war—not arbitration—remains the continuation of policy.

Aggressive totalitarian states, not having been able to obtain redress through the agency of the League of what they regard as their wrongs, are bitterly hostile to that body and go even further than Clausewitz in regarding war as the ultimate instrument for effecting change.

Ludendorff, in *Der totale Krieg*, goes so far as to define peace to be " the continuation of war by other means; the preparation of a new war ". Hitler and Mussolini use the armed and mobilized state as a pointed pistol with which policy is conducted in the first instance—and they keep finger on trigger and aim on target. The threat of war hangs over negotiations from the outset. Actually, in their proceedings, there is no great change of principle involved; for force has always been the ultimate argument in international affairs. But the veil is torn away and naked facts stand out unashamedly. Nations are to be trained with the hard purpose, overriding the claims of comfort and culture, of establishing by force their political and economic demands. Guns before butter. But, after the guns, then the butter.

The phenomenon is only another manifestation of the struggle for existence, of wielding iron to win gold. Neither we nor other sated powers will avert the conflict except either by a redistribution of possessions, which to be of value would need a reorganization of territory likely to take years to envisage and prepare, or by presenting a national front so strongly organized as to deprive a potential aggressor of the temptation of easy prey.

The difficulty in the former method is that it requires either an abundance of goodwill—a quality sadly lacking

at present in international affairs—or a submission to threats, which would result in the end in the bulk of the possessions passing to the hands of the needy nations and thus merely mark the beginning of new struggle for restoring the balance of property.

The latter method, though immediately essential, provides only a transient remedy. For it is not to be supposed that peace-loving nations will stand for ever prepared: they will weaken some day to the call of a specious pacifism and will be overwhelmed. Nor that huge armaments can exist for long without some risk of explosion of parallel magnitude.

The best that the possessor-nations can do in the matter is not to treat the two methods as alternatives, but to work them together, strengthening their forces so that they need not yield to threats, and at the same time cultivating harmony in international relations. Then, when concessions are made, they can be seen to spring, not from weakness or from fear, but from strength and goodwill.

War is so deep-seated and so firmly embedded in our social order that it can be eliminated only by a lengthy process of education. The responsibility for instruction must lie in the hands of the possessor-nations, for with them alone lies the power of relieving wants. And for the fulfilment of their task they must have not only strength in their arms but also faith in their hearts.

. . . . . .

It has become a platitude to say that war will be waged in the future by the nation as a whole, by its merchants, its farmers, its financiers, as well as by its sailors, soldiers and airmen. This, however, is no new phenomenon. Tribal warfare of old was a struggle between tribe and tribe, in which the defeated of both sexes and all ages were usually put to the sword. To avert such a tragedy the tribes-people were certain to deploy their full powers however elementary they might be. Similarly, in the

great sieges, every inhabitant, man, woman and child, was given his part to play. There have indeed been times when nations have confided their protection to relatively small professional forces. But that was due, apart from special conditions, largely to the impossibility, owing to the paucity of roads, of supplying large numbers; and, even so, the struggle was still one of nation against nation, for the people had to be heavily taxed in money and products in order to pay and provision their mercenaries. By Pultawa, Charles XII, and, by Malplaquet, Louis XIV had completely exhausted the resources of their respective countries. France owed much of her military success to Danton in the early days of the Revolution, in that he marshalled the full force of the nation behind the Republican armies. And it was not until Wellington had organized the men and material of the Iberian peninsula, that he was able to give endurance as well as point to his blows.

Countries protected by the sea were once in a privileged position. Their battleships were their fortresses. For some four centuries Britain was guarded by a dominant fleet. She was absolved thereby from the need of maintaining a powerful army, and she was able behind her shield to develop and conserve the commercial and industrial strength which proved so valuable in 1914. That strength is still a continuing asset, particularly precious now that she, too, through modern conditions, has lost her immunity from direct attack, and will have to conduct her defence with every instrument—financial and military—at her command.

There are various kinds of war: offensive and defensive; static and dynamic; limited and unlimited; great wars and small wars. It is difficult to say at the outset which of these forms, if any, hostilities will take. War is a game played without rules, in which the penalty of defeat is surrender or destruction. It is a hard and

barbaric business. Many attempts have been made to civilize it, but without success. Nations have indeed accepted restrictions with regard to the use of dum-dum and explosive bullets and to the sanctity of the Red Cross; and they observe them. These are matters, however, which cannot make the difference between victory and defeat. Where the restriction concerns a weapon of decisive nature, no nation in a desperate extremity will hesitate to use it.

Clausewitz holds that—"War should not be included in the domain of the arts and sciences, but rather in the sphere of social life. It is a conflict of vast interests, which is solved in blood, and only in that respect does it differ from other contests." That is true of war but not of its conduct. The conduct of war is both an art and a science. The art lies in leadership—in the quick grasp of situations, in the seizure of opportunities, in the weighing of risks against prospects, in penetrating the fog of war, in dominating and magnetizing fellow-men. It yields to no regulation. The science lies in technique—logistics, engineering, gunnery. . . . Napoleon was a consummate artist. Berthier, his chief of staff, was a scientist.

The Study of War

"Savoir d'abord pouvoir ensuite.

It is difficult to disentangle the real truths of war. They are submerged under floods of emotion: the excitement caused in the recorder by the event; patriotism or ideology; romance; the vanity of the commander; the exaggeration caused by the uplift of victory or the depression of defeat.

A friend of the writer was training his platoon in the writing of messages. Secretly he staged a barrack-room scuffle and then demanded separate reports from the witnesses. Although the incident occurred at close range, in familiar surroundings and was fresh in the mens' minds,

and although the persons concerned were known to everyone, nevertheless, all reports differed, some in essential particulars. It is not therefore to be expected that records of desperate fighting, drawn up perhaps long after the battle, will be accurate.

As to romance, the spotlight follows the leading actors, the most striking events. The slow, tough fighting, the horror, the atrocities, the unending struggle with lack of food, cold, mud and fever, which between them build up the bulk of war-like experience, are omitted from the tale. And, in curious fact, they fade quickly from the memory, the sense of achievement, of obstacles conquered, and of glowing comradeship alone remaining. After victory, the conquerors tend to vaunt their valour, to minimize their own numbers and to magnify those of their opponents; while the vanquished spread rumours of overwhelming disaster, attributed to every kind of misfortune except failure on their own part in courage or skill.

Then there is propaganda, which, if it does not distort history, at least creates an atmosphere tending to its distortion whose effects last long after the operations it influenced have ceased. A high standard of accuracy was observed by the German historian in the days of the Republic, but its continuance is hardly to be expected under the present regime, which is raising the pride of the nation by glorifying its achievement in every sphere.

During the war, the records of the long spells of trench-warfare were scrupulously, not to say verbosely, kept; whereas those of the battle-periods, especially where the fighting was of a desperate nature, were, if preserved at all, often sketchy and difficult to understand or even decipher. Gaps in the official records had to be filled by the use of private letters, by communications with survivors concerned, and by deductions from the psychology of commanders and their troops, and from the nature of the ground and weather.

It is on such foundations as these that the history of

war is built. They are not entirely satisfactory, but on the whole they suffice. The details which vanish are not important and grow less so with the rapid change of weapons. The broad features stand out, and they can be checked as to time and place by their repercussions on contemporary events.

There is one thread which runs through all history and on which study can profitably be concentrated. It is the human factor. The soldier of the past and the soldier of the present have much in common, as have also the soldiers of various nationalities. The man is the same in all elemental qualities. There are certain things to which he is sure to respond—firmness, quick and confident leadership and sympathetic treatment. The study of armies in the mass is a more complex affair. Except for the operations of mob-psychology, which affect all large groups, and which give the man when in mass a higher potential both of fear and courage, it is dangerous to derive lessons from the behaviour of armies of one race and apply them without qualification to the armies of another, for racial characteristics have a marked influence in war. The same warning may be uttered with regard to applying lessons deduced from the actions of armies of the past to those of the present. The changes in social conditions generally—in political creeds, in education, in standards of life, in amenities—must be borne in mind. They have altered life and, among the fortunate nations, made it more precious, interesting and exciting, something to be lived fully, pleasantly and materially. The soldier of to-day is likely to be quicker in the uptake, more equal to command, more critical, less idealistic and, if the product of industrial regions, less tough and enduring than his predecessors. The degree of change may vary with different nations. For instance, the youth in countries ruled by totalitarian governments lead harder lives and have the military and more primitive qualities drilled into them from childhood upwards.

The study of war thus includes the study of the soldier, individually, racially and collectively. The soldier of the past and racial effects can be studied in books. Individually and collectively the soldier of the present can best be studied on the spot by the young officer in his platoon or company. 'Separation grows with rank.' Commanders of battalions, brigades, divisions, progressively lose touch with troops. The subaltern should remember this and make the most of his intimate companionship with his men while it lasts.

There is another permanent element in war, namely, that success therein is largely dependent on comprehension of and adherence to certain principles or modes of action. Some of them—the value of the offensive, of surprise and of co-operation—owe their permanence to direct connexion with the human factor. The offensive is enlivening to the assailant and depressing to the assailed. Surprise disarms the mind and causes panic. The co-operation of others and co-operation with others is stimulating and makes true arithmetic of human powers. The principles in general will be treated in a separate chapter. There is nothing abstruse about them. We apply them in almost every game that we play. The manner of their application does, however, vary from age to age, from plain to hill, from land to sea, from one situation to another.

The ephemeral, fleeting subject in the study of war is that of weapons—their growth and the effect of science on them and on their application. It, too, demands a chapter of its own. The man and his weapon are respectively the human and material factors of the instrument which the commander has to handle. "The problem is to combine man the unchanging, with the implements . . . he ceaselessly spawns to his bewilderment." [1]

[1] Major J. H. Burns, "The Great Delusion", *Infantry Journal*, U.S.A., Nov.–Dec., 1937.

CHAPTER II

The Principles of War

" Les formes évoluent, les principes directeurs subsistent.

STRATEGY and tactics combine to form the art of the commander. The theatre of war is the province of strategy, the field of battle the province of tactics. Strategy is the art of making the best use of time, space and force. It seeks to place an army in a tactically favourable position, whereby an adversary may be compelled either to fight at a disadvantage, or to retire renouncing certain benefits or, in the worst case, to surrender. The best strategy is, however, of no avail if followed by tactical defeat. In 1800, Napoleon's strategy in North Italy was perfect, but it would have profited him nothing if his faulty tactics at Marengo had brought him defeat, as they very nearly did. In open warfare, strategy always precedes tactics. In position warfare, on the other hand, tactics to a great extent come first, for tactical penetration is necessary before strategy can have full play. That was why Ludendorff attacked Gough, who held the weakest sector on the British front. Penetration might have opened up higher prospects for strategy elsewhere, but only on the front of the Fifth Army did penetration appear possible.

The principles of war concern both strategy and tactics. They derive from a study of the campaigns of the Great Captains of history. They are, more correctly, modes of action which have normally proved successful. They are in no sense rules, for famous leaders themselves broke them at times without penalty. A close study of history

will assist the embryo commander in judging the rare occasions on which they may be ignored with impunity. They are simple to learn, but both study and practice are needed for their correct application.

They are eight in number: maintenance of the aim, concentration of effort, economy of force, the offensive, surprise, security, mobility and co-ordination. They, to some extent, explain themselves, but definitions and examples may clarify their meaning.

In the first principle we must be clear as to what we understand by the word "aim". The *ultimate* (aim or object) is said to be the "restoration of peace on satisfactory terms".[1] The *political* object is the breaking of the enemy's will to resist. It may be given a narrower definition, such as the suppression of a rebellion, or the conquest of particular territory. The *military* object must in the first place lie within our power; that is, we must strike a sound balance between the end and the means. It may coincide with the political object, but is generally more limited and more closely defined: the protection of the Suez Canal, the capture of Baghdad, or the destruction of Zeebrugge—in which case it is usually termed the "objective". The principle involved in its maintenance is that, once the aim is settled, all efforts should be continually directed to its attainment. The pressure must never relax. Our military object in 1900 was the destruction of the Boer army in the field. Unfortunately, having captured Pretoria, we thought that the war was over and gave the enemy a breathing space by which he profited so much that he was able to continue the struggle for another two years.

Two warnings may here be uttered in this connexion: the first that the maintenance of an aim does not imply the reckless pursuit of it; for it may often be necessary to organize ground won as a jumping-off board for a further advance, consolidating gains and mobilizing fresh forces

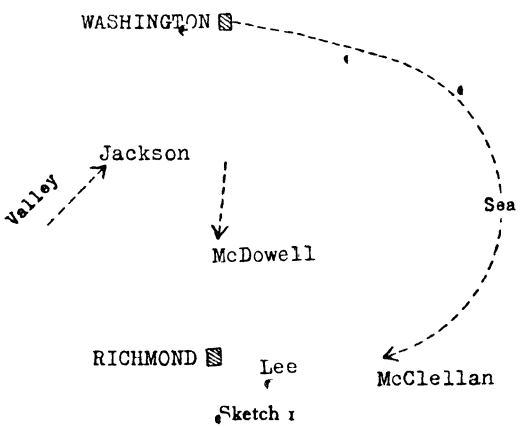
[1] Maurice, *British Strategy*, p. 68.

before making the new spring. The second is that expressed by William Pitt in 1801: "I do not know a more fatal error than to look only at one object and obstinately to pursue it, when the hope of accomplishing it no longer remains."

The principle of concentration implies that all available effort should be concentrated to achieve the decisive purpose. That generally means the application of maximum force—moral, physical and material—at the decisive time and place. But not always, for two reasons: the one, that dispersed and simultaneous pressure may be preferable to concentration, an instance of which being the employment of our Indian troops in the eastern rather than the western theatre during the Great War; the other, that the destructive effect of weapons, especially of aircraft and long-range guns, is rendering concentration to a point increasingly dangerous. Napoleon used to say that God is with the big battalions; and also that "the art of war may be reduced to a single principle—to unite on a single point a greater mass than the enemy". He himself was the high priest of the principle and its most famous exponent. Yet he would have been the first to recognize that modern conditions had rendered massing dangerous. The finest example of the application of the principle in the war was the concentration effected by Ludendorff of a million men and 10,000 guns and mortars against the 370,000 men and 6000 guns of Gough and Byng. In Palestine, for the battle of Megiddo, Allenby converted a general superiority in the theatre of war of three to one to a superiority of five to one at the decisive point. As will be shown later, however, concentration, to be effective, requires the simultaneous application of most of the other principles as well.

The principle of *economy of force* is complementary to that of concentration, as the very fact of concentration in one area implies that other areas must be denuded. It is applied in two ways: the first, to reduce to a minimum

all detachments engaged on duties not contributing directly to the decisive purpose; the second, to cause the enemy to dissipate his forces. The classic example of the application of the principle is that of the Confederate operations in Virginia in 1862 (Sketch 1). McClellan, the Federal commander, having moved by sea from Washington to the York Town peninsula, threatened Lee at Richmond with overwhelming force; and other troops under McDowell were hastening by land to assist him. It

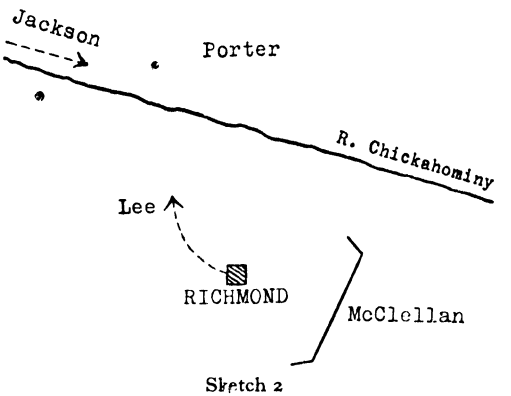


Sketch 1

seemed quite on the cards that the main Confederate army would be surrounded in the capital and forced to surrender. But Lee was in no way daunted. He guessed that Washington had been left weakly guarded, and he knew how high a symbolic importance was attached to it by the Northerners. He therefore dispatched Stonewall Jackson with a detachment to the Shenandoah Valley with orders to threaten the Federal capital from that direction. Jackson, handling his force with the greatest skill, caused great consternation in Washington. McDowell was hurriedly recalled and ordered to deal with the intruder.

In the meantime McClellan (Sketch 2) had dangerously divided his army by sending Porter with 34,000 men across

the Chickahominy to reach a hand to McDowell. Lee at once seized the opportunity afforded by this mistake. Economizing his strength by the use of the spade, he left 27,000 troops in entrenchments opposite 75,000 Federals, crossed the river, and, with the help of Jackson, who arrived back from the valley in the nick of time, overwhelmed Porter. The combined forces then turned against McClellan, defeated him, and drove him to the sea. Lee, though weaker by far than his opponents, had,



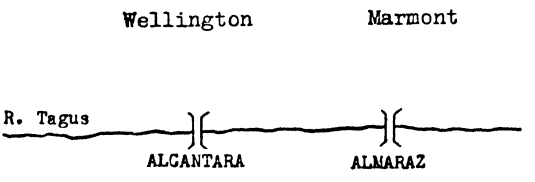
Sketch 2

by a skilful economy of force, managed to concentrate superior force at the decisive time and place, and thereby won important victories.

Obstacles may often be exploited with a view to economy of force. In 1812, Marmont and Soult lay respectively north and south of the Tagus (Sketch 3), and were connected by the bridge at Almaraz. Their combined forces were greatly superior to the British-Portuguese army. Wellington, wishing to defeat Marmont, ordered Hill, who was watching Soult south of the river, to destroy the bridge at Almaraz, and then to repair a broken bridge at Alcantara. There was no other bridge within 150 miles east of Almaraz and Soult's bridge-train had been captured at Badajoz. Hill succeeded in his task and thereby changed the whole situa-

tion. Soult was now fourteen marches farther from Marmont than Hill was from Wellington. The British commander with his flank secured and with a slight superiority of numbers then attacked Marmont and defeated him at Salamanca.

Psychology plays an important part in the application of this principle. For instance, before Montenotte, Napoleon, realizing that Beaulieu was no thruster, detached only one and a half weak brigades against him. On the other hand, before Waterloo, he detached a strong army corps to hold off Blücher, for he had had experience of that old warrior's resolution.



Sketch 3

Surprise is rather an instrument than a principle. It is the keenest weapon in the armoury of the commander. It aims at destroying the mental balance of the hostile leader and that of his troops and thus reducing their combined power of resistance. It is most potent where it causes panic, an effect which has repercussions far beyond the confines of the battlefield. It may be achieved both in preparation and action: in preparation, by intensive development of the national spirit, the national physique and the national industries devoted to the production of war material, by arrangements for quick mobilization and by the introduction of unexpected forms of training and new weapons; in action, by the discard of the obvious, by secrecy, by clever ruses (and by avoiding their repetition) and by exceptional mobility.

Surprise is envisaged mainly as an instrument of

attack; but it is almost of equal value in the defence. The ambush is one of the oldest and best-tried stratagems, and there is no operation more frequently quoted than that of Torres Vedras, where Massena, fully expecting to drive the English into the sea, was suddenly brought to a halt by lines which Wellington had constructed secretly some months previously.'

Colonel Henderson tells us that " Surprise was the foundation of almost all the grand strategical combinations of the past as it will be of those to come. The first thought and the last of the great general is to outwit his adversary and to strike where he is least expected." And this truth should apply not only to generals but also to commanders of every grade in every service. In fact, it is almost safe to say that plans should be judged by the extent to which surprise enters into them. Schemes for attack should be elaborated, whose apparent impossibility must be overcome by meticulous organization.

It will be remembered that, on the Western Front, we used to give notice of forthcoming attacks by pounding the enemy's positions for weeks beforehand, thus enabling him to bring up reserves and to build new trenches, with the result that the operations would close with the capture of a few acres won at terrible cost. Then, late in 1917, and throughout 1918, the factor of surprise was reintroduced. The " survey " system enabled guns to open fire without previous registration. The bombardment began near the zero hour of the assault and, consequently, the enemy had no time to execute the counter-measures required for dealing with the superior forces concentrated against him. Victories such as Riga, Caporetto, Cambrai and the 8th August resulted. But, without this surprise-fire, the immense labour, the skilful stratagems, the intense secrecy employed in effecting concentrations at potentially decisive points would have been rendered null and void.

As with the other principles, certain warnings are needed. The first is that both technical and tactical surprises should be effected on the grandest scale possible, every effort being made to render them decisive, not only through the surprise itself, but through its exploitation. The opportunity may not recur, for action is followed by reaction, antidotes grow and succeeding applications of stratagems and new weapons have a weakened value. The premature and tentative employment of gas and tanks in the war is an oft-quoted case in point. The second warning is that the temptation to technical surprise should be resisted when the new instrument is likely to act as a boomerang against the side which introduces it. Thus the Germans made a mistake in introducing gas when the prevailing wind was from the south-west.

The *security* of a force and of its communications is a principal responsibility of a commander. It used to be laid down that it was his principal responsibility; but that gave too strong a preference to safety over action. We therefore now find in *F. S. R.* that a " reasonable security is the basis of any plan of campaign. . . . The principle must not be read to justify undue caution and avoidance of all risks."[1]

A commander may have to provide for direct national security in some form. If so, he must not only convince himself that he has made the necessary arrangements, but he must also convince the Government to that effect, otherwise he is liable to have his operations interrupted by calls upon his army for protective purposes. McClellan's failure to convince Lincoln that Washington was adequately defended was a principal cause of the defeat of the Federal army about Richmond which was described earlier in this chapter.

In alliances, it is well to bear in mind that each member will and, indeed, should solve the problem of his national security as part, possibly the whole, of his

[1] *F. S. R.*, Vol. III, p. 7.

contribution to the common effort. No action tending to uncover a vital part should therefore be expected of an ally.

The highest form of strategic security is that obtained through the imposition of our will upon the enemy, through seizing the initiative and maintaining it by offensive action working from a sound foundation.

Tactical security is of two kinds: the passive kind which in olden days walls gave to towns and which in recent warfare unbroken systems of trenches gave to the communications and organizations behind them; and the active kind furnished by forward movement, by advanced and flank guards, and by reconnoitring patrols which, so to speak, piquet the enemy and prevent him from making any move unseen or unmolested. The latter kind affords a high degree of freedom of action to the force so covered, for an enemy whose security is threatened thinks of defence rather than attack. There are also non-tactical forms of security. The morale of troops must be protected from propaganda; provision must be made against starvation and thirst; ammunition must not fail. These are vital matters. But here again a warning note is needed. If no operation be undertaken until the troops are fully equipped in every respect, movement may be dangerously delayed and, when commenced, may be dangerously clumsy.

The main points to emphasize about security are—that in planning all probable dangers must be guarded against and all probable requirements considered; but that any attempt to avoid all risk will, unless overwhelming strength is available, almost certainly lead to eventual defeat.

It seems a platitude to say that victory can be won only by *offensive* action. Yet writers have recently ventured statements to the contrary. They hold, first,

that defence is stronger than attack; and, secondly, that it is unnecessary to defeat an enemy, for it will suffice to convince him that he cannot win. They are evidently thinking of the last war. The enemy attacks a long line of entrenchments. He encounters a fire more devastating even than that of 1918. He recoils humbled and sues for peace.

It is true that, with regard to certain arms and under certain conditions, defence is technically superior to attack. That has been clear since the American Civil War, when the growing power of weapons began to force the assailant to dig. It was the outstanding feature of the Great War and may also be that of future wars. The rifleman, moving across the open, falls a ready prey to the uncrushed machine-gun. But that is only part of the tale. However powerful, defence is a purely negative attitude. It may deny victory for a time, but it cannot achieve it. The soldier realizes this. Hence, at all periods, in all armies, the offensive has been inculcated. Whatever the peculiar strength of the defence at the time —walls, armour, machine-guns—contemporary military thought has been devoted to overcoming it. The heavy gun demolished walls, the bullet pierced armour, the tank (to some extent) defeated the machine-gun. The struggle is unending and continuous; but, in every period, the assailant is eventually victorious.

At first sight, the chances would appear to favour the defender; for he can remain still, he can dig, he can shoot accurately; whereas the assailant, while on the move, is dangerously exposed and can do none of these things. The latter, however, has important advantages on his side. The forward rush, the excitement, a goal to win, combine to give him a moral uplift wholly lacking in the defender, who is always looking to right and left, anxious lest his flanks be turned and communications severed. The assailant, especially against a passive defence, has freedom of action and power of manœuvre,

and can accordingly concentrate superior forces against any selected point of his adversary's line, or where the front is not continuous, against his flanks and rear. Thus to balance the technical advantages of the defender, he can bring moral, tactical and strategic guns to bear. In the great battles of 1918, both in eastern and western theatres, the assailants, after surprise was re-born, proved almost invariably successful, even when unaided by superiority of force. More recently, we read—"the Bilbao defence took nine months to build and nine hours to break . . . a hundred thousand men were available to construct and defend it (the belt) yet it seems to stand as a monument to misdirected effort in the shape of fruitless waste of energy, time, money and man-power. Had the nine months' respite been devoted to training the troops defending Bilbao for offensive action, who can say what difficulties they might not then have been able to conjure up for the Nationalist General Staff? In sitting down where they did to await destruction they failed to comply with any military principle or precept." [1]

As regards the second point raised, since defence is inferior in the long run to attack, it follows that the side which adopts the defensive is unlikely to convince its opponent that he cannot win.[2] The time to convince an enemy that he cannot win is in preparation. If we show him that, in spirit, in numbers, in material, we are equal or superior to him, he will not attack. Once the war has started, nothing will convince an enemy that he cannot win better than beating him.

It is often said that overwhelming numbers and material are essential for the conduct of an offensive. History tells no such tale. Of the great victories won by offensive action, many have been achieved with inferior forces; witness Lee's defeat of McClellan, with 71,000

[1] "Some aspects of the Civil War in Spain". *The Army Quarterly*, Jan. 1938, p. 241.
[2] For full discussion of this point, see *The Army Quarterly*, Jan. 1938, p. 277.

men against 180,000, and Napoleon's destruction of 15,000 Turks at Aboukir with a force numbering 7,000.

The cult of the offensive can easily be overdone, as it was at the outset of the Great War by all armies. Nothing is so demoralizing or so calculated to bring generalship into disrepute as the failure of rash assaults. This was clearly shown by the mutinies which followed the defeat of Nivelle.

Attack and defence are complementary as well as opposed actions. Defence in one part of the field of battle or theatre of operations gains time or releases numbers for decisive strokes elsewhere. The assailants will often be thrown on the defensive by hostile counter-attacks. But, on the defensive, or even in retreat, the thought of taking or retaking the offensive must never sleep.

The natural instinct of man is to adopt a defensive attitude on being either opposed or attacked; and this psychological defect is common to the private in the ranks and to the commander perhaps far away in the rear. It must be exorcized by training. Where direct attack may seem inadvisable, it may be necessary to resort to manœuvre or stratagem in order to advance. Where the defensive attitude has unavoidably to be adopted, the pose must be one of restrained activity, ready for a change to attack as soon as the curb is released. Whether in defence or attack, the stout, aggressive heart, ever ready to seize what the gods may give, will rule the battlefield.

It has sometimes been found possible, and may be more often possible in the future, to combine, either tactically or strategically, the advantages of both methods in what is known by the clumsy term of the "offensive-defensive". A line, a feature or a defile is seized which the enemy must take or retake if he is to regain his freedom of action. In the war the German positions on the Western Front and the Turkish positions in Meso-

potamia during and after the siege of Kut furnished examples of this form of action, as did our three last battles in Mesopotamia, where we placed rows of machine-guns athwart the line of retreat of the Turk. When adopting such action, the position chosen should, as in the examples given, be one on which the enemy will be forced to make a direct attack, and the action we take should form an integral part, perhaps the pivot, of a battle offensively conducted.

This method, though high in favour at the moment, has undergone many failures; for, unless executed with adequate numbers and closely connected with other operations, it will suffer the eventual fate of all defensive actions. In 1813, Napoleon, after the battle of Dresden, threw a single corps across the line of retreat of the allies and, later in the same year, after their victory at Leipzig, the allies threw a corps athwart the communications of the French. The results, owing to the paucity of numbers employed, lack of connexion with the main effort, were the same in each case: both corps were annihilated.

A commander is said to have seized the initiative when he has anticipated the enemy and forced him to conform to his movements. The initiative and the offensive are cognate in nature and mutually helpful, but they are not synonymous terms. In 1877, the initiative lay with the Russians in their advance into Turkey until Osman Pasha occupied and fortified a position at Plevna close to their line of communications. The Russians were then forced to halt and turn against the intruder. Osman Pasha remained on the defensive; but, for the period during which he held his post, he deprived his opponents of the initiative. Again, during the war, in the campaigns in Egypt and Palestine, so long as we merely held the Suez Canal, the initiative lay with the Turk; but the moment we crossed the Sinai Desert to Al Arish the initiative passed to us, even though we might remain there on the defensive.

In order to ensure as far as possible the seizure and maintenance of the initiative, with all the advantages inherent therein, it is necessary for the intending aggressor—first, to make intensive and secret preparation so that his rate of mobilization may be quicker, his collective mobility higher and his fighting-power in general greater than with his opponent; secondly, to select long beforehand the approximate date of the attack, choosing a time when his preparations should have reached their zenith and other conditions are likely to be favourable; thirdly, to effect a surprise, perhaps by attacking prior to the declaration of war; and, finally, to adopt an unresting offensive. This was the Japanese method in 1904, and it proved entirely successful.

In possession of the initiative, the assailant may decide to employ every man he can arm in the initial stroke in the hope of overwhelming the enemy to such an extent as to destroy his prospects of recovery. To strike thus almost without reserves is something of a gamble; but it was what Schlieffen proposed to do in his attack on France, and he advised his government, in the event of failure, to achieve outstanding success at the outset, to obtain the best procurable terms of peace at an early opportunity. It is quite possible that every advantage will be taken of the initiative in a future war, and the mobility and power of modern weapons will strengthen the temptation to do so.

The defender (or non-aggressor) is at a tremendous disadvantage. As regards men, he has to be strong everywhere and always, whereas the aggressor can mass his forces against a weak point at a chosen time. As regards material, he is always afraid of standardizing weapons or of collecting reserves lest he should make his special effort at the wrong time and find himself, in consequence, loaded with a large quantity of obsolete equipment, whereas the aggressor, knowing exactly when he intends to strike, can arrange his production and his standardiza-

tion of weapons so that his striking capacity is at its highest at the critical moment.

The initiative with its advantages usually lies with the " have not " nations. It forms part of that compensatory system, mentioned in the preface, which results in the cycles of history, whereby hardy but indigent races are endowed with certain acquisitive powers such as aggressiveness, resolution and ruthlessness, and are thus enabled to wrest power and wealth from opulent, complacent and apathetic neighbours.

Mobility is one of the three prime factors of force—mass (including weapons), mobility and morale, and is a factor equal in importance to the other two. It is certainly an essential link in the chain of principles; for it may enable a commander to effect surprise, to retain the offensive or to concentrate at the decisive point more rapidly than his opponent.

There is much more in mobility than mere competitive movement along a measured mile. Cavalry and armoured cars are considered the most mobile of troops, but they are easily outmatched in speed by infantry in the mountains. Troops transported by lorry are not truly mobile unless their equipment is so light that on detrucking they can carry it into battle. An army may be highly mobile on an island; but, unless the islanders possess command of the sea, it is immobile for overseas' adventure. An army moving in a long, single column lacks mobility in the military sense, because the head can be destroyed before the tail can come to its assistance. Equally lacking is an army marching in a large number of short columns or actually deployed on a wide front, for it cannot change direction. That was possibly why Ludendorff did not bother to interpose a serious force between Rennenkampf and Samsonov prior to the battle of Tannenberg, for the former, extended on a front of

sixty miles, was facing slightly north of west and, to reach the field of battle, would have had to march south-west by successive divisions and would have come into action piecemeal.

Mobility is itself a compound of a variety of factors: command, staff work, organization, equipment, frugality, morale and training. The commander, if he adheres unswervingly to his aim, if he gives quick, sound and unchanging decisions, and if he is possessed of " drive ", will exercise an effect on the movement of his troops greater than that of all the other factors combined. A lesser than Napoleon would never have succeeded in crossing the St. Bernard. It needed a Wellington to carry an army through mountains proclaimed impassable by engineers. Good staff work is essential—for the issue of clear orders, to ensure correct timings, to prevent columns crossing, to adjust the rates of movement which may vary from that of the bullock at one mile an hour to that of the armoured car at fifty miles an hour, to provide adequate protective measures so that security is not endangered nor columns delayed by slight opposition, to arrange for the regular delivery of food, without which troops must either disperse to forage or retire along their communications. Mobility is considerably enhanced by utilizing captured supplies of food, petrol and ammunition. Collection and distribution must, however, be carefully organized; otherwise much valuable material will be missed and much will be wasted. When the Germans advanced to the Marne in 1914, their organization of a special corps of light carts, for the collection and distribution of captured supplies, seems to have been a decisive factor in enabling the march to be continued after the army had outrun its normal administrative capacity. Where mechanized forces are concerned the tasks involved demand the employment of speedy action, great enterprise and skill.

A further need for mobility is sound organization,

so that the army may be articulated by corps, divisions and brigades, and thus be flexible and capable of manœuvre. And there must be adequate transport for tactical as well as the obvious administrative reasons. Finally, the troops must be fit, well-disciplined, and of high morale.

Mobility, unless protected, may be destroyed by fire-power as in the position-warfare on the Western Front. It may be hampered by mud—the fifth element according to Napoleon—by the contamination of ground, by the wearing of gas-masks or by unsuitable equipment. It is the part of the enemy to enhance these difficulties, and by their means or otherwise to reduce our mobility. His more usual instruments to this end besides fire, wire and trenches are the destruction of bridges, attacks on the line of communications, inundations, and the deliberate ravage of the countryside.

Much thought is now being devoted to increasing mobility. Mechanization, in the shape of tanks, was introduced mainly to restore the mobility which had been destroyed by machine-guns. Trucks are now available to lift one third of the infantry at a time and to carry part of his equipment in order to enable him to move with the speed demanded by the narrowing of the time-factor. Transport is, in fact, on so generous a scale that a variety of weapons may be carried and the instrument be thus suited to the task. Attempts, however, to take with the forward echelon every form of equipment that can possibly be needed, should be firmly checked; otherwise much of the newly-acquired mobility will be sacrificed. Provision should be made, not, as with the White Knight, for *everything*, but for only such contingencies as will probably occur. Occasionally, such a policy may lead to misfortune through a shortage, say, of ammunition; but it will undoubtedly prove of advantage in the long run.

Of great importance to mobility is the reduction of

the time-lag between events and the action demanded of them. In this connexion, much depends on the method in vogue for the issue and passage of orders. During the war, we suffered considerably from what is known as the "Chain" system of command. That expression implies that troops are commanded through a succession of headquarters, starting from G.H.Q., and passing through Armies, Army Corps, Divisions, Brigades and Battalions. In any operation of considerable size, several of these headquarters are involved, and all try to exercise a certain degree of control over the battle. As the more senior headquarters are usually many miles behind the front line, and are consequently completely out of touch with the situation except by the Chain in its reverse direction, through which terribly belated and often mutilated reports of success and disaster arrive, their attempt at control often proves disastrous.

The Germans adopted a different system. Their Chain, once the battle opened, started from the front. The battalion commander or the divisional commander in the front line controlled all the units within his area or which arrived in his area. The latter, for instance, would take command of any counter-attacking division which might reach him and would assign to it the objectives to aim at. Rank did not count, a point which we should have found most distressing to our conventional minds. The tasks of the various higher commanders were to make the plans and to arrange for co-operation, relief, reinforcements, supplies and preparation for further action. The system, which, of course, is much better suited to the trenches than to open warfare, resulted in much quicker, more decided and more appropriate action than was usual by our method. It demanded the highest stamp of officer for the command of front-line battalions and formations.[1]

[1] See, for full discussion, "The Chain of Command", by Captain G. C. Wynne, *Army Quarterly*, 1st April, 1938, and "Machine Guns", by Lt.-Col. G. S. Hutchison.

Co-operation is officially regarded as a principle; and, between allies, throughout the Empire, between armies and navies and, within the services, between their various branches, is clearly of cardinal value. From the fellowship of Nelson and his captains sprang the Nile and Trafalgar. From the co-operation of Marlborough and Eugene resulted the victory of the Grand Alliance over Louis XIV. The ready and splendid co-operation of the Dominions and India with Great Britain in the war was a principal factor in the Allied victory. It was the blockade of the navy, aided by the victorious advance of the Allied armies, which brought Germany to her knees. At Sadowa, Benedek's infantry and guns were saved by the self-sacrificing charges of his cavalry. In the war, the guns blasted a hole through which the infantry and tanks penetrated.

There is, however, another side to the picture. True co-operation is in truth but rarely obtained. The military brotherhood of Marlborough and Eugene stands alone in history—an eighth wonder. The spectre of disaster loomed over the Allies when the armies of Haig and Pétain began to retreat away from each other. Co-operation between the navy and the army has been excellent, when each has had its own task: for the navy, control of communications, blockade and transportation; and, for the army, the defeat in the field of the hostile forces—tasks widely disparate both in nature and locality. But, throughout our history, it has been noticeable for its absence when the services have been partners in the same operation. There were indeed brilliant exceptions; but they were rare. Within the services, no such difficulties between the various branches occur; for there, in every case, the commander functions, not by inviting co-operation, but by ordering it, and seeing that it is carried out.

The question at once arises: would it not be better to employ outside the services the principle that is rudi-

mental and successful within them, namely that of command? If it were adopted, the principle of co-operation would disappear and be replaced by that of co-ordination. The subject is so important that it will be treated at length in a later chapter.

CHAPTER III.

The Principles of War (Continued)

PURSUIT

"Vaincre n'est rien. Il faut profiter du succès."—Napoleon.

COLONEL HENDERSON tells us that Stonewall Jackson was guided by two principles:

1. "Always mystify, mislead, and surprise the enemy.

2. "Never give up the pursuit as long as your men have strength to follow. . . . To move swiftly, strike vigorously, and secure all the fruits of victory is the secret of successful war."

Actually, in these sentences, there are five principles involved: four of those usually accepted—surprise, mobility, the offensive, and concentration, and a fifth, acknowledged by both Henderson and Clausewitz, namely, pursuit. *F. S. R.*, Vol. III, declares that "Only by effective pursuit can a victory be completed and all its fruits obtained"—so there appears to be a consensus of opinion as to the importance of this instrument. Whether or not it should be elevated into a principle is a matter of purely academic interest. It certainly ranks as such both in official and non-official eyes.

F. S. R. goes on to say: "To organize and carry out a successful pursuit is one of the most difficult operations of war. Besides the physical exhaustion and disorganization of the troops at the end of the battle and administrative difficulties such as the repairing of communications, replenishing ammunition and bringing up supplies, there is a mental reaction to be overcome (what Müffling

calls 'the digestion of joy due to victory') which tends to affect all who have taken part in the battle." Tremendous drive is therefore needed on the part of the commander to overcome inertia and to organize pursuit. Hotham, having captured two French vessels in battle, replied to Nelson's urgings to pursue, that the fleet had done well enough. Nelson, commenting on this in a letter, said that, if there were eleven enemy vessels and the eleventh got away, he would not consider his duty well done.

Decisive pursuits are rare in history. For 150 years prior to the Great War, Jena, Waterloo and Tel el Kebir furnished the only examples of the completion of victory by pursuit. On the other hand, many instances may be quoted in which pursuits, though not decisive, have reaped tremendous rewards in territory, prisoners and material. There is a tendency to deride those carried out by the Germans after their victories in 1918, on the ground that they were not decisive and that they left the victors in a dangerous strategic position at their close. But it must be remembered that the first of them almost effected the separation of the Allied armies, and brought the possibility of a hurried re-embarkation of the British army into consideration; that the second was the cause of Haig's "Back-to-the-wall" proclamation; and that the third, directed against the French, and the swiftest and deepest of all, aroused the gravest anxiety for the safety of Paris. Yet all these operations were carried out by an army which was only just equal in numbers and was inferior in equipment to its opponents. Moreover, it contained no force, either cavalry or tanks, for the deep and rapid exploitation of success. And lack of speed is a fatal fault; for it gives the defender a breathing space, enabling him not only to bring up reserves, but also to organize fresh positions which, even when manned with beaten troops, may, owing to the high resisting power of modern firearms, present serious

obstacles to further advance. It certainly seems possible therefore that the German pursuits might have proved decisive had they possessed a superiority of force and a strong body of mobile troops. At the least, it would appear unsound to draw from them the inference that pursuits are impossible in modern war.

When we ourselves obtained the upper hand later in the year, we failed to apply the lessons of the German successes. We still worshipped the fetish of the "limited objective", and cavalry was still the arm of pursuit. On the 8th August, the three divisions in reserve which could have been transported to the front in lorries without danger and could have taken part in the decisive pursuit on the first day, were put into the fight only after the enemy had brought up his reserves and taken up and consolidated fresh positions. The battle had to begin again on the fresh occasion without the benefit of surprise. To keep troops in reserve and not use them is a sin against the principle of concentration of force. It is particularly sinful in the offensive battle.

These matters are stressed because it seems that, in spite of the great defensive power of modern firearms, pursuit should still be feasible provided that certain points are borne in mind. They are: the first, that the commander must never allow himself to be surprised by the extent of his victory; the second, that he should make all arrangements for exploitation. It may indeed well happen that the troops earmarked for the pursuit will be absorbed in a fierce struggle for mastery, in which case no deep advance is likely to be made. But the commander should at least detail the necessary formations and do his best to prevent them from being used except for their allotted purpose. As a third point he should ensure that a close and capable watch is kept on the battlefield, so that the pursuit may be launched as soon as the opportunity occurs. As a fourth he should, in his organization of the pursuit, insist that full use be made of captured

supplies—a matter already mentioned—in which both British and Germans failed in 1918. That is, his troops must be trained in the use of the enemy's weapons; a certain number of gunners, whose guns have been left behind, should move in rear of the infantry, carrying with them, in carts or lorries, such spare parts of the enemy's guns—sights, breech-blocks, locks—as he usually destroys or carries away when he abandons his guns; and detachments of the R.A.S.C. should organize supply from captured ration-dumps. Again, the commander should send forward no more troops than he can reasonably expect to be able to supply, and he should put the remainder, if not required elsewhere for mounting a fresh attack, to the repair and maintenance of roads, just as did Badoglio in Abyssinia. Finally, he must have several alternative plans to be used according to the development of the situation. The very rarity of successful pursuits indicates that they do not grow of themselves.

Pursuit is a decisive operation. It should therefore be practised in peace. Yet it is doubtful if ever a staff exercise has been devoted to the elucidation of its difficulties and to the methods of obviating them.

Fear is the greatest energizer of mankind. It is said of a certain great military nation that, when marching towards a particular battlefield, its army, badly organized, moved at the rate of five miles a day and that, when defeated, it covered thirty-five miles during the night. Panic is not only contagious. It is carried on the wings of rumour, turning all but the stoutest hearts to water. The Turks are sturdy fighters; yet when hotly pursued by Townshend after the Regatta battle, a thousand of them surrendered to a party consisting of one officer, one sailor and one soldier. Megiddo presented perhaps the picture of the finest pursuit in history. It resulted in the complete destruction of an army. No commander should leave such a weapon rusting in his armoury.

Morale

Morale is one of the three constituents of Force. It is not included among the principles, though it would appear to have as much right to their company as either mobility or security. It is certainly wrapped up with them. Surprise obtains its effect by upsetting the enemy's morale. The offensive sustains the morale of the troops. The finest principles in the world, as indeed the largest numbers and the best weapons, fail where morale is low.

High morale, however, cannot be produced to order like men and material. It is the divine element in war, mighty yet ethereal, intangible, pervasive, impersonal. It is not the courage of the man but the courage of the group: the determination of the group to " achieve a common purpose or resist a common danger ". The group may be the section, the company, the corps, the nation. Though inspired, though breathing enthusiasm, its key-note is steadfastness. It shines alike in victory and defeat. Victory elevates but does not test it. It is tried and tempered by hunger, cold, fatigue and disaster.

The first essential to high morale is confidence in leadership. Victory is the full reward for the trials and dangers of war. Defeat, however bravely borne, can give no pleasure to the vanquished. So the successful general wins the confidence of his troops and in doing so raises their morale. But, even in defeat, men will, in a good cause, be inspired by a leader of great and noble character. Through dreary years, they served Washington and William of Orange, while hardly a gleam of sunshine lit their banners.

Next in consequence for morale, are confidence in equipment and personal efficiency. There is nothing so depressing in action as to be outranged, to be hammered by weapons to which no effective reply is possible, to be

unprotected where the enemy is shielded. There is an unfairness in the contest. Someone—the government, the general—has blundered or has not played the game. Confidence in leadership is shaken. On the other hand, given good weapons and a high standard of skill-at-arms, the soldier feels that, individually and collectively, he is as good as the best and ready to face fortune, good or ill, with equal mind.

Discipline is the bulwark of morale. It is a sure support when the desire to lag, to sleep, to turn back, to give in seems overwhelming. It is the goad to the last effort, the mainstay of a body in the death-grip with doughty foes. Through pride in person and pride in arms, it cultivates self-respect, the corner-stone of manhood. Through pride in unit, it inspires that devotion to a flag, a symbol, which lies at the deep wells of the soldier's conduct and is the root of honour and tradition.

The fighting spirit, *l'esprit de corps* and the resolution never to be conquered, which are the spiritual factors of morale, flourish well in a good environment, where treatment is sympathetic, where administration is sound, and where the standard of life is unexceptionable. They mature best of all, however hard and poor the conditions, through adherence to a great cause.

Morale is a tender plant which an unskilled gardener may destroy. Thus, there is a danger to it in political interference. Policy must of course dominate strategy, and the Government must control the commander up to the point of setting him his task. But, beyond that, he should be given a free hand. There should particularly be no appointment to the fighting forces of commissaries as in the French Revolution, in Russia, and in the governmental forces in Spain. Nor, what is tantamount to such appointment, the dispatch of parliamentary missions to the troops, or permission to individual M.P.s to wander among them, and then return to report to Parliament. Such action is foreign to the British nature

and to British traditions; but it is prevalent in certain other countries, and it is possible that minds untrained in war or unbalanced either by defeat or by lengthy operations might turn to it in their search for a remedy. The matter is introduced at this point not only because interference of the nature indicated is subversive of discipline, but also because it gravely lowers morale by undermining confidence in the commander. The most poignant example of this was afforded by the Nivelle affair. The visits and discussions of deputies and politically-minded soldiers destroyed faith both in the commander and his plan [1] before the battle, and were largely responsible for the mutinies which followed defeat. Even so, it was not until Clemenceau had settled well into the saddle that he was able to put a stop to this dangerous practice.

It is possible to destroy morale either by the slow process of sapping or by shock. In the Great War, both methods were constantly applied. Propaganda and blockade were the instruments of the first, surprise by artillery fire, gas and tanks the instrument of the second. Liége was captured because the morale of the Belgians was shattered by the explosion of 17-inch shell. Verdun, on the other hand, hammered to an equal extent but defended by veterans hardened to the new conditions, remained a virgin fortress. Attempts to combine the two methods proved failures. The slow, ponderous bombardments of early days had none of the success which resulted from the sudden storms of shell employed later. The one was merely an attack on material, whereas the other was an assault on morale.

The morale of the soldier must be sustained by that of the nation. He is constantly facing death and disablement, often in the vilest conditions. He may be proud and ready to do his duty; but he needs encouragement, sympathy and rewards. If the people take no interest in the cause, or if his women and children are suffering in-

[1] And, incidentally, disclosed the plan to the enemy.

tolerable privations, either his heart may fail him or he may become disgusted with his rulers.

A government, before declaring war, should be sure that the great body of the nation will stand behind the declaration. The British Government appreciated this need in 1914. But, for lack of national support, the Russians failed in 1904, and the Germans in 1918. Conviction of the justice of the cause is essential both to military and national morale. Where, however, preparation for defence is lacking, faith in a cause or righteous indignation will be of no avail. In spite of the spread of education, ignorance on matters of defence is profound and almost universal. It is for the Government to remove it.

The type of education prevalent in totalitarian states may not be to our taste; but it is a force to be reckoned with, as everyone realizes who has observed the spirit and fervent patriotism displayed by the German youth of to-day. That force may have at some period to be countered. Our service estimates show that democracy can rise to a contest in material. It is not there, however, that the true test lies, but in the spiritual battle. Democracy is the system or ideology which we prefer, but it is not necessary to our being. If it fails to prepare for the test, then the Empire should revert to the hard facts of the struggle for existence and group itself for defence under such banner as will ensure its survival.

Numbers and Weapons

Numbers and weapons together constitute mass—the third element of military force, of which the other elements, morale and mobility, have already been discussed. That every one of the elements is essential may be shown by considering a force bereft of each in turn. In all cases its fighting value would be nil. As

regards numbers, the percentage of its population which a country can supply to the fighting forces depends on its geographical position and on that of the theatre of operations, on the productivity of its soil and on the nature of its armaments. It has to feed itself, it has to pay for its imports (usually by exports), and it has to furnish the equipment of its fighting forces. If the latter are highly mechanized, perhaps ten men [1] (or women) may be needed to keep one soldier at the front.

In the theatre of operations itself, the numbers which can be deployed depend on the possibility of the supply of food and equipment, and supply depends largely on the efficiency of communications. Napoleon crossed the Vistula with 440,000 men and recrossed it with a formed body of 8000. Had he possessed over his opponent the advantage of a single railway for supply, he would have conquered Russia. In 1870, the Germans were enabled to deploy superior numbers because they had organized their railways better than had the French. Figures of combatants reached their zenith in the Great War because, in the age of industry, populations had increased largely, and because steam had given wings to production and had also facilitated transport by land and sea.

That " only numbers can annihilate " is a restatement of the principle of concentration. The wolf, however, makes no count of the sheep opposed to him. Similarly, numbers, unless armed with both sword and spirit, are of no avail. The Russian armies, gallant soldiers all, but short of munitions, became a ready prey to German armaments. The Roman Empire fell from decadence, not of numbers but of heart.

The possible effect of weapons may be gauged from a mind-picture of the sudden appearance of machine-guns at an early battle, say Waterloo. Happily for the equanimity of peoples, revolutions in armaments are

[1] This figure has been variously estimated between 3 and 10. It seems unlikely to be less than 10. It is important for planning to reach an approximation to the truth.

rare. The normal process is that of evolution. Between opponents of equal standing, weapons as such have but seldom won a striking advantage. They have, indeed, affected the fortunes of war greatly, but the cause has usually lain in their skilled application to particular opportunities by a leader who has studied their possibilities, rather than in any mechanical superiority. There have been, of course, a few remarkable exceptions to this rule such as the submarines in 1917.

Weapons are of two kinds: the contact or shock-weapon and the missile-weapon. The former has experienced no great development in the course of its history, the club and the spear merely becoming the butt-end and the bayonet. Amid the marvels of science, its individual potential is still muscular and remains stationary at one man-power, except in so far as the sword, the chariot, the ram and the tank, borrowing mobility from the horse and the machine, have enlarged its effect. It has, however, always wielded a considerable moral effect, for its near approach causes grave anxiety in the hearts of the missile throwers. And this is true even if infantry be regarded as an arm rather of occupation than of assault.

The missile-weapon, unlike the shock-weapon, has progressed continually through time, from the dart, the bow, the gun, the arquebus, the rifle, the machine-gun to gas and the automatic rifle; from a firearm projecting one bullet in two minutes to one which projects 600 in one minute. The alternations in the relative strength of the defence and the attack have been largely due to changes in technical values of the missile-weapon. Its tasks on the modern battlefield are, in attack, to suppress the fire of the defender so that the shock-troops may get to grips, and, in the defence, to prevent such contact, destroying as many as possible of the assailants in the process. On the Western Front, the holding power of the machine-gun was so great that, for three years, movement from the trenches was hardly possible. Infantry could not stir

unless supported by an incredible tonnage of shells, and even then made short advances only into ground which had been already conquered by the guns. In the last year of the war, the employment by surprise of mass-produced ammunition, the use of tanks and aeroplanes, aided by the decay of the German will to resist, established once more the superiority of attack over defence.

Nations are always anxious that their soldiers shall be able to attack if necessary; for the least aggressive of them realize that they cannot safeguard their homes merely by passive defence. They wish to know whether the existing superiority of the attack is going to be maintained, increased or decreased, and what will be its appropriate weapons and how they shall be handled. In this chapter, it is proposed to deal mainly with the infantry arm. The use of tanks and aircraft in the attack will be treated later.

The principal difficulty in the tactics of infantry to-day is that, in open warfare, those of the weapons that are strong for attack are weak for defence and *vice versa*; for the former should have curved, and the latter flat trajectories. In trench warfare, the difficulty hardly arises because, for purposes of defence, the machine-gun is a perfect weapon and, for purposes of attack, the foot-soldier is given support by the other arms of such overwhelming strength that, effectively directed, it enables him to occupy a near objective without much opposition. Moreover, when he reaches that objective, his immediate task is to deal with counter-attacks; and here also his machine-gun is without a rival. Again, if he has to continue his advance within the hostile trench system, he will have at his disposal bombs and rifle-grenades—weapons of curved trajectories, suitable for in-fighting.

When, however, an advance is made without overwhelming support, against a position not clearly defined, as is the normal case in open warfare; or when, in position warfare, the crust has been penetrated and the infantry

are infiltrating, or exploiting or pursuing, the need for support by a more powerful weapon of curved trajectory becomes evident.

Continental nations for many years provided the infantry with guns of accompaniment; but the fire of these weapons of relatively flat trajectory, always operating in close support was usually masked by friendly troops, so the practice was discontinued. The general staffs, which have already been faced with the problem of finding special weapons for the protection of the foot-soldier against tanks and aircraft, have now been forced to provide him with another special weapon—a curved trajectory weapon for attack in open warfare. They have selected the mortar and, furthermore, they have decided that it shall not be provided by the artillery, but be a unit weapon.

Infantry in future warfare are likely to be employed for the most part defensively: in the first place, in the normal defence of a position; in the second place, for repelling counter-attacks after a successful assault; in the third place, when acting on the offensive-defensive, having seized ground which the enemy will be forced to attack; and those are the most important functions they have to perform. They should, therefore, normally be armed with the full equipment of defensive weapons. Weapons of attack, though essential in attack, are only occasionally needed. Is it necessary that they should permanently accompany the unit in action, thereby reducing the numbers of men available for the strongest form of defence? Would it not be possible, now that transport is less tight, to apply here the method of the gun-room, in which the unit keeps a number of different weapons from which to choose according to task, just as the sportsman does to enable him to tackle teal or tiger as required?

Machine-guns and automatic rifles are mainly defensive in intention, but not entirely so. Their fire can

give direct assistance to the tank in attack, for, whereas their bullets will not penetrate its armour, they will be of great value for keeping down the hostile fire. The automatic weapon, too, so far as it can be maintained in the forefront of the battle, is of value in the fire-fight and helps the infantry on its flanks to get forward, particularly when, transported on a machine-gun carrier and protected thereon from small-arm fire, it can dash ahead of the line. Moreover, as soon as the situation stabilizes, the overhead barrage fire of machine-guns can be used for the attempt to restart movement. Again, once the crust is broken, open flanks appear in the defenders' line and afford opportunities for a daring use of enfilade fire. The Germans developed this method in the infiltration tactics which they employed early in 1918; but, whenever resistance hardened, they had to bring up their mortars to overcome it.

Finally, the rifle itself, with a bayonet at the end, has a considerable value in the attack, more especially on the flanks. Of all assaulting troops the rifleman is best fitted to make use of ground. As he wins his way forward, creeping, crawling, rushing, but not bothering to fire, heavier weapons take his place and act as pivots for his further advance. He may not reach his goal but he may reach positions from which he can bring enfilade fire to bear; and if he happens to be armed with a semi-automatic rifle, his action may then be decisive in enabling his comrades to advance.

The problem of employing infantry successfully in the attack may be solved eventually by the inventor who produces effective armoured protection, carried either by the soldier or on a machine which can, almost equally with the soldier, take advantage of the folds of the ground.

Whether special weapons should be distributed to units or be kept grouped under higher control is a subject constantly debated without much finality being reached. Unit commanders prefer the former system because they

like, in an emergency, to have immediately under their hands, the weapons appropriate to the situation. They feel that though under the other system, they may be allotted three or four times as many of these weapons, there is no certainty that they will arrive in time, or that they will co-operate as effectively as weapons permanently on the strength of the unit. On the other hand, such a system is uneconomical and creates great complications in the unit.

Another argument runs: "The battalion should be the home of all basic infantry weapons; the division the home of the combined arms." But, what are basic weapons? Presumably, the rifle, the bayonet, the bomb, the light automatic. What then of mortars, heavy machine-guns, anti-aircraft and anti-tank guns, all of which have been at one time or another on the establishment of the battalion? There is great variety in the solution of this problem among armies. Apparently, however, the general consensus of opinion at the moment is that mortars but not heavy machine-guns should be battalion weapons.

A division is a self-contained body capable of fighting for long unsupported. Infantry can never be self-contained. It is the principal arm of the division whose other components exist largely to give it support. It should, however, be organized so as to be able to carry on under its own steam for short periods, during which outside support is unavoidably absent; and this appears to be the aim in its present equipment.

Another point much discussed is the distribution of weapons inside units. Unquestionably, the anti-tank rifle should be a platoon weapon; for no body of infantry, however small, should be exposed, ineffectively armed, to the ravage of the tank. As regards the mortar, on the other hand, sound arguments could be adduced for assigning it to the headquarters either of the platoon, the company or the battalion. The difficulty with it is that, as a platoon weapon, it is not easy to supply with

ammunition and, as a battalion weapon, it is too far back to deal effectively with targets holding up the leading troops. Actually, with us it is a battalion weapon.[1] The establishment is four, the mortars with their crews and ammunition being carried in four trucks. Were the gun-room system in vogue one or two trucks would suffice.

Of anti-tank weapons, there is, in addition to the rifle, a platoon of four 2-pounder guns, each towed by a 15-cwt. truck. The tractor seems dangerously large and might easily be spotted from the air as it is towing its gun into position in the front line—a contingency most desirable to avoid. These guns have now been placed in charge of the artillery. They will need skilful handling, for a recent calculation showed that, under average conditions, they would be expected each to knock out four tanks during an attack if they are not to find themselves overrun.

In choosing the existing mortar and the new Bren automatic, we appear to have committed the mistake of not insisting sufficiently on lightness. Troops will often have to detruck 2000 to 3000 yards from their objectives and thereafter have to advance with full equipment. The carry is long. Both mortar and Bren detachments have difficulty in keeping up with the riflemen. That may result in the missing of opportunities, for the seizure of which these types of weapons are intended. When every minute gained is of value for preventing the enemy from consolidating his position and bringing up reserves, it is essential that, if the infantry are to be entrusted with the attack, they should be armed with weapons of a mobility equal to the special tasks they are expected to perform. Major-General G. A. Lynch, Chief of Infantry, the United States army, holds that: " The development of an effective semi-automatic rifle by our Ordnance Department is unquestionably the outstanding infantry

[1] A light mortar is shortly to be issued to platoons, the number of mortars with battalion H.Q. then being reduced to two.

development of the day,"[1] and it will enable a "more decisive advantage to be taken of the fleeting opportunities of battle". This weapon is the 30 semi-automatic Browning.

The Science of Strategy

"The secret of war lies in the communications."—Napoleon.

In strategy, which is the conduct of war in its wider aspects, there is both an art and a science. The art consists of a sound selection of objectives and of an enlightened application of the principles of war. The science, with which we now propose to deal, is a matter of lines and shapes. It will be treated for the moment from the point of view of marching armies, that is, as it has existed from the earliest ages. The effect of mechanization and aircraft upon it will be discussed later.

An army can be destroyed or forced to surrender in one of two ways. (*a*) By defeat in battle. That is a tactical matter. Strategy having placed the army in a favourable position at the right moment, it is for tactics to do the rest. (*b*) Through deprivation of supplies or the threat thereof—an affair of strategy.

An army is joined to its base by a line of communications along which it receives supplies and reinforcements and evacuates sick and wounded. This line is a life-line, an artery. The mechanical operations of offensive strategy are directed to its severance; those of defensive strategy to its preservation.

Armies, when advancing, seek to cover it by the direction of their movements and by the deployment of covering forces. If, when moving in this fashion, an encounter occurs between two opponents coming from opposite directions, naturally no strategic advantage accrues to either side (Sketch 4). That is what happened

[1] "Current Infantry Development", *Infantry Journal*, U.S.A., Jan.–Feb., 1938.

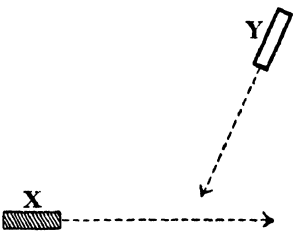
on the Western Front, in Palestine and in Mesopotamia. It generally entails long and costly campaigns. On the other hand, if one belligerent, while covering his own communications, is able to strike across those of the other belligerent, as Napoleon did in the Ulm campaign, he will have gained a strategic advantage, which



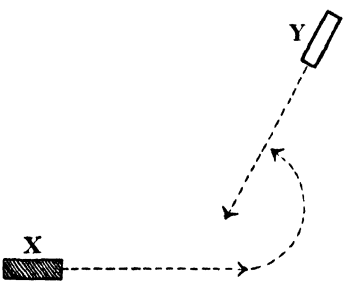
Sketch 4

will force his adversary either to fall rapidly back or to fight with his front parallel to his line of retreat—a most unfavourable position (Sketch 5).

It may be asked, however, why X should not make a curled movement and strike Y's communications. Actually, this form of action is often to be seen at manœuvres, where moral factors are of no account, and is known as



Sketch 5



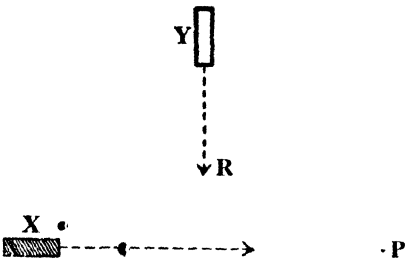
Sketch 6

the process of biting tails (Sketch 6). But, in war, it has no place, except where forces are very unequal or where they are mechanized, for X would certainly think not of attack but of rectifying his position as quickly as possible.

An interesting variation of the last operation is that known as taking position to a flank. This is shown in Sketch 7. X is advancing on P. Y, wishing to prevent him from doing so, moves to R and halts. X cannot then move on P until he shall have driven back Y from

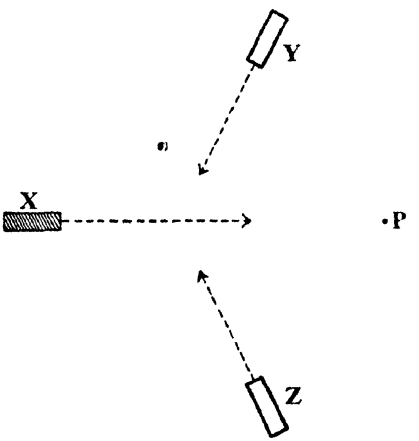
R; and even then, he will not feel secure unless he leaves a strong detachment to watch Y.

Another variation is that of two forces acting on



Sketch 7

exterior lines. In Sketch 8, X is on interior lines, Y and Z are on exterior lines. If X advances to P without dealing with Y and Z he is certain to be destroyed. His normal procedure is to leave (or send) a detachment to



Sketch 8

contain one opponent while he strikes at the other with the maximum of strength he can make available. Y and Z try to defeat this strategy by pushing relentlessly forward and co-operating as closely as the distance separating them will allow. Where other factors are of

approximately equal value, much will depend on relative mobility. Thus, when Ludendorff interposed between Rennenkampf and Samsonov, his success was largely due to the power of rapid movement afforded him by the excellence of the East Prussian railways. In general in the war, the Central Powers owed much to the facilities given them by their strategic railways for transferring troops from one front to another. Now that the utility of railways is threatened by aircraft, the Germans have built great strategic roads intended solely to fulfil the same purpose.

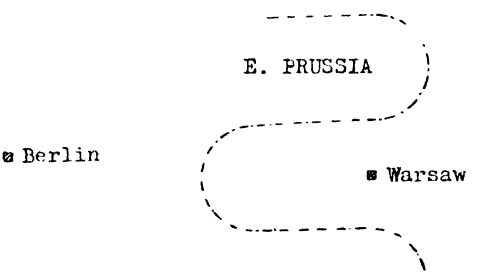
The selection of an objective is an important if not the most important part of strategy. If governments or commanders are in any doubt they will usually be correct in striking at an enemy's source of supply. The Federals struck first at Richmond instead of at the Mississippi basin from which their opponents received the bulk of their supplies; and they did not finally defeat the Confederates until they had cut them off from all their sources of supply. On the other side, Lee at the outset wished to interfere with the Federals' supply by cutting two out of three of their principal railways. President Davis, however, preferred, for political reasons, to keep absolutely to the defensive. In consequence, the Confederate victories, remarkable though they were, were largely wasted. In the Great War, a blow at the Turkish line of supply past Alexandretta might have shortened the campaigns in Palestine and Mesopotomia by some years. It was not attempted because of protests from the French, who regarded the area in question as their political preserve.

From these examples it is clear that, though strategy is the acknowledged handmaid of policy, no government, in setting their course, should fail to weigh the possible adverse reactions which its policy may have upon strategy.

Where the choice of an objective is not informed by

motives connected with supply, the reasons are usually psychological or political. Stonewall Jackson's threats from the Shenandoah Valley against Washington and the German air raids on London are instances of the one; our militarily-unsound reinforcement of the Italian front after Caporetto and our advances to Baghdad and Jerusalem furnish examples of the other.

It has been observed that, in most affairs, strategy is simply a matter of striking at an opponent's life-line. Much space is devoted in military treatises to the various forms which blows against communications may take. But, for a full understanding of the subject,

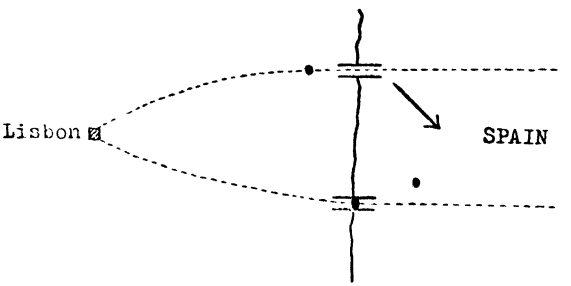


Sketch 9

it seems unnecessary to do more than to give a few examples to show how the principle operates in conditions often encountered.

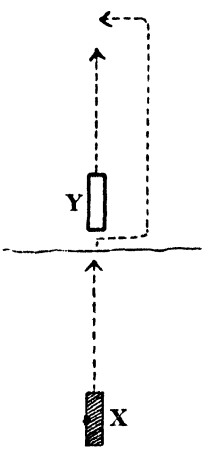
The shapes of frontiers are important. We may indicate this by taking as an example the Russo-German pre-war frontier (see Sketch 9). Russia has an army in the Warsaw salient. This army, if strong and ready, can quickly reach Berlin, or it can strike north-west and cut off German forces in East Prussia. The German troops, if relatively weak, have no choice but to withdraw rapidly from their exposed position and interpose between the Russians and Berlin. On the other hand, if there are relatively strong German forces in East Prussia, the situation of a Russian army inside the salient is obviously precarious.

The play of strategy due to the possession of passages through a straight frontier is interesting. Two roads (Sketch 10) led through difficult country from Spain towards Lisbon. Each was closed at the Portuguese



Sketch 10

frontier by a fortress. Wellington seized both these gates and thereby gained the power of issuing at will by either or both of them. If, however, he preferred to act on the defensive, he could, if an opponent advanced by both roads, concentrate the greater part of his force against one or other portion of the divided army. Alternatively, in the case of a hostile advance by one road, Wellington could block that road with a small force and, with his main body, issue by the other road against his opponent's communications. He had, in fact, by his use of obstacles made Portugal safe against attack by considerably superior forces. A river-line may be defended in similar fashion by the possession and use of two bridge-heads.



Sketch 11

We may take as a final example the parallel pursuit (Sketch 11). X, having beaten Y, decides on a parallel, instead of a direct pursuit. That is, his troops, or the more speedy of them, instead of pressing the enemy

steadily back along his line of retreat, move parallel to him by one flank in the hope, by superior mobility, of passing him and then cutting his communications.

The respective strategies of sea and air will be treated in detail in later chapters. They also deal largely with communications and supply. A navy aims at the mastery of maritime communications in order to ensure the supply by sea of its own country and deny that supply to the enemy. An air force aims in the first place at establishing ascendancy in aerial communications and then seeks to destroy the enemy's naval and military sources of supply and centres of communications. The attack on supply, whether by sea, land or air, should not be independent, but should be combined with relentless pressure from all quarters.

. . . . . .

Fortresses.—The use of fortresses in general furnishes yet another example of the truth of Napoleon's aphorism on communications. They have always been placed on important lines of approach, usually at or near frontiers. Their value there was made clear by the description just given of Wellington's action in Portugal. Where roads are few, and armies not organized to move far away from their magazines, fortresses dominated warfare, and campaigns consisted largely of sieges and attempts at relief. Turenne and Marlborough both managed by their skill and daring to escape their toils to some extent, but it was left to the French revolutionary armies, served by improved roads and less dependent on magazines, to ignore fortresses [1] and to operate as strategy might dictate.

Fortresses have had a more important effect on warfare than would appear from history, for they will, unobtrusively, have played their part if the enemy is afraid to besiege them and, consequently, takes another and more difficult route, or if they cover a frontier so well that an

[1] This is, of course, only a generalization. It was not possible, for example, to ignore fort like Bard in an unavoidable defile in the mountains.

aggressively-minded neighbour decides that invasion will not pay.

Where social and political conditions in a country are such that it will probably be found unprepared in the event of war, a fortified barrier is essential in order that the enemy may be held at bay while the national strength is developing. With an island power, this function is performed by the navy.

It is a point of honour for a garrison to resist to the last, and heroic defenders have as a rule been more highly acclaimed by their countrymen than successful assailants. Certainly, a few hours', a few days' additional resistance may alter and often has altered the course of a campaign. The German VII Reserve Corps, released by the somewhat early surrender of Maubeuge, arrived on the hills north of the Aisne just in time to fill the gap between the First and Second Armies, and, by so doing, may have prevented the invaders from being expelled from French and Belgian territory.

Fortifications are designed to meet the form of attack expected. To-day, the main features of such an attack are likely to be:

(*a*) Complete surprise.

(*b*) Sudden and very violent shock on a chosen sector, by artillery fire and aircraft bombs.

(*c*) The forcing of a gap through which mobile forces will pour in a flood of invasion.

Clearly, to counter such a menace, great depth in defence is necessary.

The maximum range of the aggressor's field and heavy artillery will be in the neighbourhood of eight miles. A lightly defended observation zone will therefore have to be held, extending so far beyond the main zone of resistance as to deny any ground within that range to a potential enemy, and thus deprive him of the possibility of combining the two weapons of surprise and shock to the

maximum degree. The interposition of so deep a zone between the frontier and the main barrier may, from political or geographical reasons, not always be feasible. It is an ideal at which to aim. Against such a system, the enemy, having to dispense with either surprise or a part of the shock effect, will probably feel that to abandon surprise will ruin his enterprise, and he will content himself with a preliminary bombardment of the main position by aircraft and super-heavy artillery, reinforced as soon as the thin crust of the observation line shall have been broken, by the remainder of his artillery.

The defender's main line of defence will be heavily fortified in concrete, and the garrison will be protected in subterranean chambers during the bombardment. The assailant may, however (and experience suggests, in spite of the most elaborate defences, that he will), effect penetration in the chosen sector. Clearly then, he should be presented with a third defended zone close to the second, so that his mobile forces may be hindered from pouring through the gap without further artillery preparation, and so that additional time may be procured for the arrival of reserves.

A fortified barrier of this nature, some ten to twenty miles in depth extending the whole length of the frontier, would, apart from the great administrative inconvenience it would entail, be terribly expensive in construction and maintenance and would require vast numbers of troops in permanent garrison. The result would be that neither men nor money would be available for the provision of those striking forces without which no adequate protection can be ensured and no victory can be won.[1]

Some compromise must therefore be effected. It may be that the third zone must be cut out; or that, in the barrier, gaps must be left, so arranged that, should the enemy penetrate through them, he would find himself in

[1] France spent so much money on the Maginot line that she had to leave her field armies for some years dangerously short of modern equipment.

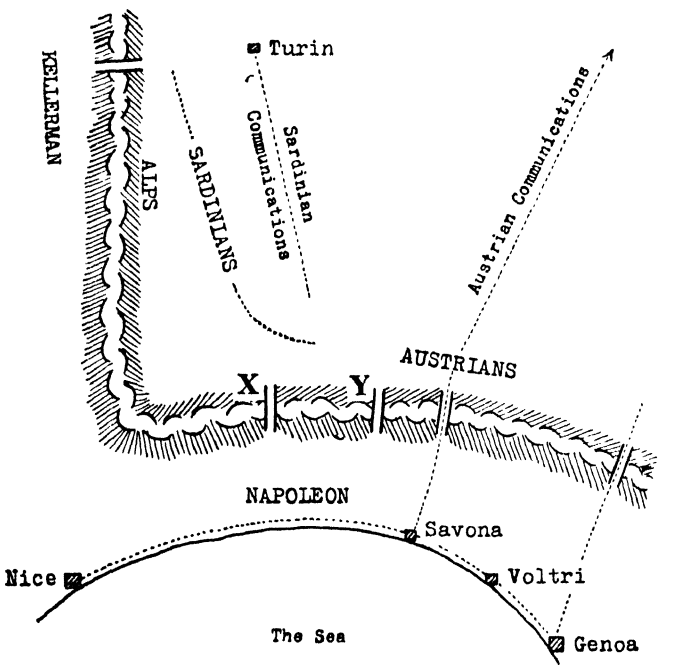
grave tactical embarrassment; or that part of the frontier be covered with inundations. Each case will have to be treated according to local conditions: The general staff, the engineer, and the scientist must work in close collaboration in order to extract the maximum value from the means available. No defence-system, as such, has ever proved impregnable. The strength lies in the spirit of the men who man the walls. It is indeed sad to-day that, whatever their valour and tenacity, the defenders are doomed to see hostile aircraft passing overhead to the bombing of their countrymen and perhaps even of their own homes. The demand of modern war for such a test of discipline and self-effacement transcends all previous experience, and can be met only by steeling the soul of a nation either through discipline or by united resolve.

Behind frontier-barriers, general staffs will, with the objects of delaying the onrush of hostile forces and of covering works of demolition, install light fortifications, to be manned by local militia, at important road defiles, which cannot easily be turned. They will probably elaborate schemes also for barring the entrances to towns, to be put into effect on the receipt of the news that the enemy has broken through. Against this form of defence mechanized forces are at their weakest. To deal with them, they will need so high an accompaniment of guns as will tend to lower their mobility.

Napoleon's Campaign in North Italy, 1796

At this point it may be of interest to interpolate a very brief sketch of a famous campaign in order to illustrate in simple form the terms, the principles, the methods, and the essential features of war, which we have been discussing.

Sketch 12.—Napoleon, south of the Apennines, and Kellerman, west of the Alps, completely separated by distance and mountains, are operating on *exterior lines*, facing the Sardinians and Austrians, who are on *interior lines* in easy though not close connexion. The Sardinians are based on Turin, the communications of the Austrians run north-east to Milan and the Mincio. Napoleon's communications lie parallel to his front along the Cor-

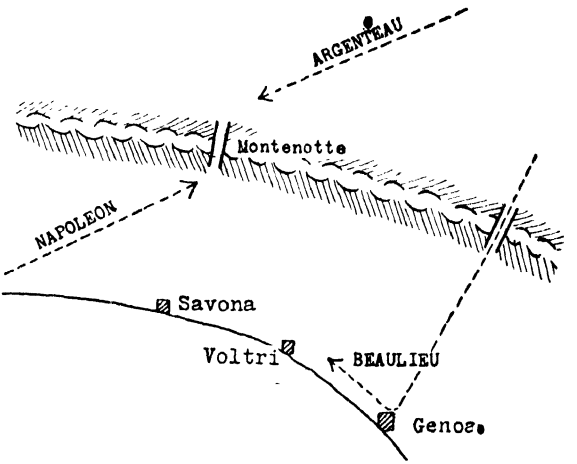


Sketch 12

niche road, then a miserable track, to Nice, and they are threatened by Nelson.

The young general, at the opening of his first campaign as a commander, is clearly in a dangerous situation; for the enemy, by forcing either X or Y pass, can sever him from his base. His one asset is a higher relative mobility than his opponents, due to the articulation of his army in brigades and divisions and to a system which relies not

only on magazines but also on requisitions. He has the advantage neither in numbers nor in equipment. Famine and disease are stalking through his camp. His men know him not. In his first and most famous proclamation, he tells them: "Soldiers, you are half starved and half naked. . . . I will lead you into the most fertile plains of the world. . . . There you will reap honour, glory and wealth. . . ." Only on the redemption of that promise, when his troops, from the rugged peaks of the Apen-



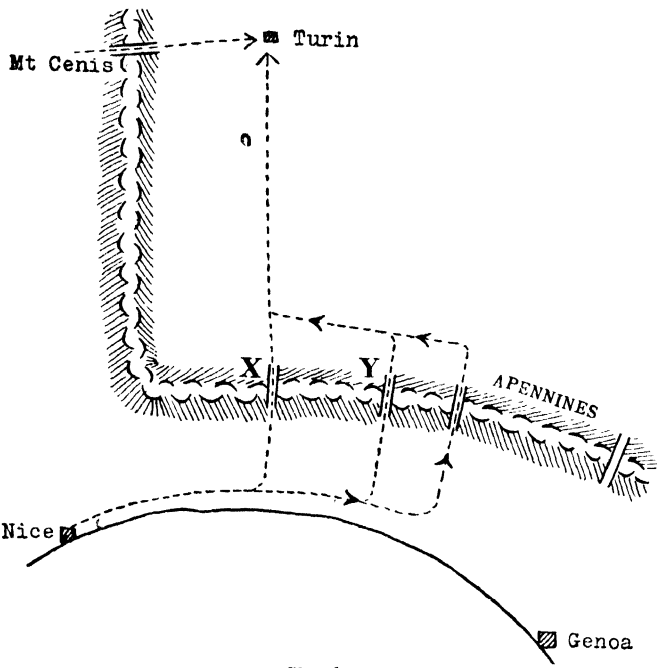
Sketch 13

nines, look down as conquerors on the green plains of Piedmont, does he win *morale* to his standard.

Sketch 13.—Napoleon, who has long and deeply pondered his problem, decides to adopt the offensive. He is, however, anticipated at the outset by Beaulieu, the Austrian commander, who himself attacks in two columns—one under his personal direction, along the coastal road from Genoa, the other under Argenteau from the north. These two bodies are separated from each other by the mountains and therefore cannot easily *co-operate.*

Napoleon *economizes* troops by fortifying the passes so

that he may reduce his detachments there. He employs one and a half brigades only to contain Beaulieu and *concentrates* the remainder towards the Savona gap, where the country is best suited to the effective employment of large forces. At Montenotte, glorious in French annals, he overwhelms Argenteau. He affects a *surprise* because



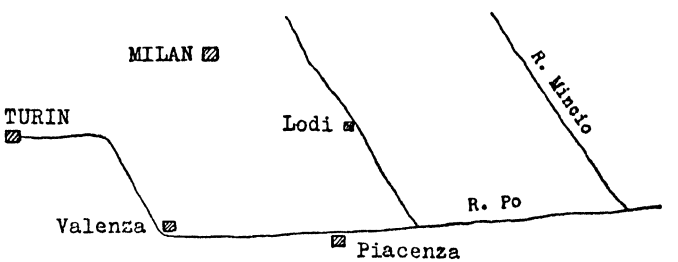
Sketch 14

his movements are quick and sudden and because, having obtained permission to march his army through Genoa, he is expected to strike in that direction. He is assisted by the mistakes of his opponents; for Argenteau, even within his own force, disobeys the principle of *concentration*, by leaving his reserves so far from the main body that they are unable to participate in the battle and are carried away in the rout. Beaulieu hastily retreats.

Napoleon has struck at the point of junction of the allies. Looking into the minds of the opposing com-

manders he is sure that divergent interests and divergent lines of communications will prevent them from acting in quick and cordial *co-operation*. He is now on *interior lines*. He holds off the Austrians with a detachment while he smites the Sardinians and forces them to surrender. He then turns upon Beaulieu and, defeating him also, conquers North Italy. Though in numbers inferior over the whole theatre of operations, he is invariably superior on the field of battle. Such is the art of the commander.

Sketch 14 illustrates the importance of communications. Anxious to shorten and eventually get rid of his long and dangerously exposed connexion with Nice, Napoleon, after



Sketch 15

passing through the gap at Savona, changes his line of supply successively to Y pass, to X pass and, finally, to the Mont Cenis, where it is both short and *secure*.

Sketch 15.—Beaulieu is lying on the Po, south of Milan, his communications running back to the Mincio. Napoleon has inserted in his treaty with the Sardinians a clause permitting him to cross the river at Valenza, and he sends a division towards that point. Beaulieu assembles his army to oppose the passage. Napoleon then concentrates the remainder of his divisions, marches rapidly to Piacenza, and, crossing there, threatens the enemy's communications. The Austrians beat a hurried retreat to escape envelopment. They are defeated at Lodi and the French enter Milan in triumph.

Napoleon, in making his flank march, was taking grave

risks, but they were carefully weighed. He knew his elderly opponent to be slow of thought and action. He knew that he would be *surprised* by the movement, and he knew that the *mobility* of his own force, deriving largely from the skill of its commander, was superior to that of the enemy. In this campaign, as in many others, he displayed a tireless physical energy, everywhere inspiring his troops to fresh courage and to renewed efforts. The contest was one of youth, physique and genius, against age and mediocrity. Beaulieu was seventy-two. Colli, the Sardinian, suffered from gout and, consequently, could neither ride nor walk. The budding dictator of twenty-seven saw but one *objective*—the enemy's army—and kept it constantly before his eyes; and he battered it without ceasing. He pierced with his wits his opponents' brains. He anticipated them, puzzled them, shocked them. A leader in a new epoch, making war in a definite, aggressive and, as with all great captains, apparently strange manner, he was certain to beat adversaries whose methods were fashioned by the stiff formalisms of a bygone age.

CHAPTER IV

The Art of Command

" The English have a notion that war is taught by Nature as eating is."—Carlyle.

THE subject of fitness for command has been much before the public of late. It is a subject which has been discussed through the ages, and will continue to be discussed in the future as in the past. Being wrapped up in human nature, it presents but few new facets. We may, therefore, expect to find in history and in the sayings of the wise a basis on which to assess the essential qualities of leaders.

The accepted requirements are character, intelligence (reinforced by study) and a sound physique. The first is the most important by far. It is indefinable, elusive, imponderable. Many qualities contribute to the make-up of character, most of them inborn, such as courage—moral and physical—energy, *sang-froid.* " *La première qualité,*" said Napoleon, " *d'un général en chef est d'avoir une tête froide qui reçoive des impressions justes des objets, qui ne s'échauffe jamais, qui ne se laisse pas éblouir, énivrer par les bonnes et les mauvaises nouvelles; qui les sensations successives ou simultanées qu'il reçoit dans le cours d'une journée s'y classe et n'occupe que la place qu'elles méritent d'occuper.*" That is a fine description of one of the most valuable attributes of leadership. But of more importance are the will to conquer and the dogged determination never to be beaten whatever the buffets of nature, fortune, and hostile action. Ludendorff makes a useful addition: " A good general," he says, " must possess a sense of

actualities—otherwise he is nothing but a visionary." [1] Yet another quality of prime importance is the readiness to take risks. *Qui ne risque rien, n'attrape rien.* The dangers involved must be carefully weighed against the results to be won from success; and the decision, even if it be to chance all on a single throw, must be taken. No Great Captain has earned his niche in the temple of fame who dared not " put it to the touch, to win or lose it all ". As Lord Howe wrote in a letter to Sir Roger Curtis: " Some occasions in our profession will justify if not require more hazard to be ventured than can be systematically defended."

Character must be cultivated by living a hard and temperate life, by gaining self-confidence through study and through the practice that makes for efficiency. It will decay in self-indulgence and idleness. Its force is cumulative and is to some extent won and enlarged by persistence. "Our lives," in fact, "make to themselves a moral tradition." Of Lord Kitchener it was said: " He began life with no gifts from the Gods . . . and yet, by resolutely following the road of duty, by earnestly and stubbornly striving to serve his country's interests and by never for one moment considering in that service the safety of his own life or the making of his own fortunes, this rough and ordinary man bred in himself a greatness, which, magnified by the legend itself created, helped his country in one of the darkest hours . . . of its long history." [2]

This was not wholly true, for Kitchener was born with the gift of character; but it emphasizes the value of persistence, and it introduces this " legend itself created ", which is one of the imponderable factors of war and often of incalculable worth. Napoleon, in the retreat from Moscow, halts near Krasny with 14,000 men to await Davout's Corps and Ney's rearguard. Kutusov is close to his flank with 80,000 men, and is urged by Sir Robert

[1] Quoted *Infantry Journal*, U.S.A., 1937, p. 528.
[2] *The Gentleman with the Duster.*

Wilson—the British military attaché—to attack. But in vain. The Napoleonic legend, the prestige of Austerlitz, frighten the Russian and he lets slip the golden opportunity. Dorsenne and Marmont secretly concentrate 60,000 men to raise the siege of Ciudad Rodrigo. Wellington can oppose only 15,000 troops, but "a great train of great days and victories" lies behind him—Vimiero, Talavera, Busaco. Marmont manœuvres almost within cannon-shot but dares not attack. Wellington watches the proceedings calmly and, in the night, falls back and, reuniting his scattered detachments, offers battle in strength. "The legend itself created" has saved the army. "That bloody old hooked nose," his soldiers would say, "is worth 10,000 men to us any day of the week." And Wellington knew how to use that power. At the battle of the Pyrennees, Marshal Soult effects a skilful concentration and attacks the British army, on which a wide distribution has been enforced by the need of covering the siege of Pampeluna. The French move swiftly and fight fiercely. Wellington, riding at full speed, reaches a point whence he can observe the enemy's main movement. Rapidly pencilling an order for the redistribution of his troops, and dispatching it by his only staff officer, he rides alone up the mountain. "One of Campbell's Portuguese battalions first descried him and raised a cry of joy, and the shrill clamour, caught up by the next regiments, swelled as it ran long the line into that stern and appalling shout that the British soldier is apt to give on the edge of battle and which no enemy ever heard unmoved." [1] Soult hears the shout and, being a cautious leader, defers his attack until he learns the reason of it. And that gives Wellington time to bring up the 6th Division and, with it, to win his battle.

This trend of thought brings us by a natural process to the instinct for psychology—an instinct compound both of character and intelligence—by which a commander

[1] Napier's *Peninsular War*, Vol. VI, p. 130.

looks into the hearts of his own soldiers and into the secrets of the hostile leader's mind. *Le petit caporal* strolling among his camp-fires read the minds of his men like an open book and drew both inspiration and knowledge therefrom. In the American Civil War, Lee and Jackson, competing with former comrades of the cadet schools and the army, were able to undertake operations against McClellan, Banks and Pope, which would have been dangerous against an opponent of unknown capacity.

A great leader must himself be a master of stratagem or he must employ a staff officer with a gift for it. The most interesting examples of the art may be drawn from our own history. Marlborough watched closely the effect on the mind of Villars of each of the complicated evolutions which led to the forcing of the *non plus ultra* lines. Wolfe completely puzzled Montcalm by his manœuvres on the St. Lawrence before he scaled the heights of Abraham.

The best age for generals is a much-debated point, especially at the moment. Youth has definite advantages: physical fitness, energy, activity and endurance. It has imagination. It is untrammelled by prejudice. But these qualities must be present in high degree to balance the lack of experience. Though no great artistry was displayed in 1866, 1870 and 1904, the victors in those campaigns won most convincingly in spite of the fact that the higher commanders were almost without exception sexagenarians. On the other hand, the old have much to lose and but little perhaps to gain. They are therefore shy of risks. " Boldness," says Clausewitz, " becomes of rarer occurrence as we ascend the scale of rank." And the old are fast bound by prejudice and tradition, which makes it difficult for them to adopt innovations in the heat of conflict. Ossification has set in, not only physical but also moral and mental.

Of the successful young commanders, there is Napoleon, never better than at twenty-seven in his first Italian

campaign. His abounding vitality secured to him many points over Beaulieu, his septuagenarian opponent. There is Alexander, world conqueror, whose " divine " attributes were the appendage of fortunate youth. There is Condé, who won his greatest victory—Rocroy—at the age of twenty-two. There are many others. With nearly all, it was the accident of birth that had enabled them to rise early to high command.

On the whole, there appears not much to choose between age and youth. But, if we examine this question in connexion with the type of campaign involved, we may note that the veterans were successful as a general rule where the conditions enabled them to sit far back and pull the strings, whereas the younger men won their battles for the most part by a more direct leadership. In the future, we should base our choice upon history and upon reason, both of which appear at the moment to point in the same direction. In the next great war there may be one high commander in the back areas, otherwise the battles, certainly the early battles, will be directed not from a princely château in the back area nor even from the back of a well-schooled charger, but rather in the air or in a fast-moving motor-car; and the passage of events will be so rapid that, to meet their challenge, every faculty, physical and mental, must be at peak, the peak of a lifetime. No failing eyes or ears or heart or limbs may hope to meet and conquer the quick succession of emergencies that will arise. We can therefore safely ask that youth shall lead us in battles of the mechanical age.

. . . . . .

We may now consider the effect of study on the power to command.

Major J. H. Burns, in a brilliant article, trenchantly demands: " Why should military men be forced to follow the trade of the scholar. . . . Why this peering into a dim past while civilization rushes forward like a

mighty river?"[1] And he thinks we are inclined to fit problems to the Procrustean bed of theory. The student must meet this assault. He must tackle his work without prejudice and he must seek a much-needed guidance from the past in the swift movement of military progress.

A mere study of the past has no military value. The generals opposed to Napoleon at Jena had studied the campaigns of the great Frederick with the utmost care; but they treated his methods almost as a ritual and made no attempt to adapt them to current needs. And there are pitfalls for the student even when he appears to be studying on the soundest lines. Between 1904 and 1914, we imagined war as we desired to see it. A soldier's profession in his own eyes is one of romantic adventure, of movement, of bright colours, gay clothes, music and waving standards; and he subconsciously discards pictures painted in sombre hues. A war of trenches made no appeal to the emotions; and unfortunately, the emotions conquered the mind. In spite of conclusive evidence from Manchuria of the difficulties of movement in face of the machine-gun, our army (and all armies were alike in this respect) rushed into battle primed with the cult of the offensive.

This was curious because, although many statements to the contrary were made, we—the students of pre-war days—had taken the advice of Napoleon and had " read and reread the campaigns of the Great Captains ". We had culled from them what are recognized as the sound principles of strategy, and we had fully realized the important part played by the human factor in war. In fact, we had done everything that we ought to have done except that we failed to discover (because it irked us to do so) how the lessons learned should be applied to modern war by modern weapons. Our intelligence was not at fault, but we did not give it a free run. Conse-

[1] op. cit.

quently, we took insufficient interest in the machine-gun, which now, twenty years later, still dominates the battle-field, and we took even less interest in the spade or wire or accurate gunnery. Galloping cavalry, the bayonet charge, and guns sweeping up in support were painted on our minds, rather than the dreary realities of empty, shell-pitted spaces, and of humanity relentlessly pounded to enable a few acres of trench-seared morass to change hands. In this matter M. Bloch, whose forecasts were in other respects notoriously faulty, was able, because his civilian mind was unclouded by romantic ideals, to prophesy more accurately.

The lesson in all this for us to-day seems to be not that we should discard history. We should study it as much as ever, seeking as before the eternal principles, the key to the spirit of armies and the art of the commander. We should ensure, however, that our sense of actualities is in control of our emotions, and that we see things rather as they are and as they are likely to be than as we should wish them, relating unrelentingly the lessons learned to the advances of modern science and to modern social and political conditions. We must not shrink from unpalatable truths, which may seem to run contrary to dogma, tradition or convention. Even chivalry might have to go were the enemy to discard it to our danger. Wars are nasty affairs, however the romanticist may hallow them. Instead of trying to render them pleasant, we should devote our energies to making them shorter and fewer.

By the end of the war, we had succeeded in recapturing some of that mobility of which the machine-gun seemed to have deprived us for ever. Then, with a further improvement of armoured vehicles, the old glamour of rapid movement appeared to be returning; and, for a decade, we linked our intelligence and our imagination with the feats of the great Mongol invaders. That stage has not ended; but the multiplicity of antidotes to the

tank may be bringing it to a close. It is for us to watch lest the attractions of a revived mobility should cause our emotions once more to gain control of our reason. Study which leaves us, as it found us, romanticists, possesses a value no greater than that of a study which is simply academic.

A commander will succeed neither in his studies nor in his battle-plans unless he is possessed of imagination or makes use of those who possess that quality. His imagination must paint the potentialities of new weapons and conjure up ideas for their exploitation in the prevailing circumstances of air, land and sea. It must embrace the situation before him both as he sees it and as his adversary sees it. It must sense the morale of his own troops, of the hostile troops, and of the hostile commander.

Plans devoid of imagination may lead to stalemate, and the avoidance of defeat. They will never win quick victory. Imagination must indeed be duly restrained by common sense. The trouble is that " common sense ", " sound judgment ", and " ordinary prudence ", admirable qualities as they are, often connote lack of vision and a tendency towards the avoidance of risks. Sir Philip Chetwode, in an address to staff-college students, said that: " War and particularly successful war is much more an affair of the imagination than many people think, but few officers in the army allow much play to their imagination. It would almost seem to be a crime to do so or to be one inch outside ' sealed pattern ' and regulations." There were, then, perhaps, some grounds for the merciless comments of both allies and enemies on our tactics and strategy in the Great War. At least they should give us cause to ponder.

So much for peace-study, which prepares the mind for the appreciation of problems in general. War-study is devoted to the particular problem at hand. Note the methods of Napoleon in the latter respect: " If I always appear prepared, it is because, before entering upon an

undertaking, I have meditated for long and have foreseen all eventualities. It is not genius which reveals to me suddenly and secretly what I have to do in circumstances unexpected by other people, it is reflection, meditation." And again: "I have adopted the habit of thinking out what I ought to do three or four months beforehand, and I base my calculations on the expectation that luck will be against me." But, even with all this study and care, this great man finds command no light affair. "When I have drawn up a plan of battle I am the most pusillanimous of men. I magnify the dangers and the incidents, am in a terrible state of excitement even when I seem cheerful; I am then like a girl who is going to have a baby." [1]

The commander must be sure in his own mind as to the object to be attained, and he must keep it clearly and persistently before him. Failure to do so will certainly result in those constant changes of plan which are the despair both of staffs and troops.

Every plan must, however, be based on guess-work to some extent. Should guesses prove wrong, should conditions turn out to be far less favourable than expected, should the object appear either unattainable or attainable at a cost grossly excessive with regard to possible gains, then it would be a sign not of strength but of weakness in a commander, were he to persist in that particular design. The problem whether or not to continue the pursuit of a declared aim of fading prospects is one of the most refractory that a commander may encounter. If he persists, disaster may ensue. If he desists, his priceless prestige may fall. He should remember, however, if torn with doubt as to which course to follow, that it is safer to persist; for history has repeatedly shown that commanders as a class, while appreciating to the full their own embarrassments, gravely under-estimate those of their opponents. Many bottles might be filled with the tears

[1] *Napoleon*, Emil Ludwig, p. 569.

of those who desisted too soon and learned later that the application of just one more pound of force would have broken the enemy's back.

In our system there is a remarkable gap which needs attention. There is no commander-elect of the army in the field. The C.I.G.S. remains at home. Among the Commands, Aldershot possesses the greatest prestige and might normally be expected to furnish the Commander-in-Chief. But Cæsar's Camp and Chobham Ridges provide but limited scope for one whose activities in war may range over vast provinces; and the control of two divisions offers an insufficient acquaintance with the army as a whole. It would seem that an Inspector-General should be appointed who would supervise all training, would direct the larger manœuvres whether at home or abroad, and would automatically become Commander-in-Chief of the principal army in the field on the outbreak of war. The main objection to such a plan is that a continual concentration on operations and training tends to divert the mind from the equally important matter of administration. It is, however, enough, perhaps, to state and emphasize the objection to ensure that it shall not be serious.

The strength of character, the bridled imagination, and the high and cultivated intelligence which together produce the Great Captains are but rarely found in combination. If one of these qualities is lacking, perfection is marred. Will history acclaim as Olympians, Foch, Galliéni, Joffre, Haig, Allenby or Maude? Perhaps Foch, perhaps Allenby. Foch led the Allies to victory; not, however, as an all-conquering hero, but as the embodiment, in the leader whose personal prestige stood highest at the moment, of the principle of unity of command. Allenby's conduct of the campaign in Palestine was a gem of the purest water. He could not have been more completely successful. But he was never highly tried; for he had at his disposal an immense superiority of force.

On the other side, Conrad von Hötzendorf had insufficient scope for his undoubted talents. Mustapha Kemal displayed high qualities but in a relatively minor sphere. Hindenburg and Ludendorff deserve high place; for their campaigns in the east were skilful beyond praise. But the riddle of their respective contribution to a great co-partnership has yet to be unravelled; and no dual leadership can rank in fame with the single performance of a Napoleon, an Alexander, or a Nelson.

In warfare, to which true mobility shall have been restored, the need for personal courage in the commander will be vital; for, however exalted his rank, he may have to " lead " in the original sense of that word. Actually, he is likely to spend much of his time in the air, whether the operations are naval, military, aerial or combined. Of Jutland in the early days of aircraft, Admiral Harper wrote: " It is possible that the Commander-in-Chief would have had a far better idea of the situation if, instead of being dependent on the reports of his cruisers and his own limited range of visibility, he had been in the air." But he considers that such action was prohibited by weak communications and the lack of training of the staff. Those objections no longer hold. Wireless has made tremendous progress, and staffs understand it well. General strategic control will still be exercised from the ground in whatever element warfare is being conducted; but, in the arena of battle and the approach thereto, the leader will be often in the air. Particularly will this be the case when he is in command of mechanized forces, for " to expect to teach a battle how to rage either from a rear headquarters, into which are pouring reports, the mischief of whose belated arrival is aggravated by an uncertain speed factor, or in a tank looking out with blinkered vision into a pall of smoke, is an idle hope ".

The problem of finding the dividing line between political and military control has always been perplexing.

Sir William Robertson wrote two large volumes [1] on the subject from his experiences in the Great War. Now, when the nation—man, woman and child—fights as a whole and where every move on the board affects so many issues, domestic and foreign, the commander can hardly expect a free hand. The best he can expect is that, having been allotted a task, he may be allowed to execute it in his own fashion and be given all available support.

Having examined the qualities necessary for the adequate discharge of the functions of high command, we may now consider by what process of education and in what nature of environment such seeds of genius as may exist may be brought to fruition. This is a matter on which opinions will differ considerably and which lends itself to very wide discussion. The writer proposes to limit himself here to a brief opinion based on slender personal experience of the measures calculated to bring the best men to the top, fit physically and highly developed mentally for the responsibilities they may have to assume. He would like:

(*a*) A system which would demand from earliest youth the continual exercise of responsibility. Such a system is prevalent (except as regards specialists) in the navy from the midshipman in charge of a cutter to the captain who rules the battleship.

(*b*) Promotion by merit (for which an excellent system exists) whereby valuable officers may reach the higher ranks while still in their prime.

(*c*) Opportunities to selected officers in the junior ranks for study not only of military matters but also of the broader aspects of the national life.

(*d*) A recognition that acknowledged professional efficiency, so far as such efficiency can be tested in peace, should endow the possessor with a prestige higher by far than that of the most skilled exponents of games.

[1] *Statesmen and Soldiers.*

(*e*) Official discouragement to the tendency of senior officers to cast a blight upon unconventional ideas expressed by their juniors.

(*f*) The maintenance at each command and divisional H.Q. of a war-game for the instruction of a large number of officers in the wider aspects of war. The "game" should be permanently in commission, the technique of its management being in the hands of a small permanent staff, so that it can be put simply and quickly into operation.

(*g*) Opportunities for maintaining physical fitness by such exercises as hunting, ski-ing and pig-sticking, a sound balance being maintained between mental and physical training.

CHAPTER V

Mechanization

MECHANIZATION, like most processes, has had its ups and downs. The inefficacy of the tank, of which so much was expected, at the Somme, at Bullecourt and at Passchendaele was a bitter pill to its advocates. In the first two of those battles, the small scale on which it was used reduced its value as a technical surprise and thereby deprived it of any prospect of decisive effect. In the third, it was continually becoming bogged. Not until Cambrai, did it prove successful. In that battle, employed in large numbers, over suitable ground, it effected, not indeed a technical, but a tactical surprise. According to General Fuller, the conquest of a square mile in the Salient, where the tanks, so far as they took part, were wrongly used, had cost about 8,000 casualties. At Cambrai, where they were soundly used, the cost of the same area was eighty casualties. Hopes for a marvellous future for them at once soared high. Here was a purely British invention giving every promise of decisive results. On the German " Black Day " in front of Amiens, these hopes were apparently confirmed, albeit at a heavy cost in machines, and further confirmation was afforded in all our victories up to the Armistice.

Pride in British parentage, the conquest, so long deemed impossible, of machine-guns, wire and trenches, and the glory of a stupendous and unexpected victory combined to throw a glamour round the tank, perhaps not wholly deserved. Its earlier failures in the attack and its subsequent failures in our retreats in March and

April, 1918, were either disregarded or attributed to incorrect causes; and British and German writers were at one in ascribing to it the principal share in the victory of the Allies.

In view of this still widely-accepted opinion, with its decided bearing on the future of war, it may be found interesting at this point to consider to what causes should justly be ascribed the success of those great offensives, ranging from Riga and Caporetto to the Allied victories of the Hundred Days, in the penetration of entrenched systems, resting on secure flanks.

It is clear that every attack effected—firstly, surprise, thus preventing the defender from disposing his reserves to meet the particular attack; and, secondly, shock—of a nature beyond human endurance, caused partly by the surprise and partly by a powerful concentration of guns and mortars discharging ammunition in the immense quantities rendered available by the new technique of mass-production.

It is equally clear that the tanks of those days did not form an essential ingredient of victory; for, in spite of their aid, the Allies failed to achieve any decisive victory, and also failed to repel in their early stages, the great offensives launched by the Germans who were themselves unprovided with them.

So much is certain. Doubts (which have an indirect bearing on the value of tanks) remain on two points. The first—was it possible, except with the aid of greatly superior forces, to push through the gap and maintain movement until a distant objective giving promise of decisive results was reached? The second—was the Ludendorff or the Haig method of breaking the front the sounder?

As regards the first doubt, the Germans admittedly did not succeed in this respect in any one of their offensives. They failed because their strokes, though brilliantly planned and conducted, reached in every case

a 'tactical and strategic' limit imposed by the advent of hostile reserves and an administrative limit imposed by the difficulty of supply. They were, however, as regards the Western Front, only just equal in numbers and inferior in material to their opponents. The possession of a superior force or of a mobile force for exploitation might well, as already pointed out, have turned the scale in their favour.

As regards the administrative limit, the Germans, in their advance in 1918, failed to make any serious use of captured material and they were greatly hampered, first, by lack of transport—a deficiency which is unlikely to occur at the outset of a campaign—and secondly, by having to move over the devastated Somme area. In planning grand operations in future, it seems highly probable that no sector will be chosen for assault unless the ground beyond it will permit of the swift movement and supply of engined forces.

If these points be borne in mind, and advantage be taken of aircraft as an additional means of supply, a striking force attempting a decisive advance will not necessarily be hindered by a lack of administrative capacity. It is not a matter, however, on which to be didactic, for we have had no experience of the supply of engined forces, except in Abyssinia where the scale of operations was relatively small and the opposition weak.

The second doubt as to the lessons to be learnt from the successful offensives of 1918 arises in connexion with Ludendorff's operation on the 21st March. Was he sound in staging a single big attack, or should he, as Haig did later, and as Wetzell advised, have mounted a series of attacks, separate both in time and place from one another, but closely connected strategically, in the attempt to shake the hostile system from end to end and thus enable an advance to be made along the whole front.

Haig was successful and Ludendorff failed. But

success is not the only criterion on which to base judgment. Haig made repeated use of the newly-acquired shock-power of his artillery by moving his heavy guns up and down his front as required, and he drew considerable value from his tanks. He followed up each blow by a limited advance on the part of the particular army engaged, and, in so doing, defeated and drove back the hostile armies opposed to him. On the other hand, despite the possession by the Allies on the Western Front of vastly superior forces and the lowered morale of their opponents, he never managed to achieve decisive success, though, of course, his action contributed greatly to the enforcement of Germany's surrender.

The causes of the failure of the German offensives have been already stated. It may, however, be worth while considering why it was that they, without tanks, succeeded as well as did the British offensives which were strongly supported by those weapons.

The reasons, apart from the surprise and the shock of the opening stroke, seem to have been—that the divisions had been taken out of the line and given intensive training in open warfare, whereas their opponents were wholly unprepared in that respect; that divisions were assigned no limited objective but were expected to advance for several days without relief; that units were instructed to press forward regardless of what units on either flank were doing; that the new infiltration tactics, thanks largely to the initiative displayed by crews of the light automatic, proved of decided value; and, finally, that the British defensive system was faultily conceived.

Haig must have studied these tactics. He already realized the value of surprise and shock in the initial stage, for he had himself applied them at Cambrai; and he continued to apply them through all his offensive battles. In view, however, of the ultimate failure of every German offensive, it was not unnatural that he should prefer, for action after the first shock, measures which

afforded promise of less spectacular but more enduring rewards. Unfortunately, he did not realize that Ludendorff's lack of decisive success was due largely to failure in exploitation. The Germans could pursue only on foot. That they came, nevertheless, so near to victory emphasizes the value of pursuit in any form and is a tribute to the marching and fighting powers of the German infantry. Haig, however, suffered from no such handicap. He had at his disposal for exploitation tanks, whippets, infantry in lorries and, for the hour when defeat should turn to rout, a great force of cavalry. That being the case, was the surprise for which such immense and skilful preparations were made, and was the gigantic shell-shock imparted to the enemy to be followed by a halt, in the old, old way, on the Green Line—a policy which would unquestionably permit the arrival of the hostile reserves and entail a renewal of bloody conflict on even terms. If that was right, then all history is wrong. Haig was, of course, entirely correct in making preparations for an onslaught elsewhere against the event that success in the first battle might fail to reach expectations; but that was mainly a matter of the displacement of heavy guns, weapons which have no serious value in exploitation.

What then is the moral to draw from the comparative failure in this particular connexion of both German and British methods? It seems to be, first, that continuity of operation is essential; secondly, that infantry on foot is not the arm for exploitation beyond the enemy's defensive system; thirdly, that the policy of the limited objective is sound to the extent only that infantry profiting from the bombardment should occupy an assigned line or trench-system; and, finally, that through the gap held by the infantry should pour mechanized forces followed by motorized (or embussed) infantry, the latter ready to occupy areas as they are won.

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To return now to the subject of mechanization in general. The war ended, as stated, in a blaze of triumph for the tanks; and, although thousands of them were destroyed in the holocaust of material which followed the Armistice, interest in them remained high. In the succeeding years, much research both into their technique and into the tactics appropriate to their qualities was conducted, especially in Britain and America. In this process, ideas changed considerably. Satisfied that the obstacles to movement had once been definitely conquered and could be conquered again, the belief became prevalent that a renewal of open warfare was at hand. Instead, therefore, of the original weapon, which was intended to destroy the dominance of machine-guns and wire and which, to fulfil that task, was slow, heavily-armoured and possessed of a high trench-crossing capacity, a faster, lighter vehicle was evolved which was intended to strike, no longer at strength but rather at weakness, and was expected to have an influence on warfare analogous to that of the Mongol horsemen who long bestrode Europe unchallenged.

For a decade and a half, it is possible that a nation possessed of large numbers of these machines might indeed have emulated the feats of those eastern warriors; for troops had not then been provided with any equipment to deal with the menace. In fact, all that a commander could do in the matter was to seek ground so difficult to tanks as to render the struggle between petrol and muscle, steel and wool a little less unequal; and that was action of a negative nature often inappropriate to the tactical situation.

On the line of march, a division tried to protect itself by throwing out field-guns to either flank—a procedure which was disorganizing without being effective. To march securely within a circle against whose circumference there is a potential threat from all points of the compass, is difficult enough for mechanized forces; it was impossible for the division equipped as it was, say,

in 1926. If it took up a position, a mechanized enemy might ignore its front and attack its flanks and rear. It was strong only against a frontal assault; and that the tanks would have been foolish to deliver.

Nevertheless, for some years, owing to the lassitude consequent on a long and exhausting war and to the expectation of an enduring peace, the grave possibilities immanent in this threat caused no serious anxiety. Then the nations, especially those less richly endowed with tanks, awoke to the danger. Antidotes sprang up in many forms. Fortified lines were built along frontiers and rivers, and anti-tank guns and mines developed rapidly in quality and quantity. By 1937, the German, for instance, had an establishment of seventy-two anti-tank guns per division,[1] and the menace of a sudden irruption of armoured forces had, for those countries which had developed the necessary protective measures, been greatly reduced.

This reaction caused, however, no halt to the growth of mechanization, which process, stirred by the explosive nature of the political situation, had, from the early thirties, gone from strength to strength. Both France and Germany now possess three or four mechanized divisions and can motorize many others. Britain has a mobile division and has motorized the regular artillery, transport, and, to some extent, the infantry of her metropolitan forces, so that she has hardly a horse remaining in the ranks. Russia is said to possess anything between 5,000 and 10,000 tanks of great variety of size and performance. In Spain, both sides do, indeed, complain of their tanks, of which they have many types, but they are using them in growing proportions. There has, in fact, been a great replacement everywhere of specially vulnerable troops, such as cavalry, horsed artillery and transport, by petrol-driven and armoured units. The

[1] It is said that, by 1939, he will have 135, seemingly an excessive number, and he has already 13,000 anti-tank mines per division.

strategic and tactical mobility of guns and infantry has been greatly increased, and mechanized fighting forces of high power and speed have come into existence.

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We may now turn from the history of mechanization to its part in strategy. The fate of armies will, owing to the increase in motorization and to the fire-power and the mobility of mechanized forces, depend more than ever on a correct appreciation of the value of time. To anticipate an enemy by a minute at an important tactical feature may make all the difference between victory and defeat. Yet in a war where minutes are greedily snatched, it is as dangerous as ever to proceed without adequate preparations. Modern war, so long as it is fluid, will therefore make higher demands upon the combination of quickness of perception with soundness of judgment of commanders than ever in history. In March, 1918, the Germans were able to assign nine hours to the artillery bombardment which preceded their assault; and then, even with their slow-moving forces, were able to penetrate forty miles beyond our original lines—a distance which might often prove decisive—before being brought to a halt by the intervention of the Allied reserves. Such a preparation to-day would allow of some eight hours' movement of the defender's petrol-driven troops from both flanks and in the centre. In that time, reconnaissance vehicles would have covered two hundred miles and other vehicles one hundred and fifty miles, all converging on the critical area. The first arrivals would form a thin crust which succeeding troops would gradually thicken until it might present a new and formidable barrier to the assailant, backed perhaps by several mechanized brigades ready and set for the counterstroke. Clearly then, a lengthy artillery preparation would lead to disaster or at best to stultified effort. On the other hand, a short preparation might not suffice to crush the defences and the morale

of the enemy; and, unless they were overcome, the assault would wither away. The French incline to a comparatively long preliminary bombardment, at least three hours in duration. The Germans apparently hope by applying the maximum of shock with the maximum of surprise to reduce the period to a lower figure. Correct correlation of time with shock-power is clearly vital to success.

Presuming the gap has been secured, the rapid exploitation of success becomes the paramount consideration. In modern wars, in contrast to those of earlier days, the tactical battle has often to be won before strategy can have full play. And it is only through the skilled handling and the quick movement of the mechanized force, after the gap has been won, that strategy can hope to profit from the tactical victory.

If this mechanized force has been to a great extent destroyed on the field of battle, the assailant, even if he should have stormed the position, will, after his Pyrrhic victory, be impotent for further action. Granting, however, that the mechanized force is successfully through the gap, the danger that the enemy will destroy his communications arises. The more speedy the advance, naturally the less time will the defender have to effect intended demolitions. On the other hand, modern power-tools enable such demolitions to be executed much more quickly than in 1918, and they are likely to prove more effective against mechanized than muscle-driven formations.

There is room for a whole strategy of demolitions at this point. The most important auxiliary on reaching the gap is no longer the gunner or the airman but the engineer. It will be his business, by speed of movement, of repair, of improvisation, to enable the assailants to retain their mobility. On the defender's side, provided that their government do not falter at the execution of the most drastic measures of destruction, the mobile field-com-

panies, working in close touch with the general staff, may have an opportunity for the most brilliant frustration of invasion in the history of their distinguished arm; and, not frustration only, but even defeat. Clearly, however, the assailant will choose lines of advance which will reduce to minimum so dangerous a power in the hands of an opponent.

Other matters affecting the time-factor are that mechanized divisions are likely to be much quicker than infantry divisions in overcoming the resistance of beaten troops, and that the speed, the ubiquity and the numbers of armoured vehicles, fanning out after passing the gap, may enlarge into panic the fear caused by successful penetration.

But (and there is a but in every case) the assailant in the process of pursuit is in considerable danger of being struck in flank by counter-attacks. To guide us in this matter, we have the experience that no such counter-attacks were delivered in 1918 until the advance had been definitely arrested, although certain obvious opportunities occurred. The consequent suggestion is that, as the initiative lay with the assailants, the defenders thought, not of counter-attack but merely of stemming the advance. That indication may, however, well prove a faulty guide; for, in the future, the defender's mobile divisions, being purely offensive instruments, will have undoubtedly received instructions to attack the assailants on one or both flanks rather than simply attempt to intervene between them and their objective. Whether or not these instructions will be maintained when the enemy has broken the line and is moving rapidly, say, on Paris, the future alone can disclose. It is a matter of nerve in the High Command.

On the whole, this question of the likelihood of the defender being able to set a limit to an assailant who has pierced his main defensive system seems to be much as it was in 1918, though the balance, if any, is in favour

of the assailant. Leadership is likely to dominate the issue. The main danger from the defender's point of view is that the aggressor may strike without a declaration of war, and thereby effect so high a degree of surprise as dangerously to interrupt arrangements for control, reinforcements and mobilization.

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When it is intended to smash through a fortified frontier, it is probable that a sector will be chosen for assault, beyond which the country is specially suitable to the action of mechanized forces, and that, against it, a mighty force of artillery drawn from every available source will be assembled with all secrecy and suddenness possible. Broad roadways, admitting perhaps of four rows of one-way traffic, may greatly facilitate this concentration, and all the arrangements for the rapid opening of fire can be effected by the survey corps prior to the arrival of the guns. The plan for the breaking of the principal crust may be a replica on a vaster and more modern scale of the later offensives of the war: a stupendous shock, designed to unnerve the defenders, succeeded by assault, the capture of the sector and the passage through the gap of the mobile divisions, followed by the infantry of occupation. The resultant situation, except perhaps as to time and place, will then, no doubt, be that anticipated by the general staff of the defender's army, who may therefore be able to bring into play their plans for striking the invaders with all the mobile force they can summon, and for occupying by infantry heavily armed with anti-tank weapons, key-positions commanding important communications. The various factors which will weigh in the balance as between the opponents have already been discussed in this chapter.

It seems possible that the aggressor, having cleared for himself a gap, will send forward only the most mobile of his artillery with the striking forces and will transfer the remainder elsewhere to prepare another

blow, choosing a locality so near that of his original blow that it may be possible to connect up with the latter and thus broaden the base of invasion.

As defended frontiers are seldom, if ever, fortified throughout their length, it may be possible for an aggressor to sweep into his enemy's country without the preliminary of a powerful artillery preparation. But that is unlikely. His success will depend not only on penetration, but also on the possibility of using his mechanized force thereafter as a powerful, well-knit striking instrument. That condition will, as a rule, restrict his operations to a few widely-known lines of advance; and it is athwart these approaches that the defender will have placed his fortifications. On the other hand, a frontier not wholly fortified, does afford the assailant the great advantage of allowing him to turn flanks and utilize enfilade fire—an advantage which may enable him to dispense with some of the vast mass of guns regarded as essential for the attack of a line where the flanks are secured.

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We may now pass to the realm of tactics. During the past few years the Mongol idea has tended to disappear. Genghis Khan used to strike mainly at weakness, and our *F. S. R.*, in general, still encourages that procedure with mechanized forces. But continental authorities appear to visualize tanks in large numbers, accompanied by infantry, attacking to front (and to flanks if there are any) by successive waves with the support of an artillery, less powerful indeed than that which dominated the field at the end of the war, but compensating for weight of metal by improved technique. The French tend to proceed cautiously, destroying and mopping up the enemy's forward lines before pushing farther on. They suffered heavily from an indulgence in optimistic offensives during the war, and they are determined not to repeat that experience.

One distinguished French writer considers that no assault should be launched until the enemy's position has been fixed by the most careful reconnaissance and the actual positions of his batteries have been pin-pointed. Such meticulous preparations, however, consume time, during which the enemy is digging in and accumulating ammunition, and during which his reserves, now duly warned, are arriving. He who aims at making everything sure in war will generally find himself beaten.

The Americans incline to the French method. The first wave, consisting of medium tanks, tackles the anti-tank guns. The second wave (accompanying-tanks of a light type) is closely followed by infantry and deals with machine-guns. The Germans, on the other hand, prefer in the first rush to overrun the hostile artillery and to assail various command headquarters, leaving to succeeding waves of tanks and to infantry the task of mopping up the trenches passed over. The British have a special, heavy tank, issued at the rate of one battalion per division, which is intended to precede the infantry in the assault.

These are the most commonly practised tactics of attack in open warfare against a hastily-prepared position, which term has been defined as a system of defence on which some forty-eight hours of work have been expended. In general principle they remain the same in all forms of major attack, the difference in detail being that the more highly organized the enemy's defences, and the more secure his flanks, the more powerful must be the concentration of artillery against the particular sector selected for decisive assault by the tanks.

There seems to be universal agreement that tanks and infantry should be employed together in the attack, though opinions vary as to the method of combination. The French still regard infantry as the primary arm of assault and tanks as weapons of accompaniment which, with guns, pave the way. The presence of infantry

would, however, reduce the prospects of tanks for three reasons: the first, that it would weaken them against counter-attack by hostile tanks; the second, that machine-guns, instead of affording the valuable support of direct fire, would have to be limited to overhead, distant-barrage fire; and the third, that in attack the tanks need a good light and easy ground, whereas infantry prefer fog, natural or artificial, and broken ground; and it is not possible to reconcile in one area these mutually antithetic requirements. The question then arises whether tanks alone or infantry alone should deliver the attack. The three great advantages possessed by tanks are: the first, the speed with which they can traverse the space intervening between the armies, a factor which may enable them to reach the hostile position and the hostile artillery before the enemy has recovered from his initial shock; the second, the power of following more closely behind a barrage than can infantry; and the third, immunity from small-arm fire and small splinters. On the other hand, they will be subject to losses from anti-tank (A.T.) weapons as devastating as those suffered by infantry in 1914 from machine-guns, without the faculty possessed by the latter of going to earth.

The small tank might, indeed, be saved to some extent by its size and speed. It is, however, speedy only over good ground, having a relatively low cross-country performance; and it is certain that many of the approaches passing over such ground will be mined. The medium tank, with thicker armour, a higher cross-country capacity and a better gun-platform, will present a bigger target and will never be able to carry enough armour to be immune from the fire of the ordinary anti-tank gun. Dreadnought tanks, slow moving, few in number, and visible far and wide, will, however thick their armour, fall a victim to the larger-calibre guns, some of which may in future be automotive and ready in an emergency to move directly to the threatened area.

Apart, however, from the age-long struggle between guns and armour, from which the gun always emerges the victor in the end, there is the question of relative accuracy in shooting. The gun on the rolling, wobbling platform of the tank cannot expect to compete with a gun firmly anchored to the ground. Ship-guns, suffering in a minor key from the same drawback, have always been defeated by shore-guns.

On the other hand, tanks have over A.T. guns the great advantage which ships do not enjoy against coast-fortresses, that they are possessed of shock- as well as fire-power. They will, moreover, be afforded tremendous fire-support. They will be covered to the flanks and possibly to the front by smoke, which may be used far more extensively in the future than in the past; and, when conditions are particularly favourable to this form of guard, they may win through. It is held, too, that their chief opponent, the anti-tank gun, will be difficult to conceal from the air, for it must fire over open sights from a position in or near the front line. That, however, is a doubtful point, for this type of gun is an individual weapon for which, being widely distributed, cover can often be found in hedges, woods and broken ground.

Infantry, for their part, are even less potent for attack now than they were in 1918. But, under the conditions which then enabled them to advance, namely surprise and a tremendous artillery support, they possess certain advantages denied to tanks. They are better able to utilize ground for cover; they can attack by night or make use of darkness to cloak their close approach; they are able, in the event of incomplete success, to entrench on the line they have gained; and they have a high capacity for holding ground which they win.

The balance between the two is fairly even; but what weights the scale heavily in favour of employing infantry is the consideration that, if they are defeated, they will probably be able to try again either on the spot or else-

where; whereas the tanks, if they are defeated, may well have suffered so heavily as to be no longer available in sufficient numbers either to make a fresh attempt, or for the exploitation of any success achieved by the infantry, without which exploitation the success would be fruitless.

If the leading infantry are given a limited objective which lies within the enemy's position, which may have a depth of some miles, penetration should be completed by reinforcing infantry brought up as close as possible to the line by trucks. The tanks will then remain available for any tasks which may later fall to their lot.

Although tanks are weak against troops in fixed positions, they are thoroughly effective weapons against troops in movement. The infantry, having been successful in occupying ground, are almost sure to be subjected to counter-attack. Here is the opportunity for the tanks. Such of the enemy's anti-tank guns as may have survived the original bombardment, may, being mainly far forward, be unequal to affording effective support owing to the flatness of their trajectories. Neither the enemy's machine-gun barrage nor his shrapnel will be of any avail against armour. There will be only H.E. shell to face, which, fired from under cover, are notoriously impotent against tanks. A mechanized force, shepherded free of the ravage of the opening battle, could be thrust against the counter-attacking divisions with every condition in its favour. The latter are likely to escape defeat only if they are able to employ tanks. But, even so, they may have suffered heavily from anti-tank guns rushed up to the gap by the assailant before the tank-battle is joined.

Apart from the counter to the counter-attack and apart from the tank-battle, a mechanized force should, whenever the general situation can be favourably influenced thereby, follow the policy already suggested of striking against weakness. The occasions likely to occur are: pursuit;

flank-attacks against the enemy's position under assault by friendly infantry; independent flank-attacks developed beyond any strongly held area; attacks against an enemy's rear; and attacks upon lines of communications, especially upon the enemy's mobile advanced bases. In none of the operations named, if they are soundly planned, should it be necessary to break more than a thin crust, for which the armament and armour of light and medium tanks, given the normal artillery support provided in a mechanized force, should suffice.

Another duty for tanks will be to act as part of the mechanized and motorized forces covering marching divisions in the approach-movement. None but light tanks need be employed for this task. Ground is gained by speed, and by anticipating the enemy. It is held by lorry-borne machine-guns until the advanced guard arrives. The tanks meanwhile will have swept on. If the enemy is encountered in weakness, he is directly attacked. If in strength, his flanks are turned. And so the game is played until strong bodies of hostile tanks or anti-tank guns put a stop to it. The battle is still one against weakness. Where the enemy is in superior force, the tanks are withdrawn to more profitable activities.

The fact that the tanks may be forming part of a mobile division will not alter the general principles of their employment as adumbrated above, except that the scope of their activities will be enlarged and that therefore they may at times have to break a thicker crust or to overcome a more solid core of resistance. Throughout such operations, the rules, as with all the great mobile forces of history, must be: to seek a road to the enemy's vitals through weakness; by speed, by surprise, to anticipate the enemy so that he may not have time to organize resistance; to maintain the impetus of the attack; to avoid strength even though doing so may entail the preparation of fresh plans; and, if the encounter be unavoidable, to operate rather by manœuvre

than by assault. For all these purposes, light and medium tanks will, apart from scouting vehicles, clearly suffice.

In the battle of mechanized forces, hostile tanks of greater power may, and probably will be, encountered. What then? The answer appears to lie in speed, manœuvre and in a skilful use of supporting weapons. Accompanying guns—field and anti-tank—will have to take ground to a flank, just as horse-artillery did in the days of cavalry, so as to bring unmasked fire to bear on the most dangerous of the opponents. An escort of light tanks and a clever use of ground will be needed if they are to effect this task successfully.

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The anti-tank gun, it seems, will have a tactics of its own, very different from that of the field gun. Its task will be individual—the direct attack of the nearest tank. It will therefore act alone, under no central control. The guns may be a hundred to three hundred yards apart, sited according to the demands of fire-effect and concealment, both matters of prime importance. As regards the former, the guns should have a clear view of the tanks for at least 300 yards; for within that range their fire is to the highest degree effective. Where longer ranges are in question, there must be a compromise between the claims of field of fire and concealment. Advanced positions should be selected into which guns should be run should the enemy place down a smoke-screen. In general, positions should be in the forward line rather than distributed in depth, except as rising ground gives guns sited in rear unmasked observation.

As A.T. guns are vulnerable in movement, it will not be an easy matter to change positions by daylight. A considerable reserve must therefore be kept in hand in order to meet attack from unexpected directions.

Anti-tank batteries might with advantage form part of mechanized forces. On a firm platform, they will fire with much greater accuracy than will the tank-guns

and, if cleverly handled, might cause an adversary heavy casualties before the actual mêlée commenced.

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It may be convenient at this point to consider what natures of armoured fighting vehicles can be most profitably employed in continental warfare. Tanks are designed to combine fire-power, mobility and protection in proportions that will accord with the particular task for which they are intended. They vary therefore in size, weight, armour, armament, and cross-country capacity. The Russians, for instance, have light amphibian tanks with just sufficient armour to resist rifle-fire at short range, heavy tanks, protected perhaps against 1 in. shell, and many types between these two extremes.

It seems, however, that the range of variety can, and should be, strictly limited, and that not more than two types should be necessary. The first might be a light tank similar to that in our service, but with a better cross-country performance,[1] containing three men, an automatic rifle and an anti-tank rifle.[2]

The function of this type, both in the mobile division and in units containing heavier tanks, would be mainly that of the old light horse: reconnaissance-patrols, advanced and flank guards. In the battle of mechanized forces, it would engage its own kind, threaten flanks and the hostile train, and essay to put hostile guns out of action.

The other type might be what is known with us as the medium tank—a machine weighing about 12 tons. It would form the fighting nucleus of the mobile division and should carry a weapon equal to the perforation at ranges under 500 yd. of the armour of most existing tanks, for which a calibre of ·8 in. should suffice.

As to armour, neither type of tank would be pro-

[1] A relatively high mobility across broken country is more important than high speed across easy country.

[2] Most tanks of this nature have hitherto carried only a driver and a gunner. The third member of the crew has been added because it has been found in recent warfare that the value of a tank with a commander employed only on control duties is nearly double that of a similar tank which has no commander.

tected either against the anti-tank gun or the field-gun. The medium tank should be prepared to face the anti-tank rifle in the hands of the infantry, for which it will need 1 in. of armour. For the lighter tank a thickness of ½ in. should suffice, for it will only be expected to compete with the armour-piercing small-arm bullet. Against everything else it will have to trust to its speed. Should a high-velocity rifle capable of putting its ordinary bullet through ½ in. of steel become the normal infantry weapon, the light tank might be forced off the field, and the whole position would then have to be reconsidered.

The French, in their combination of tanks and infantry in the attack, propose to put in a heavy tank, whose mission it will be initially to "deal with anti-tank guns. These tanks are armed with 75 mm. guns capable of knocking out anti-tank guns at ranges of 1,200 to 1,500 metres and have such thick armour that anti-tank guns are ineffective against them at these ranges." [1] But will it be easy for tank-commanders to spot anti-tank guns at these ranges; will 1,500 yd. of range often be available for direct fire; will not other tanks ahead inconveniently interfere between gun and target, and will not this static duel give time for automotive field-guns (if there are any) and even guns in position to join in the contest? In fact, the openings for the effective employment of such tanks would seem too rare to justify their existence.

Where it is held that tanks are to be used in attack, where it is accepted that an anti-tank gun is capable of knocking out any tank likely to be of use in the battle-field, and where the direct support of machine-guns renders it difficult for the opposing infantry to handle their anti-tank rifles, it seems that the best agents for attack are swarms of small, cheap, standardized tanks.

[1] Major R. S. Tindall, "Modern Attack Trends", p. 29, *Infantry Journal*, U.S.A., Jan.–Feb., 1938, from which much of the information regarding French and German methods of attack is taken.
A.T. guns will, however, be effective against their attacks.

They demand but relatively few work-hours for maintenance and replacement; they are immune to small-arm fire; their size and speed ensures them considerable prospect of survival; and their numbers are such that the enemy may fail, whether by fire, by pits, or by mines, to destroy a sufficient quantity to prevent them from breaking through his line. They should not, of course, be accompanied by infantry, but infantry might well begin to advance as soon as the tanks should have reached the first objective and have begun to move along it.

As, in addition to our light and medium tanks, we possess a number of heavy (I) tanks and are building more, we must consider their most useful employment.

The use with infantry of tanks small and great in large numbers seems likely, unless conditions are specially favourable, to lead to a holocaust of weapons better employed elsewhere. If, therefore, we are to employ tanks with infantry, we shall be well advised to use our " I " tanks only. They are not required for the swift operations of a mechanized force, and they will be of some assistance to infantry especially if they move protected inside a corridor of smoke. Such as succeed in reaching their objective may be found useful in mopping up, in assisting the infantry to the conquest of further lines, and also, in conjunction with other tanks, in repelling the enemy's counter-attacks.

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The decision to abandon the mechanized machine-gun carrier and to transport the heavy machine-gun in trucks appears to be sound. The machine-gun is not a weapon of attack except when used for affording support in trench warfare by distant barrage fire. But it is admirable for defence, for quickly forming a defensive flank, and for the consolidation of ground won either by infantry in the attack or by mobile covering forces advancing in a succession of bounds.

The Bren on a machine-gun carrier should be able

to fulfil a number of useful purposes. It can dash out in front of the infantry and cover their advance until its fire is masked, and then, possibly, repeat the process. If there are open flanks, it may be able to find them and then afford support by enfilade fire. If forming part of a combined tank and infantry assault, it is likely to be immune from hostile attentions, as the enemy will concentrate his efforts on the larger vehicles, and it should therefore be able to bring fire from a steady platform to bear on to the hostile anti-tank guns and thus assist the tanks considerably.

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Recent Warfare.—Experience in Spain appears to show that given an open field and fluid warfare—conditions which prevailed during Franco's advance from Seville to Madrid—petrol-driven forces are of great value. On the other hand, against towns and against solidly-constructed positions where flanks were not easily found, they could not be used independently, but were employed without marked success as part of a combination of all arms in the assault, in general, making a start after the infantry had been well launched. There is no indication as yet that they have been used to any great extent in the exploitation of success.

Spain, however, is not a good testing-ground with regard to the value of mechanized forces in modern warfare. The conditions there differ greatly both topographically and militarily from those prevailing or likely to prevail in Central Europe. The country on the whole is more mountainous, rugged and ill-roaded. The size of the forces engaged, both absolutely and in relation to available space, is smaller, the standard of training and the scale of modern equipment far lower than with the armies of the great powers. It would be easy to fall into error by placing a high emphasis on lessons learned in Spain, though to disregard them would be equally unwise.

Supply and Traffic.—New problems, both administrative and tactical, are continually arising owing to the changes and improvements in weapons. Among them is the group connected with transport and supply. Railways, which are the most economical form of land-transport in existence, enabled millions of men to be deployed and, through four years of war, to be supplied. They were then exploited to the full, with hardly a safety margin. The French armies on the Western Front, for instance, absorbed seventy-five per cent of the maximum capacity of the railways in their rear, apart from civilian traffic.[1] Railways are now gravely menaced by the increase in air-power. By their nature and by the indications they furnish, they render assistance in many ways to the hostile airman in his destructive role. They are rigid and inflexible, they contain numerous attractive and unmistakable targets in the shape of railheads, junctions, workshops, storehouses, &c., and the immensity of the mileage they cover renders the problem of their adequate protection peculiarly intractable. It seems, therefore, that they are unlikely to be largely utilized during a continental major war within economic air-range—say 150 miles—of the enemy's frontier. Clearly that will reduce their value enormously. The question arises: will the new situation have to be met by a reduction of combatants to the figures of pre-steam days or will roads be able effectively to replace railways to the required extent?

Road-transport is very much more flexible and safe than rail-transport. Usually, vehicles have a choice of several roads, and divergences can be made to clear defiles or demolitions. Moreover, as they are driven by their own power, they can move independently, and therefore present a much less simple target than does a train of similar capacity. Convoys, too, can be arranged, anti-aircraft defence can be limited to unavoidable defiles,

[1] Dupuy and Eliot, *If War Comes*, p. 97.

and the position of advanced and intermediate bases can be changed at will. Roads, too, since 1918, have acquired a greatly enlarged resistance to wear. In Spain, movements off the battlefield have been effected almost entirely by lorry, as being a safer method than marching. For the counter-attack at Brunete, for instance, Franco brought up 40,000 men by driblets of motor-vehicles, almost without loss.[1]

Road-vehicles employed in war consist mainly of lorries with capacities ranging from 30 cwt. to 10 tons. Where it is feasible to combine movement by night with cover by day, great petrol-tank lorries and road-trains, perhaps of 100 tons, may be used. It may be necessary to resort to cross-country transport in localities specially menaced by air-attack, and in the forward areas. Of commercial lorries suitable to army work, Great Britain possesses vast numbers; but, owing to the scarcity of ships suitable for their transport and to the priority claims of the fighting vehicles, their transfer to continental ports would be a slow process. The British army and air-force might thus be for long a considerable burden upon the resources of our continental allies in transport.

The great new German roads built purely for strategic purposes and with a capacity of three parallel rows of traffic in each direction, or in an emergency of six rows in one direction, constitute a precious military asset, available for the deployment, transfer and supply of troops. Gentle curves and gradients, the carriage of all cross-traffic by overhead bridges, and a plentiful supply of sidings enable very high speeds to be maintained upon them. The great chaussée from Munich towards Salzburg, which thinned suddenly to a second-class country road on reaching Austria, has fulfilled its initial purpose, and will now, no doubt, be broadened throughout. These roads

[1] Major T. R. Phillips. "Air Power and Troop movement", *Infantry Journal*, U.S.A., May–June, 1938.

undoubtedly have a capacity equal to that of railways. With normal road systems the matter must remain in doubt until put to the test.

The recent campaign in Abyssinia showed that roads fit for motor traffic can be built in the most unpromising regions, and that such roads may have a striking effect in rendering operations quick and decisive. It is noteworthy how clearly Badoglio, the Italian commander, grasped the situation before him. His problem was less to beat his badly-led and poorly-equipped opponents in the field—for that was a task which gave him no great anxiety—than to be able to move an adequate striking force to its objective through barren and mountainous country and to furnish it with supplies. To solve the problem, he set 150,000 of his soldiers, not seriously wanted for other purposes, to the making and mending of roads; and there is no doubt that this order contributed as much as any other factor to the most brilliant success ever achieved in a colonial campaign.

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The organization of traffic has now become a military problem of the first importance, and it demands for its solution the application of brains continually in contact with it. Germany, with her constant rallies of hundreds of thousands of people at Nuremberg and elsewhere, has brought to a fine art the movements of man by motor—movements which approximate to some extent to those likely to be made in war. She employs for this purpose a special corps of motor-volunteers (K.K.) numbering some 200,000 men. Great Britain has no such practice; but, with her high density of cars to road-acreage, has, at least, considerable experience in the process of relieving congestion.

There appear to be two separate problems involved: first, the maintenance of movement to front, rear or flanks of the engined forces involved; and, secondly, the maintenance of their supply. The latter has already been

dealt with. In the first, advances will normally be made by bounds which will be adjusted to meet the situation as regards opposition, roads and supply. The distances which can be covered in a day may be gathered from the recent march of an experimental motorized infantry division in America, which covered 326 miles in thirteen hours when returning from manœuvres. That of course is an optimum performance, and only possible to a division wholly motorized journeying in friendly country.

Movements when not in contact with the enemy might well, Colonel Martel suggests,[1] follow the ordinary civilian methods instead of the methods hitherto adopted in the army of assembly places, marshalled columns, and close supervision. The drivers of vehicles would be given their starting times and destinations, and would move independently. A division, which contains some 3,000 vehicles, travelling a hundred miles in this fashion, between dawn and dusk, would, he considers, show far less congestion than is to be seen on our main roads at week-ends and would offer but a poor target to aircraft. In some countries it is being arranged to turn over troops to traffic-control units (a specialized force) just as they are turned over to the railway service for train-movement. These control-units are mobile and can be thrown into any area at short notice. Not only are they responsible for the organization of all ordinary movement, but, in accordance with the wireless reports which they receive from their various posts, they divert traffic to alternative routes should the highway be blocked by aerial or other attack.[2]

[1] Lecture, *R.U.S.I.*, May, 1937. [2] Phillips, op. cit.

CHAPTER VI

Maritime Strategy

" The first article of an Englishman's faith is that he believes in the sea."—Savile.

BEFORE the days of Mahan, naval strategy was regarded without interest by continental powers and by maritime powers as something which just " growed " of itself. It was not realized how greatly naval power had influenced history, nor how that power had been built up and applied.

The mantle of Mahan descended upon the shoulders of brilliant British and French writers—so that the whole subject has been fully explored and illuminated and is now well understood by all nations whose interests lie to any great extent upon the waters. A few of its salient features in warfare of two dimensions and their main implications will be summarized in this chapter.

The strategy of a navy (we are dealing with it as it was before the days of submarines and aircraft) differs widely from that of an army, the governing factor in the difference lying in the nature of their respective communications. At sea, communications are, until mastered by one side or the other, common property. They are flexible and are trammelled only in narrow waters. They link ships with a wide coast-line and with naval bases of appropriate strategic distribution.

A fleet aims at the mastery of communications less for its own security than to ensure for its nationals immunity from overseas invasion, the free movement of imports and exports, and the transport and maintenance

of expeditionary forces. It seeks its end by defeating or neutralizing the hostile fleet. The army, for its part, takes in its communications an interest which is purely selfish. It is tied rigidly by them to its base, and it depends on them for its life and its efficiency. It is an old saw that the general seeks by mastering his opponent's communications to defeat him in battle; whereas the admiral seeks to defeat the enemy in battle in order to master communications.

A fleet is impotent without a striking force behind it. Hence it has been normally unprovocative when backed only by the small British army. When, however, Britain is allied with continental nations it becomes a danger to potential enemies, and, therefore, in order to avoid provocation, the British Government has usually declined to form continental alliances until driven thereto by an immediate threat against her interests.

On land, victory may, and often does, lay the whole country open to the invader. At sea, victory may be decisive, but, in general, only against an island power. Neither Trafalgar nor Jutland were decisive victories; but they might well have proved decisive had we been beaten. Trafalgar, however, was decisive in the sense that it gave the British navy the control of communications, a control which, except in the Pacific and a few areas such as the Caribbean Sea, it has never quite lost since.

At sea, power is absolute, on land conditioned. The blows which sunk Cradock and von Spee depended for effect not on courage, nor on skill, but on the calibre of guns. On land, however, victory may be won by an army short both in numbers and equipment. Spirit, ground, skill, play essential parts. There is no counterpart in naval history to the expulsion by Garibaldi and his Thousand of 24,000 regular troops from Sicily.

For an army, a base is easily found and equipped and can be as easily changed, whereas a base for a fleet must possess a deep, safe anchorage, must be well defended

by permanent works, and must possess docking accommodation. Such harbours are scarce, and their equipment and fortification, as Singapore can witness, may take many years.

Fundamentally as fleets differ from armies in respect to the elements in which they move, the obstacles they have to conquer, and the tasks they have to fulfil, their actions are nevertheless inspired and directed by the same principles. Maintenance of the aim, surprise, security, mobility, co-operation, economy of force, concentration of effort, and the offensive are of as much importance to the sailor as to the soldier, though they may have to be applied by different means and in different fashions.

Time is as valuable at sea as on land. Nelson, for instance, attributed much of his success to having a quarter of an hour in hand on all occasions; and it is difficult to over-estimate the effect which the quick dispatch of the *Inflexible* and *Invincible* to the Falklands had on the naval situation at the time. In 1904, the Japanese took time by the forelock when they attacked the Russian fleet before the declaration of war, and, by a single stroke, changed the balance of naval strength in eastern waters in their favour.

The aim of the navy is, as has been stated above, the mastery of communications; and it must never be out of mind. This has also been the aim not only of our naval but also of our general strategy at the outset of any great campaign in which army as well as navy is involved; for, until communications have been to a great extent mastered, maritime power cannot be applied. If mastery should be achieved by destroying the hostile fleet, so much the better, for not only is the moral effect of victory high, but the enemy would thus be deprived of his weapon of a " fleet in being ". Normally, however, such destruction is not easy; for, in the first place, even in the most successful fight, destruction is never

complete; and, in the second place, fleets are evasive bodies, much more so than armies; and they know that to sacrifice themselves in battling against odds, will harm rather than help their cause. They are inclined therefore to break off an action rather than allow themselves to be defeated, and prefer, in the last resort, to be bottled up in harbour rather than expose themselves to the risk of destruction. It is to be noted that the defeat or blockade of a hostile fleet does not end a sailor's task. Until the last day of the war, it is his duty to deny the sea-routes to the enemy's traffic and to keep it free for his own. Collingwood had to ride the seas unrestingly for ten years after the death of Nelson.

In an empire which has far-flung possessions and extensive communications to consider, a naval commander has to exercise a close economy of force. To keep fleets in every sea to protect a trade which is essentially vulnerable, is no more effective than to guard a frontier by a cordon of posts. Some dispersion of effort is, however, unavoidable; for trade is world-wide and must be protected at least where it is most dense, that is, in straits and in focal areas. The degree of dispersion is governed by geography, relative strengths, relative mobility and the distribution of naval bases. In our history, the solution has usually been " the disposal of squadrons about a strategical centre, from which fleets could condense for massed action in any required direction, and upon which they could fall back when unduly pressed ", the degree of dispersion being determined by " the number of naval ports from which the enemy " could " act against our maritime interests and to the extent of coast-line along which they were spread ".[1] During the war there were two such centres—one at Scapa Flow for the northern seas and one at Taranto and Brindisi for the Mediterranean.

[1] Corbett, *Some Principles of Maritime Strategy*, p. 144 (Longmans & Co.), quoted by permission of Lady Corbett.

Concentration of superior force in the decisive theatre or theatres is essential; but, with fleets, owing to their responsibility for the free passage of trade, which cannot be termed a subsidiary task, the detachment of units for distant duties is even less avoidable than with armies. In all cases it is for the battleships as far as possible to afford cover to the smaller craft in the fulfilment of their tasks.

Tactically, a fleet is always an offensive weapon, whereas an army may act either offensively or defensively. Strategically, the superior fleet usually, but not always, acts on the offensive. In the Spanish-American war, the American fleet, and in the Russo-Japanese war, after the fall of Port Arthur, the Japanese fleet, had for their task the mastery of local waters in which to ensure the safe transport of their respective expeditionary forces. Togo waited in the Yellow Sea for the Baltic fleet and destroyed it on arrival there. Samson, on the other hand, following some imaginary principle of seeking out an enemy and destroying him, crossed the ocean to tackle the Spanish squadron. By doing so, he uncovered the expeditionary force. The result was that he missed his quarry, and the Spaniards arrived in American waters and caused the gravest anxiety there for the safety of the transports. Except where special conditions arise, however, an unrelenting offensive is pursued until the weaker fleet is destroyed or bottled up in harbour. In the latter case, the task of delivering the *coup de grâce* is usually left to the army.

The weaker belligerent generally tries to avoid battle until such time as, by manœuvre, by stratagem, by the destruction of a detachment, he may have adjusted the balance of strength. In this connexion are to be noted the uses made first of the *Emden*, whose action against our communications attracted no less than twenty cruisers to her pursuit; and, secondly, of von Spee's squadron, which not only destroyed Cradock's detach-

ment, but also, with a little luck, might have defeated Sturdee and thereby become temporarily master of the Pacific and a threat to the Atlantic. Failing success in such affairs, the inferior fleet falls back under pressure into harbour. There it constitutes a " fleet-in-being " and, though for the moment on the defensive, is possessed actually of the initiative. It may either attempt to break out to strike a special target, or it may try to pass its warships on to the high seas, or it may arm its merchantmen and man them with its idle crews for the same purpose. The more aggressive the attitude of the weaker fleet, the more the opposing fleet has to concentrate, to the danger of its trade the protection of which demands dispersion. The game is worth playing right up to the end. Thereby, the stronger fleet is kept continually and exhaustingly on the alert, and may eventually lose its superiority either by being inveigled into making mistakes or by the lowering of its morale. On the other hand, the latter may, by the intensity of its blockade, cause a starving population to insist on the blockaded fleet, in order to remedy the food situation, putting to sea as a forlorn hope.

Naval bases are a principal factor in mobility. They permit the movement of warships along communications; they extend their range for offensive action; and they renew their powers when damaged. Had we not equipped Singapore as a base, none of our battleships could now proceed to the Far East were it considered desirable for them to do so.

The question of the degree of stress to be laid on mobility within a fleet is much debated. The pace of the fleet is that of its slowest vessel. Fire-power and protection, both essential in a battleship, tend towards slowness. Where the difference of one inch in calibre or one inch of armour may be vital, it is natural to attach supreme importance to these two qualities. A high relative mobility is of value to a battleship for two reasons:

for pursuit and because it enables the stronger fleet to force an action when conditions are favourable. But these advantages have to be purchased at a great cost in money and at the sacrifice of one or both of the vital needs. The *Queen Elizabeth* and the *Hood* were equipped with approximately equal armaments and armour. The former, designed for a speed of twenty-five knots, displaced 31,100 tons; the latter, expected to travel at thirty-one knots, displaced 42,100 tons. In fact, for the extra six knots demanded, there was required an additional tonnage of 11,000—an amount which translated into armour and armaments might have increased the *Hood's* power by 50 per cent.[1]

Most foreign ships in comparable classes are faster than ours. An enemy may therefore be able to evade battle except on his own terms. As, however, the speed of a fleet is that of its slowest battleship, only after many years and at vast expense could we hope to redress the balance. Thus the building of further ships of the line affords no immediate solution to the problem. For that, we shall have to attempt to reduce the speed of the enemy. Leaving aircraft out of consideration for the moment, this can be effected only by the attacks of mosquito flotillas, consisting of fast torpedo boats supported by the fire of destroyers. Such action is costly. It will demand not only large numbers of light craft initially, but the ability to replace losses quickly. That is, simplification of design and standardization will be necessary.

A question which affects both mobility and power is that of comfort. British and American ships, with crews of democratic notions and high standards of living in civil life, and with broad oceans to cross in the course of prospective duties, require a relatively large cubic space per head. Britain, however, with her network of supply bases, can redress that drawback by assigning less space to fuel. A nation like Germany, intending, perhaps,

[1] Instance quoted from *If War Comes*, Dupuy and Eliot, p. 168.

not to engage its capital ships outside the Baltic and North Seas, and an autocratic nation like Japan with low standards of living, can devote the tonnage required by others for comfort to armaments.

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We may turn now to the maintenance and exercise of naval power after mastery of communications has been obtained. Blockade may be either naval or commercial. Naval blockade is a method of maintaining mastery by preventing the enemy fleet from leaving harbour (close blockade), or by being ready to attack it after leaving harbour and before it reaches its presumed objective (open blockade). Here the possession of a suitably placed base is clearly of prime importance. Open blockade is a function of the battle-fleet. Close blockade died with the advent of the torpedo.

" Commercial blockade . . . is essentially a method of exercising command, and is mainly an affair of cruisers. Its immediate object is to stop the flow of the enemy's sea-borne trade, whether carried in his own or neutral bottoms." [1] It has always been one of our most effective weapons, but it is dangerous to apply it severely to neutrals, for such procedure might entail the addition of several nations to the ranks of opponents. In the war, we had to go slow in this respect so long as the United States was a neutral. Once she joined the Allied ranks, all the great powers were involved in the war, and this precaution became superfluous.

Actually, we did not declare a commercial blockade then in its technical sense. It was not worth our while to do so. Clearly, we could not blockade the Baltic against Scandinavian ships or the territorial waters of Holland against Dutch ships. Elsewhere, approach to German ports was barred by minefields. There is a clause in the Treaty of Paris to the effect that blockades to be binding must be effective, " the meaning of which

[1] Corbett, op. cit., p. 185.

is that a force, strong enough to enforce obedience and sufficiently distributed to make it risky to break through it, must command the approaches to the port or stretch of coast declared to be under blockade ".[1] In a non-technical sense, however, commercial blockade includes capture at sea and the application of the doctrine of contraband, both of which methods we employed. With the United States on our side, we gave contraband (which is held to consist of " goods capable of giving any help to the enemy's prosecution of the war ") its extreme value even to the extent of imposing upon neutrals a system of rationing never before attempted.

The question of blockade has come much to the fore in connexion with the civil war in Spain. Only when a *de facto* state of war has been recognized, must neutrals submit to blockade. Belligerency is usually recognized when a large part of the country concerned is (as in the American Civil War) in the hands of the insurgents. It may be that recognition was not accorded in Spain on the grounds that neither party was possessed of sufficient naval strength to render a blockade effective. Whatever the reasons, they need to be strong; for, where international laws, long and anxiously pondered, are not put into force, warfare is liable to degenerate into barbarism. " It cannot be expected," wrote Canning in this connexion, " that men should scrupulously discharge the duties of a situation, the ordinary rights of which are denied to them." [2]

The navy is always a source of special interest and pride to the nation. It furnishes the direct guard to the country. It ensures the arrival of our supplies. So long as it had command of the sea, it enabled us to take as much or as little of a war as we liked. For us, superiority at sea depends, however, on something more than stout ships, well manned. It depends on many natural advantages,

[1] Richmond, *Sea Power in the Modern World*, p. 68.
[2] Quoted by Professor H. A. Smith, in a letter to *The Times*.

particularly that of position. But Holland is almost equally well situated and, moreover, threatens our principal trade-routes at short range. Consequently, for 150 years we were forced to dispute maritime supremacy with her. Only our greater resources gave us the eventual victory. A dominant power in Europe, however, which had seized the Low Countries, would have all the military and economic strength needed for exploiting the value of that position. It has, therefore, always been our policy to unite with lesser powers in order to prevent a great power from dominating those regions. Accordingly, for the preservation of our naval ascendancy, our armies have fought there in successive centuries under the Veres, Marlborough, Wellington and Haig.

France lies in an equally threatening position; but, fortunately for us, both her innate ambitions and her defensive requirements have been military rather than naval, and an immense expenditure on her armies has left but little to spend on fleets.

Naval action, whether by defeat of the hostile fleet, by blockade or by commerce destruction, cannot achieve decisive results, except against an island power or when, as in the battle of the Nile, employed against the communications of an expeditionary force. A fleet can guard; it can strike; but it cannot occupy. Trafalgar prevented the invasion of England and was a cause contributory to Napoleon's downfall; but it was not decisive, for the French emperor continued to dominate Europe and won there a whole succession of epic victories. Again, the naval blockade established in 1918 was a cause strongly contributory to the German collapse; but it did not prevent the very close approximations to disaster on land early in that year, nor could it have brought the war to a close without the victorious pressure exercised by the Allied armies. Actually, too, this particular weapon has a double edge. While it exhausts the enemy through slow starvation, it is also exhausting the patience

both of neutrals and of our own people, so that where it achieves victory, it may fail in the most important object of war, the attainment of a satisfactory peace.

For two hundred years up to the end of the nineteenth century, Britain had ruled the waves. She was troubled by occasional qualms between La Hogue and Trafalgar, but they were short-lived. After Trafalgar, her dominance was unquestioned. She exercised sovereignty, however, over the surface only; and to the perpetuation of that particular kind of rule her equipment, her organization and her training were designed. All three—and with them the whole foundation of the naval structure—were bound to be challenged by new conditions arising out of the advent of weapons possessed of the power of movement in three dimensions. For the moment, however, we are concerned with a navy and an army which won an Empire and maintained it until 1914, operating in two dimensions. Their work in combination will be studied in the ensuing chapter.

CHAPTER VII

Co-operation

" I do not think that the British Constitution as at present worked is a good fighting machine."—Lord Salisbury.

"WE are accustomed," wrote Julian Corbett in 1911, " partly for convenience and partly from lack of scientific habit of thought, to speak of naval strategy and military strategy as though they were distinct branches of knowledge which had no common ground. It is the theory of war which brings out their intimate relation. It reveals that embracing them both is a larger strategy which regards the fleet and army as one weapon, which co-ordinates their action, and indicates the lines on which each unit must move to realize the full power of both. . . . It discloses, in short, that naval strategy is not a thing by itself, but that it is only a part of maritime strategy—the higher learning which teaches us that for a maritime state to make successful war and to realize her special strength, army and navy must be thought of and used as instruments no less intimately connected than are the three arms ashore." [1]

The navy transports the army to its destinations, sets it ashore—on a quay in peace, on a beach for battle—covers its disembarkations, maintains its communications, enables it if need be to change its base, and forces dispersion upon its enemies by threatening their coasts. The army guards home harbours, seizes and holds naval bases overseas and gives effective point to the combined effort. Clearly then it is vital that the two services should co-operate in the closest fashion.

[1] Corbett, op. cit., p. 8.

The struggle for survival and the process of building the Empire have provided many splendid examples of such co-operation. While Wolfe was moving to Abraham's Heights, Saunders with his fleet was preventing reinforcements from reaching Quebec, and was feinting to keep Montcalm's attention distracted from the point of landing. That Louisbourg fell was largely due to the happy relations which existed between Amherst and Boscawen. In the Crimea, the co-operation between the two services which effected the landing of a large force upon a hostile and little-known shore was perfect; at the re-embarkation at the Dardanelles, it was equally so.

But this has not always been the case. Friction between naval and military commanders concerned in the same venture has often occurred and has caused the wreck of many of our overseas expeditions. Men of the calibre even of Nelson and Sir John Moore could not work amicably together either in the field or in council. "At least one-half of the combined enterprises which we undertook in the eighteenth century," writes Sir Frederick Maurice, "failed either because of the jealousies between the services or because of the mutual ignorance of each other's needs, or because of ignorance at home of the requirement of such expeditions." [1] Drake and Raleigh owed much of their success to the fact that they *commanded* both sailors and soldiers. When control was divided, Drake ruling the fleet and Norreys the army, failure resulted.[2]

Three commissioners accompanied Penn and Venables to the West Indies in 1655 to keep the peace between admiral and general. Their first report was of relations "sweet and hopeful", but, later, in spite of their ministrations, quarrels broke out to the ruin of the enterprise. Again, after our failure against Cadiz in 1702, Colonel

[1] *British Strategy*, p. 129.
[2] Callwell, *Military Operations and Maritime Preponderance*.

Stanhope wrote that an army and a fleet divided against each other can make no conquests. The expedition to Cartagena in South America revealed this mutual hostility at its worst. Of Vernon—the admiral, it was said that he could bear no rival, and of Wentworth—the general, that he would brook no colleague. Lord Mahon wrote of Vernon that—" several parts of his behaviour seem not imcompatible with a malicious pleasure in the defeat of an enterprise not directed by himself". Immortal doggerel describes the opposite, but equally fatal, attitude of excessive courtesy as displayed by Chatham and Strachan. Finally, it was lack of agreement between Hood and Dundas that allowed a powerful French fleet in Toulon to fall into Republican hands. These jealousies derive in part from early days when generals at sea—Blake, Monck and Rupert, " transformed the tumultuary marine of the Elizabethan era into the navy of La Hogue and Malaga and . . . placed the sea power of England upon a secure and organized basis ".[1]

Some of the finest qualities of the human character such as energy, resolution, *esprit de corps*, have the corresponding defects, either innate or consequential, of jealousy and intolerance. The defects are not peculiar to Britons, who are, more than most, endowed with sweet reasonableness. They are universal. Writing of the Turkish expedition to Malta in 1565, whose disastrous ending was mainly due to the quarrels between Mustapha, the general, and Piali, the admiral, the historian of the Knights of Malta says: " Each was more intent upon depriving his colleague of the honour of success than carrying out the main object of the expedition, and each felt that he would rather the attack were a failure than that the other should reap the fruits of success." [2] In Indian waters, the quarrels of Dupleix and La Bourdonnais and of Tally and D'Aché helped almost as much

[1] ibid. [2] ibid.

as Clive's victories or the insubordination of Suffren's captains in the building and consolidation of our Indian Empire.[1]

That distinguished American professor, Nicholas Murray Butler, in an address dealing with the problems of government, stated: "J. W. Weeks . . . who was Secretary of War in the cabinets of President Harding and of President Coolidge, told me many things drawn from his own experience at the head of the War Department which were to me as startling as they were novel; . . . convincing evidence . . . of the departmental antagonism which exists between the army and the navy. He even went so far as to suggest the substitution for the War Department and the Navy Department as now constituted a single department of National Defence with an Assistant Secretary for the Army and an Assistant Secretary for the Navy."[2] And here is another American opinion concerning the quarrels between the two services: "Each concentrated on securing an increase of itself regardless of such an incidental consideration as a properly balanced force. It was fine for keeping everybody in a fighting mood, but it didn't work so well in the interest of the army or the country as a whole."[3]

With us, friction behind the scenes was so serious that in 1903, Lord Middleton at the War Office and Lord Selborne at the Admiralty threatened to resign unless "steps were taken to bring the two Services under one Council". Then, indeed, the Committee of Imperial Defence was formed, which did admirable work before and after the war. Nevertheless, we hear from Lord Mottistone that "before the war the difficulties between the War Office and the Admiralty were often so acute that the public suffered gravely"[4]

[1] ibid. [2] Quoted *A. & N. & A. F. Gazette*, 15/10/36.
[3] *Infantry Journal*, U.S.A., May–June, 1935.
[4] *Hansard*, House of Lords, Vol. 96, No. 52, p. 818.

During the war, in the period before air-forces became serious factors, there were many failures in co-operation to record. Lord Fisher, for instance, had planned a landing in the Baltic, which the army knew nothing about. He also wanted the soldiers to take the impregnable fortress of Heligoland—a capture which he thought would convenience the fleet. Then Sir William Robertson tells us of six different plans " emanating respectively from the First Lord of the Admiralty, the Secretary of the War Council, the Chancellor of the Exchequer, the French Commander-in-Chief, the British Commander-in-Chief and the First Sea Lord. . . . These rival policies and plans, uncontrolled by any master-hand and never discussed by the War Council in terms of available means, continued to jostle each other in the Council's deliberations." [1]

The most disastrous failure in naval and military co-operation was that which occurred at the Dardanelles, for which enterprise no joint plans had been elaborated, though its possibility had often been considered. The details of that epic but unhappy adventure have, however, been quoted so often that they need no repetition here.

All this friction, all these failures to co-operate both in planning and in execution appeared to point strongly to the advisability of the substitution of co-ordination by some higher authority for the vain hope of co-operation. It seemed utterly wrong that we should confide the destinies of the Empire to a possibility of co-operation between two ardent and obstinate combatant services, which had shown that they entertained mutually incompatible views on many great subjects and were ready to quarrel about them both in peace and war. Fifty years ago, Lord Wolseley, with a wealth of experience behind him, advocated a Ministry of Defence, and the suggestion has often been mooted since. With the advent of a third service the need for co-ordination was certain to increase.

[1] Robertson, *Soldiers and Statesmen*, Vol. I, p. 83.

PART II

Strategy in Three Dimensions

" England is an island and every Englishman is an island."—Bernard Shaw.

" We are the credulous, indifferent children of centuries of security behind the Royal Navy."—Winston Churchill.

CHAPTER I

The Submarine

HAVING now very briefly discussed the main aspects of two-dimensional or area warfare, we may turn to the consideration of three-dimensional warfare, which has resulted from the advent of the submarine and the aeroplane.

We shall deal with the submarine first, as, of the two agents with which we are now concerned, it has been the more exhaustively studied, tested and applied. This type of vessel, long forecast by Jules Verne, existed in small numbers prior to the European War.

On the surface, it is driven by Diesel engines; but, as these machines require air for their operations, it has, when submerged, to be run on accumulators.[1] Its surface speed varies from 14 to 24 knots. Our K Class was designed to travel at 24 knots in order to be able to keep up with battleships, but 18 knots is about the normal maximum. The largest vessels have a displacement of 2,000 tons, a cruising range of 18,000 miles, and are expected to be able to remain at sea without relief for four months. The submarine remains on the surface as long as possible because its accumulators have a relatively low endurance. Going dead slow (1 to 3 knots), the capacity of the batteries is about 40 hours. At top speed (11 knots) they are quickly exhausted. They can, however, be recharged by the Diesel engines on the surface in a few hours. Submerged, a submarine has to keep moving

[1] New German submarines are said to run on the surface and below on the same engine.

except when it comes to rest on the sea-bottom. There it can lie until its air and oxygen tubes are exhausted, that is, about 48 hours. Owing to pressure, however, it cannot remain long at a greater depth than 250 feet.

The submarine proved to be the most effective commerce destroyer of history. In April, 1917, at the zenith of its career, it accounted for 847,000 tons out of the total allied tonnage of 881,000 destroyed by all manner of craft; and, as is well known, it brought Great Britain within a few weeks of starvation.

It has, however, numerous defects. It is half blind; lying on the water, it has but a low command and a short view; with the periscope it has much less; and, completely submerged, it has to depend on the hydrophone[1]—that is, not on its eyes but on its ears, for warning of approaching vessels. The wake caused by the periscope is easily spotted in calm weather from an aeroplane or even from the bridge of a ship. It is a highly vulnerable vessel, being subject to disablement, on the surface by a single shell and, submerged, by the shock of a depth-charge, which has the effect of damaging its mechanism and opening its joints. It is of no great value in a fleet action, though excellent for distant reconnaissance beforehand and for use as a movable minefield over which the hostile fleet may be beguiled. It needs a regular overhaul either in a harbour or in a specially equipped tender. It is limited in ammunition, carrying only eight to twenty torpedoes according to the size of the vessel. It therefore has to resort to gunfire whenever possible, for which it has to stay on the surface dangerously exposed. It succeeded against battleships only when the recognized counter-measures had not been taken.

Against these defects, the submarine may count many obvious and valuable powers: the moral effect

[1] German hydrophones are said to be so much improved that they can act as range- and direction-finders, thus reducing the need for using and showing the periscope.

of a lurking peril, endurance, a capacity for riding out the worst of gales, for vanishing into the vast ocean without leaving a mark, for blockading a harbour, for preventing the blockade of a harbour by surface ships, for entering a harbour unprotected by minefields and chains, for diving under minefields as at the Dardanelles, for mine-laying, and for lying up near distant coasts and reporting hostile movements there.

Numerous antidotes were employed for its defeat. Minefields, on which a vast amount of man-power and material was expended, proved on the whole a failure. The most successful antidotes were depth-charges, " Q " ships, the arming of merchantmen, pursuit by destroyers and aeroplanes, and finally and most importantly, the use of convoys. The convoy-system broke the back of the submarine menace as soon as it was introduced, partly because the collection of ships into groups reduced the number of targets and partly because, if the submarines wished to attack the convoy, they laid themselves open to counter-attack by the escort. In the later stages of the war, when every antidote was in full play and American ships were rendering assistance, the hunter became the quarry and, for the last few months, the German crews, where they survived, underwent the most unhappy experiences.

The success of the submarines was embodied in two remarkable achievements. The first, already noticed, was that they brought the British people to the verge of starvation through the destruction of supply ships. In connexion with that feat, they may claim to have imposed upon Great Britain immense additional burdens, of which it may suffice to quote two items; namely, that at the height of the danger, there were no less than 4,000 anti-submarine vessels employed in the North Sea alone, and, in the autumn of 1918, a line of guarded minefields, 180 miles long and containing 70,000 mines, entailing an unparalleled expenditure of men and material,

was in course of construction from Norway to the Orkneys.

Their other achievement was strategic, and lay in the effect they exerted on the operations and composition of the Grand Fleet. At the outset, the naval bases in the northern area were not adequately protected; and, consequently, the gravest anxiety prevailed lest hostile submarines should enter them. "At present," wrote Beatty in October, 1914, "we feel that we are working up for a catastrophe. . . . The menace of mines and submarines is proving larger every day. . . . The situation as it is, we have no place to lay our heads." [1] Accordingly the fleet had to be kept out of harm's way while the defences were being completed; and, at the critical moment, when the Expeditionary Force was under passage to France, it was harbouring at Loch Ewe on the west coast of Scotland. Moreover, it had to be protected in movement by a large flotilla of destroyers which had to be taken for that purpose from their proper task of dealing with submarines in infested areas.

For months it remained on the west coast of Scotland or on the north coast of Ireland, during which time the High Seas Fleet could, without the risk of being caught in the operation, have raided far into the Channel. When the necessary chains, nets and mines had been laid, the Grand Fleet returned to Scapa Flow. But even there it was not within satisfactory striking distance of raiding forces. Only towards the end of the war was it considered safe to harbour at Rosyth, which was sufficiently far south to enable the fleet to execute its tasks effectively, though, even from there, the movement of battleships was confined, by order, to the northern half of the North Sea.

The Germans, however, failed in the end either to starve Britain to submission or to emasculate the Grand Fleet to the point where it might have been defeated

[1] Churchill, *The World War*, p. 371.

by the High Seas Fleet. When the various antidotes were in full swing, and when the assistance of the Americans had rendered allied maritime strength overwhelming, the submarine menace faded away. Two points must, however, be remembered in this connexion: the first, that, when the prospects of obtaining decisive results by submarines were still high, the Germans devoted much of their industrial power to the preparation of the March offensive. In Germany, the dominating fighting service was the army; and, to it, naval needs were apt to be subordinated. "Had the German High Command shown as much determination as some of her submarine officers at sea, the impact of the submarine might have been decisive." [1] The second, that the submarines were operating without any support from surface vessels, a procedure which facilitated the attack of their opponents and which may not always be adopted.

The early anxieties for the safety of the Grand Fleet and the desperate straits of the spring of 1917 have passed into history as matters unforgotten, indeed, but thought unlikely of recurrence. The lessons of the long and mighty struggle have been studied, the faults remedied and the successful methods recorded. The monster has been conquered once; his weaknesses have been laid bare; he can surely be subdued in the next war from the outset. Such is the prevailing opinion in England. The submarine has now been relegated to a place in that long row of instruments which have expected to scale the heavens and have proved to be mere useful utensils.

It may, however, be wise to examine the grounds of this optimism; for the reasons which follow seem to suggest that the submarine may still constitute a serious threat to this country:

1. From available statistics, it seems probable that, in the unhappy event of a war in the near future, we

[1] Capt. C. B. Barry, D.S.O., R.N., *R.U.S.I. Journal*, Feb., 1935.

should be handicapped at the outset by an inferiority as regards submarines. This would be of consequence, not because there is often a battle between craft of this nature, or because large numbers of submarines are essential to our naval strategy, but because a power with a superiority in submarines and a smaller trade than ours might be tempted to evade the provisions of the London Treaty with regard to the treatment of merchantmen.[1]

2. In the European War, a maximum of 200 submarines available at any one moment forced the Allies to the employment of 600 destroyers, 8000 lesser vessels, and a vast organization of minefields. At the outset of the next war we may expect to see against us in one theatre alone, say, 100 submarines employed, according to the prevailing precepts of shock-strategy, perhaps in one or two reliefs only instead of the three necessary in prolonged operations. And it must be borne in mind that at this period the submarine crews will be well trained.

3. Whereas a large number of hostile submarines will be ready for immediate action, it may be long months before merchantmen are armed, harbours protected and minefields provided; and that this drawback may be accentuated by the springing of an attack without a declaration of war, action which might enable a number of these craft to be concentrated secretly in focal areas, ready to synchronize their opening operations with the first air-attack.

4. Whereas, since the war, submarines have grown in power and range, merchantmen, like foot-soldiers, have remained as vulnerable as ever. Moreover, our

[1] "In their action with regard to merchant ships submarines must conform to the rules of International Law to which surface vessels are subject.

"In particular, except in the case of persistent refusal to stop on being summoned, or of active resistance to visit or search, a warship, whether surface vessel or submarine, may not sink or render incapable of navigation a merchant vessel without having first placed passengers, crew and ship's papers in a place of safety. For this purpose the ship's boats are not regarded as a place of safety unless the safety of the passengers and crew is assured, in the existing sea and weather conditions, by the proximity of land or the presence of another vessel which is in a position to take them on board."

carrier-tonnage is smaller, our ships are larger, our home-supplies more meagre and our population is greater than in 1914—all points which tell against us.

5. Oil-tankers furnish large and vulnerable targets, whose destruction on a considerable scale might, in particular circumstances, prove decisive.

6. Finally, aircraft, even shore-based aircraft, will afford a vision to submarines, the lack of which imposed a grave handicap upon them in their early history.

The fact that warships are now better protected than of old against underwater attack and that certain valuable antidotes, including aircraft, are available immediately in considerable numbers, can hardly be held wholly to counteract the effect of the adverse conditions just enumerated. It is to be noted that, though the British sailor disputes the value of the submarine, he does everything he can at international conferences to get it abolished. And he is quite right; not, indeed, because it is valueless, but because the British navy is essentially a defensive instrument and the guardian of a vast trade, whereas the submarine as regards trade is an offensive weapon and the most effective of commerce destroyers.

If it be accepted that the submarine is still a real menace to our security, how should the danger be obviated? Clearly by the provision, ample and immediate, of the craft best suited to dealing with these vessels, even if this might entail retardation in the building of battleships.

The problem at issue is an essential part of the main problem of the navy—the mastery of communications. The connected principle is that force of the right kind should be concentrated at the right time at the right place in a degree sufficient to achieve its purpose. Let us take a suppositious case. We are at war with Italy. She is known to possess some 105 submarines concentrated in the Mediterranean, based on harbours perfectly placed

for the attack of our trade, transports and warships. To defeat them we should require at least 200 destroyers; that is a number greater than we can provide out of the whole Empire. And the destruction of the submarines in view of their capacity for evasion would hardly be accomplished in less than two years.

On the other hand, we have a superiority in the Mediterranean, both as to the numbers and the quality of our capital ships, more than sufficient, excluding air-forces from consideration, to bottle up the hostile fleet in harbour. This superfluity of leviathans would, however, merely add to the number of targets; and their disablement, should it occur, would entail a substantial reduction in the maritime power of the Empire. The danger to us in this case lies not in hostile battleships, but in the hostile submarines. Surely, in such a case we could hardly claim to be fulfilling the principle just quoted. All the force needed is available, but is not all of the right kind. It has been argued, indeed, and it is arguable, that the flotilla should replace the battleship; but no one has ever suggested that the battleship should discharge the duties of the flotilla.

There is a strategy of equipments, which plays a part, especially in the navy, as important in preparation for war as the strategy of operations plays in war itself. In the one as in the other risks have to be taken. In Europe we are guided by a two-power standard in capital ships. Such superiority may be very comforting, but a less degree should suffice if the lower standard would enable more light craft to be constructed with a view to abating what still appears to be a serious menace. Our tendency at the moment is towards over-insurance in capital ships and under-insurance in light craft.

Great Britain herself does not need to be specially strong in submarines. A good many would be required to assist in retaining the command of narrow seas after the withdrawal of battleships, for which purpose very

light craft would suffice, for reconnoitring and for defensive purposes at Singapore, and in the Dominions. The question of our strength in submarines in relation to the figures of our other craft, is one which should be kept under constant review, for it will depend partly on the grouping of potentially hostile powers, and partly on the trends of naval policies. But there is no need for us to match our strength in this respect with other powers which are confronted with conditions differing fundamentally from those which the British navy has to face.

CHAPTER II

The Aeroplane—Past and Present

THE other instrument in three-dimensional warfare is the aeroplane. It is more important even than the submarine, which almost proved " the deciding factor in the last war ".[1] The submarine is a purely naval weapon. The aeroplane is at once a naval weapon, a military weapon and a weapon special neither to land nor sea, but of the air, aerial and independent. The possibilities of the submarine were fully exploited in the European War. It is unlikely to exhibit new features or to cause surprises other than those shocks which may be dealt to the optimist who believes its measure to have been fully taken. The aeroplane, on the other hand, was fully exploited in the military sphere only. It shaped no fortunes at Jutland, and its operation as an independent arm was in its infancy in 1918. It has, indeed, been employed in several campaigns since that year—in Abyssinia, in Spain, in China—but nowhere on the continental scale. The nature of that scale may be gauged by figures showing possibilities now long obsolete. In 1918, Germany was producing machines at the rate of 2,000 a month. After the Armistice, she was forced to destroy 15,700 planes and 27,000 engines. The British Empire deployed 3,300 machines in front line, and was producing 100 machines a day to maintain that strength. Replacements were calculated from 30 per cent to 66 per cent per month according to task.

Some idea of the advance of the aeroplane as a vehicle

[1] Richmond, *The Navy*.

in common use may be gathered from the fact that Russian civilian planes flew 75,000 miles in 1923 and 9 million miles in 1933, in which year America led the field with 54½ million miles to her credit. In the war, the aeroplane was a fast-growing child. It has now almost reached maturity and may show no remarkable further advances apart from stratosphere flight, which has no great military promise except in shortening the time-factor in the concentration of our imperial power. It is proposed to deal in this chapter with its inherent powers and weaknesses and with its action in the European War and in the wars that followed, indicating in what ways and to what extent it has changed the nature and conduct of warfare from those described in the earlier chapters.

It has been suggested that, as opposing aircraft are always practically in touch, there can be no such thing as aerial strategy. This, however, appears to be a mistaken view. The correct application of air-power will be found to be as dependent on ancient principles as that of the other forms of military power, certain obvious qualifications to that statement being borne in mind, namely, that it takes no count of geography except as regards distance and the possibility of landing; and that, even more perhaps than with the navy, superior equipment is of immense, often decisive, value.

Powers.—Briefly the powers special to the aeroplane are:

(*a*) That of movement in three dimensions, obstructed only by land and sea.

This power enables the airman (1) to pass over obstacles, fortifications, armies and fleets and to strike, by means of the weapons he carries, at the heart of a hostile country; (2) to change his base at will; (3) to switch his forces quickly from one theatre of action to another (flexibility); (4) to act at one and the same time as an independent striking force and, as regards the navy

and the army, both as an auxiliary and a general reserve; (5) to tell the commander of an army what is happening " the other side of the hill ", and even to enable him to exercise command from the air.

It is a power which should be given free rein. Like the element in which it moves, the aeroplane should be ubiquitous.

(*b*) High speed.

(*c*) Long range.

The combination of (*a*), (*b*) and (*c*) enables the commander of air-fleets to strike rapidly and penetrate deeply and repeatedly in any required direction into a hostile country; to concentrate widely-dispersed forces towards the objective, in order to intervene, perhaps decisively, in battle either by land or sea; to effect surprise, to carry out a pursuit or to cover a retreat.

(*d*) Capacity to transport troops, weapons and supplies up to a maximum, in the largest machines, of six tons.

These powers all lend themselves to offensive action. Like the tank, the aeroplane is, tactically, a purely offensive instrument, though strategically it may be employed defensively.

Limitations.—Now for limitations. An air-force can neither occupy nor hold. Unless, therefore, it succeeds in terrorizing a government into submission, such successes as it may gain must be confirmed by the army.

To a greater extent than a fleet, it is strategically immobile unless provided with suitable bases.

It has no power of direct defence, and must therefore be protected on the ground by army troops.

Its powers may be partly or wholly nullified by storm or fog.

Its powers become attenuated with increase in range.

As the aeroplane is endowed with a high capacity for evasion, an air-force cannot obtain the mastery of

the air [1] except when possessed of overwhelming superiority of numbers, or in the absence of an opposing air-force.

The aeroplane is complicated, vulnerable and delicate. Some forty men are required to keep one machine in the air. Inspection after flight occupies more time than the flight itself. On the ground, for repairs, spare parts and fuel, a large and growing organization is required which, together with the aircraft on the aerodrome, require defence against land and air-attack and overhead protection against bombs.

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Comparison of Naval and Aerial Power.—The power of an air-force is utterly unlike that of an army, but it has some resemblance to that of a navy. Both naval and aerial fleets are pervasive, flexible, and tied to no particular base, can operate in large bodies or by individual vessels, can draw profit and safety from dispersion without hindrance to concentration at need, are purely offensive weapons, are incapable of occupying and holding, depend greatly on highly organized bases, and are possessed of a high degree of evasion. These analogies are not purely academic. They suggest, and the matter will be pursued later, that aerial strategy will develop rather on the lines of naval than of military strategy.

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Aircraft in the War.—Early in the war, our air-force consisted of a naval and military wing. Later the wings became respectively the Royal Naval Air Service (R.N.A.S.) and the Royal Flying Corps (R.F.C.), the one under the Admiralty and the other under the War Office. These two services, well and gallantly as they fought, competed with each other, in most wasteful fashion, for machines, for mechanics, for weapons. "They fought,"

[1] It is interesting to note that, for the same reason, when warfare at sea became three-dimensional, mastery of the sea became practically impossible.

said Admiral Sueter, " over engines, they fought over the steel for engines, they fought over everything that was required." The system, moreover, lacked the fluidity essential to a sound application of air-power. It was therefore abolished, and, in 1918, was replaced by the Royal Air Force (R.A.F.), controlled at first by an Air Council and, later, by an Air Ministry of equal standing with the other ministries of war. The aerial needs of the navy were fulfilled by a fleet air-arm under the direct operational control of the Admiralty, but under the Air Ministry for training, supply and research. Seventy per cent of the pilots and the whole of the reserves were found from naval personnel. This system of dual control, which was most unpopular in the navy, will be referred to later.

The needs of the army were served by Army Co-operation Squadrons, administered and manned entirely by the R.A.F. but, operationally, under the army commander. There was, in addition, an Independent Air Force, wholly at the disposal of the Air Ministry and designed for aerial strategic action, mainly the bombing of distant objectives—industries, centres of communications, &c.—and, if necessary, for reprisals.

The decision to form an air-ministry and an independent air-force was a landmark in the history of our fighting forces. It was bitterly opposed by both naval and military authorities, who regarded the air-arm as a simple auxiliary, to be devoted to their respective needs and to the extension of the range of their activities. But it was undoubtedly correct; and, by facilitating the discard of ancient prejudices, it contributed greatly to the development of the new service on sound lines technically, tactically and strategically.

With the navy in the war, aircraft were employed for scouting, for spotting, for hunting submarines, for the bombardment of ports harbouring U-boats, and for forming, in infested areas, protected lanes through which

merchant ships might travel comparatively safe from the attack of submarines.

With the army, they were employed for reconnaissance, for ranging artillery, and for close co-operation with the infantry in battle. They proved of immense value. They enabled long-ranging artillery to be used with effect; they helped the infantry in many a tight corner, and they reconnoitred ceaselessly over and beyond the enemy's lines, noting his movements and photographing his dispositions and entrenchments. To make clear their value, a few instances will be given here of the far-reaching effect their actions and fortunes had on operations. The first two instances quoted concern single machines.

During the summer, prior to the third battle of Gaza, great care was being exercised in the concealment of preparations for a turning movement round the flank of the Turk at Beersheba; for, if that wary warrior were to gain an inkling of our intention, he would reinforce his left. In that case, our enterprise would certainly fail, as victory depended on being able to rush that flank in order to win the water without which mounted troops could hardly survive, much less act. The precautions taken proved entirely successful until, shortly before the battle, a German airman broke through our aerial patrols and made a complete sketch of our dispositions for the attack. Fortunately for us, he was brought down just before reaching his own lines and consequently the Turk remained in ignorance of the impending blow.

On the other occasion, a British aviator went up just before Ctesiphon and discovered a fresh Turkish division whose arrival was unknown to Townshend, and which was to turn the scale against us in that hard-fought battle. Unhappily, he was brought down by machine-gun fire when recrossing the Turkish lines, and so his information never reached the British commander. On such slight incidents and on the courage, the skill, the luck of par-

ticular airmen may hang the fate of battles and of nations.

To these instances of the action of individuals we may add two descriptions of the action of formed bodies. The first occurred during Allenby's great victory at Megiddo. "It was the R.A.F. which had converted the Turkish retreat into a rout . . . the holocaust of the miserable Turks fell in the valley by which Esdraelon drained to the Jordan by Beisan. The modern motor road, the only way of escape for the Turkish divisions, was scolloped between cliff and precipice in a murderous defile. For four hours our aeroplanes replaced one another in series above the doomed columns; nine tons of small bombs or grenades were dropped and 50,000 rounds of S.A.A. were rained upon them. When the smoke had cleared, it was seen that the organization of the enemy had melted away. They were a dispersed horde of trembling individuals, hiding in every fold of the vast hills. When our cavalry entered the silent valley next day they could count ninety guns, fifty lorries, nearly a thousand carts abandoned with all their belongings. The R.A.F. lost four killed. The Turks lost a corps." [1]

The other description concerns the pursuit by allied aircraft of the Austrians after their final defeat at Vittorio Veneto. "The sight on the Pordemone road moved the victorious British troops to horror and to pity. . . . For mile after mile was flanked with wreckage of troops and transport, shattered guns and wagons . . ." [2] The difficulty of execution, and consequent rarity of effective pursuit were indicated in an earlier chapter.[3] Aircraft seem likely to solve the problem in the future, especially when the defeated army has to negotiate defiles in its retreat.

. . . . . .

Our interpretation of the principles of war, in connexion with the employment of aircraft with the army, is

[1] T. E. Lawrence, *The Revolt in the Desert*, p. 392 (Jonathan Cape).
[2] Sandilands, *The 23rd Division*, p. 230. [3] See page 31.

interesting. During the Somme battle, we applied the principles of concentration and the offensive with such vigour that, in the four months during which it raged, our airmen established a complete domination over the German lines, and the air was therefore kept entirely free for the machines which were co-operating with our artillery and infantry. Nevertheless, it is not certain that the principles were correctly applied. The efforts of the air-force were dispersed to a multiplicity of targets, and pilots were given repetitive tasks which bordered on routine. Close co-operation with guns and infantry might well have absorbed a smaller proportion of their activities, and concentration might have been effected mainly on some four or five really important targets whose destruction would have disorganized the arrival of supplies and reinforcements.

We also failed to concentrate our aircraft in the decisive areas. For instance, during the desperate battle raging south of Arras on the 2nd April, 1918, we assembled only 645 British machines to oppose 822 German machines, while north of the critical area we had 393 opposing 185. At the same time, the French in their area were setting 2000 machines against 367. " Thus though the Germans along the whole western front were outnumbered by nearly 3 to 1, they had a nominal superiority on the active front of nearly 30 per cent." [1] The Germans were blessed with unity of direction and for that reason " were able with a far smaller air service than was available to the Allies, to obtain the maximum effect, according to the changing needs of the battle-front, from their comparatively slender resources. It is not too much to say that the Allied superiority in aircraft was largely discounted by the failure to follow the elementary principle of concentration." [2] We may well bear this indictment in mind in later chapters, when we are considering

[1] H. A. Jones, " The War in the Air ", *Official History*, Vol. IV., p. 349.
[2] op. cit.

the size of the permanent allotments we should make from the general body of the air-force to the navy and army respectively. Perhaps the most effective application of the principles of the offensive and of concentration was seen in the employment of the Richthofen group which, containing the best machines and the pick of the pilots, repeatedly reinforced the German line at critical periods—a sounder system than the uniform, continuous dispersed and very costly offensive waged by us.

. . . . . .

Raids.—The institution of an independent air-force to operate under its own commander was due less to strategic insight in high quarters than to the pressure exerted by the public in favour of reprisals for the bombing of British towns.

These German raids had proved most effective. In 111 attacks they had caused, indeed, less than 5000 casualties and damage valued at less than £2 millions. They had, however, signal achievements to their credit. They aroused a sufficiency of panic in parts of London to cause anxiety as to the moral endurance of the inhabitants, and they caused stoppages of work in the areas under threat of 75 per cent of the workers for a period of 24 hours after the raid was over.

With a maximum employment of 43 planes, the German aviators created a remarkable diversion of force from the main theatre. They succeeded in raising a public outcry which forced the Government to bring aircraft back from the front for home-defence, and to institute a powerful anti-aircraft guard to threatened cities. Early in June, 1918, just after the last German raid, there were 376 aeroplanes, 468 A.A. guns, and a balloon-apron wing protecting London. And the mere possibilities of further raids caused additions to be made to these forces right up to the Armistice.

This fear of raids was common to both sides. The official historian quotes a German report to the effect

that the indirect result of the raids of our independent air-force, " namely, the falling off of the production of industries and also the breaking down of the moral resistance of the nation, cannot be too seriously estimated ".[1]

When it is remembered that two Chinese bombs dropped on Shanghai caused about 1000 casualties and that raids will be conducted in future not in driblets but by hordes, it seems likely that panic and dislocation of work are likely to show a considerable increase over war experience unless appropriate remedial steps are taken.

Two lessons stand out starkly from these comparatively minor raids: the first, that the public demand for protection by a large proportion of the air-force will be difficult to withstand; the second, that a sturdy endurance of the horrors of bombing will be a principal, if not the principal, factor in ultimate victory. Further reference to these matters will be made in the chapter on Air Raid Precautions.

It is commonly said that diabolical action against women and children will result in stiffening the will of the nation to fight to the last. This is excellent stuff for the platform, as are the statements that when the invader appears the nation will rise as one man, and that one Englishman is worth three foreigners. The orator will always win applause by such remarks. But they do not tally with hard facts. There is no substantial difference between the fighting capacities of individuals of the greater powers; there is no military value in an untrained soldier; nor can sudden horrors, even in the domestic circle, stiffen courage to any effective application unless leadership and organization are available. An unready people are as corn ripe for the sickle.

It is interesting to note that air-raids in war-zones have proved relatively ineffective. Many of the inhabitants leave or are evacuated on the approach of the enemy or on the threat of bombing; those who remain

[1] H. A. Jones, op. cit.

get hardened and, moreover, are too busy at their various tasks to think of possible peril. Thus Dunkirk was raided continually—for a period, as often as twenty times a week, yet continued its work as a supply-base undisturbed. Similarly, London and Birmingham, when their non-effectives have been evacuated and their effectives are hard at work, will cease to be vulnerable.

The bombing of open towns is prohibited by international law. But the prohibition does not extend to towns, however open otherwise, containing anything such as a factory or a dock, which may be considered to be of military value. Clearly, then, an excuse can be readily found for bombing almost any group of buildings. In view of the general disgust aroused by the wanton destruction of women and children involved, why, it may be asked, should not more stringent limits be set to the practice by international agreement? Such an agreement, though desirable, could not be implemented. It could obviously not be made during war. If, in a period of peace, the standard of general goodwill and trust in the sanctities of treaties stood high enough to enable it to be concluded, it would still fail in time of war. For, with the best intentions in the world, the aviator will make mistakes and will bomb non-military targets, as happened repeatedly in the war. The sufferers will regard such acts as intentional. Reprisals will take place and then counter-reprisals. There is no cure except the exclusion of bombing altogether, or, better still, of the aeroplane itself from warfare.

Actually, since the Armistice, the practice of bombing open towns, though widely condemned, has become universal wherever wars have raged—Abyssinia, Spain, China—and only the flimsiest of excuses are made in vindication. Mussolini, in a recent speech,[1] and without provoking much adverse comment, proclaimed that the operation of his "incomparable air-force" would be

[1] 30th March, 1938.

" swift and implacable " and would be directed against civil populations. The same is true of the use of gas, which all nations have agreed not to use. Articles on the value and limitation of the gas-weapon, and the best methods of employing it, can be found in the military magazines of any nation. The amount of trust placed in the international agreement in the matter is best indicated, perhaps, by the provision by our non-military Home Office of 50 million gas-masks. We are indeed entangled in the toils of our own inventions. We may preach from the pulpit and the platform; but the sentimental emotions, which oratory arouses, fade quickly under the stress of the struggle for existence. At the end of the Great War we were busily engaged in building large bombers specifically designed for the bombing of Berlin. War is a struggle of unlimited violence, and the side which recognizes that fact and exercises its power ruthlessly from the outset gains decided military advantages; though, fortunately, those advantages are likely, when savagery exceeds certain limits, to be offset by drawbacks in the political field.

. . . .

Aircraft in Recent Campaigns.—We may turn from the lessons of the European War to those which may be culled from campaigns waged in other theatres since the Armistice. On the whole, the performances of aircraft have proved disappointing to the more ardent of their advocates. The great cities of Spain and China have for the most part survived repeated assaults from the air. Only where the incendiarism of the defender has completed the work of the bomber have they been utterly destroyed. The attempts to sink ships have but seldom proved successful. Infantry, which was expected to drop far from its proud place as queen of battles, is still the most numerous arm, and even cavalry and horsed artillery, which were expected by extremists, including the author,

to be stampeded by aircraft from the field, are playing prominent roles.

Certain conditions, however, are prevalent in campaigns now being waged which would not obtain in continental warfare. They are that neither Japan nor Nationalist Spain can have any desire completely to destroy cities which they hope to occupy and govern. They have probably used the minimum of destructive power compatible with the achievement of their military aims. Attacks on ships have been delivered on a scale so small that lessons of value can hardly be drawn from them. As regards the continued existence of the pre-war arms in Spain, the number of aircraft employed is comparatively small, the country is large for the number of troops engaged, movements off the battlefield on any considerable scale have been mainly effected by lorry, and many of the principal operations—Oviedo, Madrid, Toledo—have been of the nature of siege warfare, which is not the best medium for aerial operations. In China, the defenders, short of aircraft, are said to have already suffered a million casualties, and only their immense reserve of man-power has enabled them to keep the field. Nevertheless, though Spain and China have probably provided better tests of the technique of weapons than of tactical and strategic methods, they witness in solid fashion that aircraft have by no means disqualified infantry from playing a leading part in future warfare.

The new features which have appeared in recent campaigns are:

1. The use, in addition to bombardment by artillery, of heavy and continuous aerial bombing of positions in preparation for the assault.

This method appears to have met with considerable success. It has the decided advantages over existing methods that the enemy, driven from one position, is allowed no respite for the bringing up of reserves and

building of fresh trenches, and that immediate continuity is thus afforded to the operation. In one case where it was employed we hear that—" The Bilbao defences took nine months to build and nine hours to break. The breaking showed the heavy bomber fulfilling the role of artillery, plus the moral effect which the approach of a number of these machines produces upon the man in the trench. The bombing was carried out in relays and without any intermission on a section of the eastern defences, and at the end of nine hours the Nationalist infantry burst through the gap."[1]

2. The use of aircraft for supply and transportation—in Kurdistan, in Abyssinia, in Spain, on the North-West Frontier of India and in China.

The quick pursuit of the Italian army was rendered possible, first, by the pursuit of their air-force, which caught the enemy in defiles and prevented him from reforming, and, secondly, by the supply by air of the advancing troops. Food and ammunition to an amount which has been variously stated in figures between 120 and 400 tons were dropped on columns in a period of some eighteen days. In the Aussa region and, in some cases, in Kurdistan, columns were entirely supplied by air. Quite recently, after the affair at the Shahur Tangi, the brigade at Wana was not only supplied by air, but nearly 2,700 men—reliefs and reinforcements—were transported between Wana and Manzai by air. On another occasion on the North-West Frontier, 1,400 men and 850 animals were transported between two stations in two days in fourteen old planes. We have, too, on several urgent occasions, transferred troops in heavy-transport machines from station to station in the Middle East. The novel mobility and flexibility thus afforded to the army is of immense value. Speed, not numbers, is often the decisive factor, especially in the East. On one occasion, for instance, the arrival at Jerusalem of a single platoon

[1] Some aspects of the Civil War in Spain, *Army Quarterly*, January, 1938, p. 241.

by air from Egypt averted a dangerous crisis. The Spanish theatre, where the Government had naval control of the Straits of Gibraltar, was to afford " the first example in history of the aeroplane checkmating the warship. In the space of four weeks, the Nationalists transported by air 13,000 men and 500 tons of war material from Morocco to Spain ",[1] and landed them there without any serious mishap. The same process is going on in civil life. In New Guinea, a gold-mining district, containing 600 whites and 2,500 natives, and fifty miles from the coast, was supplied for ten years by two aircraft and a staff of six persons. Loads included motor-cars and cattle. 5,400 tons of freight were carried, the maximum portage in a single day amounting to nineteen tons.[2]

3. Aircraft have, of course, shown improvements in every direction: in speed, navigation, wireless transmission, accuracy of bombing sights.

The benefits of progress, however, are nearly always accompanied by off-setting, though not equivalent, drawbacks. Even speed has its disadvantages; it reduces manœuvrability in the fighter; it entails for a high-powered machine a concrete runway of 1,000 yards, not always easy to find or quickly prepared; it requires the discharge of the projectile at a much greater distance than of old from the target, thus counteracting the improvement in sights. Moreover, both increased speed and the other improvements demand enlarged ground organizations, which interfere with both the mobility and the flexibility of air-forces.

[1] ibid., p. 234. [2] *Journal of the U.S. Institution, India.*

CHAPTER III

The Aeroplane in the Future

" The present day has no value for me except as the eve of to-morrow; it is with to-morrow that my spirit battles."—Metternich.

BEARING in mind the various lessons drawn in the preceding chapter from past performance of aircraft, we are now in a position to discuss the employment of these weapons in future warfare on the continental scale.

A. *Control.*—The first point to consider is control. The system of complete technical, tactical and, within the limits prescribed by the demands of imperial strategy, operational control of the Independent Air Force by the Air Ministry is no longer challenged. The degree of control to be exercised over Army Co-operation Squadrons and the Fleet Air Arm still gives rise to discussion and will be considered later in this chapter.

B. *Flexibility.*—In order to obtain full value from the flexibility of an air-force, that is, its power of switching wholly or mainly from critical point to critical point in accordance with strategic needs, it is essential that detachments from the main body of the air-force (that is, naval and military wings and groups assigned to special tasks) shall be kept as small as possible. Only so will it be feasible to bring the maximum of power to bear on what is the most important target of the moment. Only so will the navy and the army themselves be sure of receiving the maximum of support in the greater emergencies, whether for the winning of victory or for the covering of defeat.

Flexibility is the greatest strategic asset of air-forces

and must be sternly and rigidly preserved. It embodies the principles of concentration, economy of force, surprise and mobility. Of these the last-named demands, if flexibility is to be real, the careful organization of communications. How immobile an air-force unprovided with communications can be, was shown during the recent emergency in the Mediterranean, on which occasion two squadrons urgently needed in Egypt had to travel by boat and took five weeks on the journey, from action on one aerodrome to action on another.

C. *The Conflict of Range and Fire-power.*—The question of range requires special examination. Range is, of course, a valuable quality in that it enables distant targets of importance to be attacked. It might be, for instance, that a fleet whose disablement in whole or in part might win for the assailant command of the sea, was lying in a distant but attainable harbour. Such an occasion would indubitably demand the exploitation of the range of aircraft. On the other hand, fire-power, which is as potent a factor as ever, conflicts with range, because the greater the range the smaller the weight of bombs which can be carried and the less rapid the rate of their projection; and this is in an age in which there is no need to economize ammunition, production being able to cope with expenditure. For instance, where it is a question of assailing London, a machine based on Hamburg compares with one based on Calais as a muzzle-loader with a quick-firing gun. There is, therefore, for each target, an economic range, to be estimated by relating its value and the possibility of destroying it to the expenditure of aerial power involved.

In this connexion, noteworthy points of combined strategy arise. For the achievement of the aim of aerial ascendancy, range must, in the interests of fire-power, be shortened to the utmost, with regard not indeed to air-fleets, between whom range is reciprocal, but to the aerodromes, factories, and other establishments which

support them. This can be effected only by gaining ground, which is a function of the army. Thus for the aerial attack of England, Germany would halve range and approximately double fire-power by occupying Belgium, and a Britain allied with France would gain similar benefits by sending her bombers to Nancy. With us in the past, when the first aim of maritime strategy was the mastery of communications without which imperial strategy would have been devoid of meaning, it was the function of the army to assist the navy by capturing bases. Similarly, the army, and perhaps the navy also, may nowadays have to assist the air-force in attaining that ascendancy in the air without which the combined strength of the fighting forces cannot be effectively applied.

As the campaign progressed, the army would be constantly aiming, perhaps as a principal objective, at the capture of ground, both to deny its use to enemy aircraft and to assist in the application of our own aerial power. In certain rare circumstances, it might even be desirable that the fleet should risk closing to an unfortified shore in order to utilize its aircraft and the great power and range of its guns in closely-combined coastal operations of special importance. Were the ships backed by shore-based aeroplanes and were they to effect a surprise, the struggle between them and the hostile aircraft would not necessarily be unequal; and their guns with their great power and range might make a useful contribution to the reduction of the enemy's aerial power by bombarding all known aerodromes and other ground organizations within a range of twenty miles.

D. *The Object.*—When the air-force was divided wholly or for the most part between the navy and army, the question of any object ulterior to that of the support of the older services did not arise. That condition has now changed. The air-force is an independent body whose object, equally with the objects of the army and

navy, must be elucidated and defined. This is a vital matter for, unless sure of our object, we shall not know for what purpose we need to design our machines and in what strength, to what end we should organize, train and distribute our formations.

The object of the air-force has been described by the Prime Minister as the provision of " an effective deterrent to any attack upon the vital interests of the country ".[1] The implication of this description generally accepted is that the air-force must be of sufficient size, strength and offensive capacity to afford threat of effective retaliation against potential enemies in their own lands. That this implication is correct is borne out by the composition of the air-force, of which two-thirds are bombers, that is, weapons of offensive strategy, and one-third defensive " fighters ".

This object is mainly a political object, designed to deter an enemy from employing shock-strategy and, if possible, to avert war altogether by offering an unpleasant prospect to the inhabitants of the country of a potential aggressor. Its merits may now be examined.

When a nation is suddenly smitten by a furious blow which might prove conclusive of the conflict thus initiated, its first, natural and correct instinct is to ward off the blow. Not until the shock is broken can counter-strokes be entertained. London, the likely object of such an onslaught, is the pivot on which the Empire revolves. It is the decisive point. No ultimate victory could compensate for the decimation of its population and the severance of its communications and the destruction of its treasures. Attack must be averted, if possible, and crushed if it should materialize. Is that object likely to be obtained either by the threat or the act of retaliation?

It does not seem so. An intending aggressor would have undoubtedly perfected air-raid precautions in his

[1] Cmd. 5107.

chief cities before launching an assault. He would have protected his aerodromes, his aircraft factories and his pilot-training establishments either by concrete, or distance or camouflage. Moreover, with a view to sustained action and in the expectation of a quick victory, he would probably have accumulated reserves of material and trained personnel sufficient to effect replacements over considerable periods. In such case attacks on his civil population would be unlikely to create serious panic; nor, in the early days of the war, would the bombing of his aerodromes and sources of production effect a noticeable reduction in air-strength. Thus the intending aggressor, who had decided to brave the other dangers involved in shock-strategy, would probably not be deterred from his purpose by our threat of retaliation. On the other hand, our air-force, being committed by its composition to aggressive action, would be unable to find targets in any way comparable to London and, consequently, its action would almost certainly fail to put a stop to the enemy's attack. It seems therefore that some other policy should be tried.

An enemy who launches a stupendous air-attack is taking a serious risk. Even with the clearest possible prevision, he will certainly meet unforeseen dangers against which he will have made no provision. He will not know exactly what standard of gunnery has been reached by the defenders' artillery, or to what height their balloon-aprons will attain, or what new devices, such as flood-lighting of the upper regions from balloons, may be encountered. It may be taken as certain that the progress of science and the ingenuity of the Londoner under menace to his existence will, if given time, find effective antidotes to attack. Moreover, the deployment of thousands of aircraft can hardly be executed without confusion and loss. And the more that are launched simultaneously against the selected target, the heavier will be the toll of gunfire both actually and proportion-

ately. If the stroke fails or proves indecisive, the loss of prestige and morale incurred will be prodigious. Such numbers of aircraft will have been shot down by guns and fighters that the assailant will probably lose ascendancy in the air, without which his army and his fleet will battle under grave handicaps.

Might it not then be better, in view of all the dangers the assailant must encounter and all the hard knocks he must necessarily suffer, to render his task still more perilous by considering, as is usual in war, defence before counter-attack, and by expressing that strategy in the composition of the air-force through the doubling of the existing proportion of fighters? Might that not have a greater deterrent effect? Or, if it should fail to avert aggression, might it not militarily be the more effective policy?

It would seem to offer the following advantages:

1. It would furnish a direct and powerful contribution to the protection of the capital, to the saving of life and the preservation of vital communications.

2. It accords with the principle of concentration. London is the decisive spot. There we assemble our guns and our aircraft to deal with an enemy employing aircraft alone. To assail, say, Berlin would enable an enemy to utilize his guns which would otherwise be useless.

3. It would afford the air-force the opportunity, desired by all airmen, of closing with the enemy, and would therefore not only fulfil the immediate object of defence, but would also tend to the achievement of the ulterior object of ascendancy in the air.

4. The result of the war depends ultimately on the will of the people. In the terrible and unexampled trial to which they would be subjected, the sight of their airmen helping them would afford a sense of unity against the common foe and would stiffen their resistance far more than any reports of the successful bombing, say, of Berlin or Paris.

5. Early reports from Spain gave the impression that fighters were at a discount. Recent information, however, though nebulous in the extreme, indicates that they are now in the ascendant. Capitaine Poulain even goes so far as to state: "It is now definitely admitted that the bomber is practically without defence against the fighter." And again: "It has not been rare to observe the presence of thirty fighters to protect a flight of five bombers."[1] Moreover, the fighter is now much more heavily armed than the bomber.

6. Where the enemy's attack was directed against civil populations, it would tend to mobilize world opinion more decidedly in favour of the defender.

7. It would be equally effective were the enemy to make air-ascendancy, instead of civil populations, his main objective.

8. For the offensive operations of the army, by which only the enemy can be finally crushed, surprise is the most powerful weapon. It is a weapon, as was shown by Allenby at Megiddo, which depends on an overwhelming superiority in the air. In the struggle for that superiority, the fighter is greatly superior to the bomber.

9. It is probable that a continental foe will regard Britain as the heart of any opposing alliance and may therefore, at the outset of a campaign, devote the whole of her aerial efforts unreservedly to her elimination. In the interests of the alliance apart from selfish motives, it would seem advisable therefore that Britain should be in a position to defeat this attempt by the counter-action of a mass of fighters.

10. The enemy has the initiative and is almost certain to strike quickly in order to forestall the development of our latent power. Should he, however, open the war without an initial air-attack, and thus render our defensive policy nugatory, his action would show that this policy

[1] *R.U.S.I. Journal*, August, 1938, pp. 582-583.

had, as intended, acted as a deterrent; and, in any case, it would have removed our principal danger.

Incidentally, how did we defeat the submarine? We collected our ships into large groups which, if the enemy were to pursue his object of destroying us by starvation, he must attack. These groups were well protected by anti-submarine craft. The attacks were made; they suffered heavily; they petered out; and then the hunter became the hunted.

The reasoning on which the convoy-system was based seems to apply to the case of London and other big targets. We draw the enemy aircraft, otherwise so evasive, to the prey; and then we attack him. It is hard indeed to think of any better method of obtaining that aerial ascendancy without which neither our fleet nor our army can seriously function.

In this connexion, we must never say to ourselves that the offensive is the only way to victory. Offensive and defensive measures have been complementary since the birth of time. Eventually, the offensive must be employed if the end is to be achieved. But, as we battle through, we must examine each problem encountered, not necessarily in the light of this or that particular principle, but with regard both to its essential nature and to its relation to the campaign as a whole.

The policy of direct defence applies, however, only to our particular problem. Military objectives in the enemy country might be attacked by an ally less immediately threatened and more favourably situated, who could be reinforced by our bombing machines.

There are, however, certain points of doubt and actual drawbacks connected with this defensive policy to be considered:

1. The warning is short and with the increasing speed of aircraft is becoming shorter. Consequently, the interceptor-fighters are finding it more difficult than ever to

gain " the weather-gauge of height " before the enemy can drop his bomb.[1]

2. The advantage in speed formerly possessed by fighters has fallen from the 50 per cent of war-days to about 15 per cent, and, consequently, the number of attacks which can be made on the bombers before they depart may be reduced.

3. The advantage of the strategic offensive would lie with the enemy.

4. Casualties to personnel are higher with fighters than with bombers and, therefore, with a " fighter " policy, a higher proportion of pilots to machines is needed. This need can easily be fulfilled in peace; but, once war has begun, production usually outstrips training.

5. Fighters, owing to lack of range, have not the flexibility of bombers. Except via French aerodromes, they could not, for instance, reach the Mediterranean.

These drawbacks are important, but the balance of advantage would seem to lie with a policy of concentration for direct defence by fighters rather than of immediate counter-attack by bombers. Moreover, as both types will have been standardized, we should be able so to organize our industry that, when the situation alters and more bombers are needed than fighters, there should be no serious difficulty in making the change.

E. *Choice of Target.*—We have no experience from past wars of the aerial bombing of naval bases or of the degree to which maritime trade may be destroyed by aircraft within easy striking range. The rapid evacuation of Malta in 1935, however, expressed the naval view of the vulnerability of naval bases under certain conditions;

[1] In the war, interceptor machines had great difficulty in finding enemy machines, and consequently the casualties they caused were comparatively few. Their prospects of finding the enemy should be better to-day, because the enemy will be more numerous by far, because he will usually travel in formation, because we possess better detecting instruments, and because the system of continuous patrol, though extravagant of flying power, has been successfully developed so as to afford indication both of the approach of the hostile bombers and of the direction of their movement.

and all indications appear to suggest that the aerial attack of trade will be much easier than its defence.

Similarly, the areas of mobilization of an army, its ports of embarkation, and the transport for its conveyance overseas appear to be subject to serious aerial attack. Unless, therefore, the hostile air-forces can be dominated to a considerable extent, both navy and army may suffer heavily in the opening stages of a war. For this reason and for other reasons to be mentioned later, it would seem that the first aim in the future not only of air-strategy, but of all strategy, should be to obtain ascendancy in the air. As aerial forces will naturally play the principal part in achieving this object, they must be maintained permanently in a high state of readiness, and their mobilization and the mobilization of stationary anti-aircraft units should take precedence over that of all other services.

In the attainment of the aim, the hour-to-hour selection of targets will naturally play a vital part.

The choice is wide and depends on a variety of factors:

(*a*) The possibility of reaching the target.

The hostile air-force is an immensely important objective but possesses a capacity for evasion so great as to render its pursuit, were it unwilling to engage, wasteful of energy.

(*b*) The immediate military value of the target.

Malta would possess a high value as a target if it contained a battle-fleet, but not otherwise.

(*c*) The value of the target for sustaining the fighting forces or the economic life of the nation.

Coventry is a centre for the production of munitions in general; but a more economical target would be a town in which the manufacture of an important machine or weapon or some essential part thereof was concentrated to the extent, say, of 50 per cent to 100 per cent of total production.

(*d*) Range—a subject already discussed.

(*e*) The extent to which the targets are distinguishable and vulnerable, that is, on their size, on landmarks of approach, on the depth and strength of the anti-aircraft defences, on the degree of thoroughness of air-raid precautions, on the period of probable warning and, in the case of towns, on the density of the population and buildings.

London is large, densely populated, unprepared; its approach is indicated by the Thames, and the period of the warning it receives might perhaps be no more than twenty minutes.

F. *Simplification.*—The building up and the maintenance, even in peace, of a high figure of front-line machines makes so heavy a demand on output that it would seem advisable to simplify and standardize machines so that it may be possible to produce them rapidly and in large quantities. The value of simplification is said to be one of the more definite of the lessons from Spain. Such luxuries as high finish which add a point or two to power or speed may well be discarded. " It is better to have 1,000 machines flying at 270 m.p.h. than 100 flying at 300 m.p.h." There were some twenty different kinds of machines in the R.A.F. at the end of the war, and there are said to be no less than 37, apart from training machines, at the moment. This tendency to specialization should be resisted as it adversely affects the flexibility of aircraft and interferes with mass-production. Simplification and standardization solve not only the problem of numbers, but they facilitate the training of pilots and mechanics, and they render existing ground-organization less complicated.

G. *Civil Aviation.*—The naval power of Great Britain is indigenous and rests largely on her mercantile marine, whose growth to the dominance of commerce has been largely due to her position as an island, centrally placed in the maritime world. British fishermen and British ocean traders have provided the bulk of the men, the

material and the spirit which created and has sustained that power. The mercantile marine furnished magnificent assistance to the navy in the war, and its conduct through four years of unremitting toil and peril counts among the proudest traditions of our race.

Great Britain commands no such benefits for her air-power. Moreover, she is penalized by many positive drawbacks. Her geographical position in existing conditions is of the worst. She is a terminus rather than a centre. Her climate is unfavourable. Her small island is already equipped with excellent communications, and its size repudiates the possibility of any great internal development of aviation, such as is natural to America and Russia. Our civil aviation is, therefore, in its present state, a negligible factor. If these conditions persist, our air-power will have to be sustained, not by the expression of a national spirit which might look to much of its livelihood, its adventure, and its protection in the air, but by a pillar of finance on whose credit it must place an enduring strain.

Nevertheless the situation is not wholly black. There is a great future for the aeroplane in the vast spaces of Australia, Canada, South Africa and India, and, given the necessary organization of communications, for aerial intercourse throughout the Empire. There is further the possibility of capturing a position analogous to that enjoyed by our mercantile marine. Were we to construct a few sea-dromes between Ireland and Canada, between Canada and Australia, and between Australia and Ceylon, we should become a hub to spokes of air-travel radiating in nearly all directions. We cannot indeed change our climate; but, what is much more important to aviation, we might conquer the faults of our position. The importance of these sea-dromes would be greatly enhanced if, as is now suggested, factories for British aircraft as well as for Dominion aircraft were built in the various Dominions.

H. *Shock-strategy.*—By land and air there appears to be a tendency towards " shock " strategy. That is to say, strategy which, in pursuance of a particular policy, aims at *la guerre à l'échéance*—war on a selected date when preparations may be expected to be complete as regards the numbers and training of the troops and the material in hand and in prospect; a war, too, launched without any previous declaration. It is a method both abhorrent to, and beyond the political capacity of, democratic countries; but it is one against which countermeasures must be considered, for it may well be adopted by totalitarian countries. It is a method likely to be applied above all against the British Empire, because it is known that disbelief in the danger of attack upon our homes has been bred into our bones by the immunity of nine hundred years, and that therefore we are likely to be caught unprepared; and also because the forces of the Empire, weak, scattered, unorganized at first, become, if given time, the most powerful in the world. The onslaught is likely to be delivered, regardless of loss and in maximum strength and pursued until the resources of the assailant are exhausted.

On the other hand, it will not be easy, in a world where political changes succeed each other with startling rapidity, for the intending aggressor to select a far-away date for the attack and keep to it. Any plans of aggression in Mussolini's mind, for instance, would have received a severe shock by the sudden appearance of German troops at the Brenner.

Shock-strategy on land has already been treated in the chapter on mechanization. Here we deal with that which is much more important to us—*l'attaque brusquée* in the air. The power of the attack must depend largely on range; but it seems not unreasonable to expect, under this method, that a daily average of at least 600 tons of bombs would be dropped—a weight double that dropped on England in the four years of the European War.

After the first few days, a sharp decline might be expected.

Such an assault would not be launched except with a feeling of certainty—in the first place, that the hostile military and civil defences (guns, " fighters " and A.R.P.) could be effectively pierced; and, in the second place, that the defender's air-force could not retaliate effectively.

Alternatively, should the aggressor accept the principle that ascendancy in the air should be the first aim, he might apply his shock-strategy to the destruction of the opposing air-force. Here again the value of surprise, based on careful preparation, would be of immense value. Every aerodrome, every aircraft factory, every training establishment within reasonable range might be attacked. A large proportion of the defender's aircraft might never be allowed to leave the ground. The assailant might thus gain an overwhelming ascendancy at the outset, which, once won, should not be difficult to maintain. Afterwards, he would be able to switch, at will, against the civil population or the fighting forces, whichever target might seem to offer the more profitable results.

Such a plan might well be chosen, not only for the high military benefits it offers, but also because it avoids the shocking of world opinion. It will almost certainly be the selected method when it is known that civil morale is of high order and air-raid precautions efficient.

CHAPTER IV

The Navy and the Air-Force

"Without air-security, this country could hardly carry on a war, save with the greatest difficulty, if at all, and that in spite of overwhelming naval preponderance."

—*Securus*. Brassey's Naval Annual, 1938.

"The great problem to-day is how the fleet with its many auxiliaries can be secured against attack in a position which fulfils the need of proximity to an enemy."—Richmond.

THERE is but little guidance to be obtained from the study of past events as to co-operation on a large scale between a fleet and an air-force. The tactical problems of spotting, reconnaissance, anti-submarine work are comparatively simple and call for no comment. The strategic task is that of mastering the maritime communications in concert, so that friendly ships may ply freely and hostile craft be swept from the sea. It is both formidable and intricate.

A grasp of certain factors is fundamental to a sound judgment in the matter. One is that naval aircraft, whatever their type, are vastly inferior to shore-based aircraft. Another factor is that the aircraft-carrier is vulnerable by construction, weakly armed and, as it has to steam into the wind to receive its planes, an encumbrance in action. It is excellent for extending the range of naval forces by taking aircraft to Shanghai, Chanak or Palestine, but only when no serious aerial opposition is likely to be encountered. These two factors show how gravely endangered a fleet will be which operates in narrow seas bordered by hostile countries. They demand also that naval commanders shall usually endeavour to fight as near as possible to their own coast, where they

may expect the support of shore-based aircraft, and shall refuse, if relatively weaker in naval machines, to be drawn more than two hundred miles from such support. Nelson would not have battled at Trafalgar or the Nile, or Hawke at Quiberon Bay, or Rodney at St. Vincent under modern conditions. The old naval rule that the enemy's coast is our frontier cannot apply unless and until aerial dominance shall have been achieved. If we fail to realize such implications of aero-naval strategy, we shall fare badly against an opponent who has made them the subject of his special study.

The final and most important effect of these two factors is that, as hostile air-forces can restrict the movements of fleets, and as sea-borne aircraft cannot compete with shore-based opponents, ascendancy in the air—only to be won by the strongest possible concentration of effort on the part of air-forces—is a pre-requisite to the mobility and, therefore, to the effectiveness of fleets.

A third factor is that, whereas merchantmen are very vulnerable to aerial attack, their direct defence, or their convoying, by aircraft is, with existing equipments, not practicable except at an inordinate expenditure of air-power. The effect of this factor is to show that air-ascendancy is vital to the protection of trade.

A fourth factor is that of naval bases. We selected them of old for their strategic value along our lines of communication and along the great arteries of commerce at points where trade is forced into narrow channels—Gibraltar, Malta, Aden, Singapore—and, apart from the fulfilment of naval needs, we demanded of them only that they should be easy to defend.' Since those days the conditions of defence have altered, in that the range of artillery has largely increased and warfare has become three-dimensional. Consequently, they are now much more vulnerable than of old, and their vulnerability in relation to that of the ports of hostile powers may be a

disturbing factor in future conflicts. France, for instance, is well placed for aerial action against Chatham, Portsmouth and Plymouth, whereas Brest alone of her naval bases is within easy reach of our machines. Between Britain and Germany conditions are almost equal in this respect; but at the moment the Germans would find much better targets than we should. Italy and Spain have Malta and Gibraltar, respectively, almost at their mercy; and we should find great difficulty, unless allied with France, in taking effective counter-action against those countries. In future, it is quite likely that aerial attack will be devoted less against ships than ports, for the one can be armoured and not the other, and on the one a miss is wasted, but on the other often partially effective.

The answer for the nations more vulnerable in this respect would, at first sight, seem to be that they should move their bases out of effective bombing distances of potential enemies. There are three objections to such a policy. The first, that the change would affect function as well as site; for our bases, instead of being offensive in intention as at present, would become defensive. The second, that naval bases take many years to construct and equip, and that great towns dependent on the work they afford have grown up round them. This objection is so strong that the authorities refuse to face it, and it therefore adds to the urgency for obtaining air-ascendancy. The last objection is that battleships are expected to afford cover to the smaller warships defending the commerce of friends and destroying that of foes. If, however, they are immune by distance from air-attack, they will also be too far, for the fulfilment of this duty, from the focal areas and main approaches, where trade-ships pursue their way. It seems unlikely, therefore, that the inferior fleet, unless menaced by powerful flotillas—aerial, surface and submarine—can be prevented from issuing to attack convoys and to support its own flotillas. Thus, in narrow waters and in the absence of air-

ascendancy, the value of superiority in battleships appears to be but small. On the other hand, on the oceans, it might be considerable, where bases with an oceanic outlook were available.

An interesting point in this connexion is that a potential enemy—say Germany—could happily restrict his naval construction to a few, even a very few, capital ships together with strong submarine and flotilla forces. He would make no pretence at directly disputing the command of the sea with the British fleet. Except for his ocean-raiders, he would remain in harbour—a fleet-in-being. Given that he had sufficient air-strength to force our battle-fleet to a safe distance, he could, under the conditions just stated, issue from that harbour almost at will. A single battleship protected by flotilla vessels would usually be equal to the execution of any raiding task required, as it would be superior in guns and armour to any ship likely to be encountered.

The nation possessed of the stronger air-force as well as the stronger fleet might be able to destroy or disable the "fleet-in-being", if the latter were within reasonable range, by bombing it in harbour; and the attempt should certainly be made. A nation weaker in warships but superior in air-strength could either use its air-force to reduce the adverse balance of naval strength, or could keep the distant fleet idle in its base by the threat of bombing it.

In view of the probability that, in the event of a war with a major power in the Mediterranean, we should be unable to use that sea for our trade, it would seem advisable to ask South Africa to bring Simonstown, for docking accommodation though not necessarily for defence, up to the standard of a naval base, to strengthen the defended ports on the Cape route and to construct a base on the west coast of Africa either at Freetown or in the mouth of the Gambia, where a fleet would be free from any likely air-attack.

A fifth factor is that, whether in port or at sea, there is often but little work for a ship — especially a battleship — to do. On the other hand, there is unending work for the aeroplane so long as the campaign lasts. It is a heavy gun fired with observation and practically without limits as to direction and range, against selected targets. To such a priceless weapon it is not possible to allow hours of idleness more than are needed for refitting. To attach it in large numbers therefore to fleets which are likely to spend much of their time in distant harbours is clearly uneconomical. The fleet air-arm is contained mostly in battleships and in aircraft-carriers. Had it existed in its present form in the Great War, how would the activities of its pilots have compared with those of pilots on the Western Front? The proportions might have been in the neighbourhood of one to fifty.

The naval battle-weapon, *par excellence*, is not the bomber but the gun. A fleet, indeed, requires a certain number of aircraft, largely for spotting and reconnaissance, and it should, unquestionably, have complete operational control of its air-arm and of any shore-based reinforcements sent to it on particular occasions; but the number of naval machines should be kept at a minimum so that aircraft factories may be devoted mainly to the production of land-planes, which alone can win that general ascendancy in the air necessary, as cannot be repeated too often, for affording protection to a fleet and at the same time endowing it with mobility.

A favourite contention with the navy is that aircraft are just as much ships' weapons as are guns, and that it is therefore for the Admiralty to settle their requirements in the one as in the other. But that would give the sailor a command over aircraft resources equal to that of the airman—a result which would strike a mortal blow at our air power. It is also argued that other navies possess larger air-arms than we have. Which navies? Certainly

not the German or Italian navies. They know too well the high relative value of shore-based aircraft to squander the productive capacities of factories in such fashion. The American navy, with a problem differing profoundly from ours, has more than treble our number of aircraft. But apart from the fact that we are most unlikely to come into conflict with her, exactly how, it may be asked, is she going to use her superiority in this respect against us? Unless we were foolish enough to sail into mid-ocean to meet her, she would be impotent against us. On approaching our shores she would be met by overwhelming strength in shore-based aircraft.

It is argued again that a large fleet air-arm is needed because land-planes will never be able to afford protection to fleets in mid-ocean. It is, however, not there as a rule that naval battles have been fought, but in narrow seas and in focal areas. And the admiral of the future will take care, with a relative weakness in aircraft, not to be caught in mid-ocean, just as he will normally refuse battle in close proximity to enemy aerodromes. It would indeed be a convenience in respect to certain purposes for a fleet to be possessed of a relatively powerful air-arm, provided there were no factors other than those of a purely naval nature to consider. Overwhelmingly strong in battleships and aircraft, the fleet would then be dominant in mid-ocean; but it would be as vulnerable as ever in the narrow seas and bases to which it must eventually return. Moreover, sailors would profit far more by general air-ascendancy, to which an economy in fleet-aircraft would contribute, than in any power to parade unchallenged in areas in which they are unlikely to be called upon to fight. The fact is that it is impossible to be safe everywhere, and any attempt to cater for every contingency likely or unlikely will merely result in general weakness, all the more lamentable because avoidable.

There are two things to note in this connexion.

We must remember, and it is often difficult to do so, that the great central body of the air-force is as essential a guard to the Empire as is the navy. And, what is more, it is the immediate guard. Britain could lose the war in a week by failure in the air, whereas she could probably survive failure at sea by six months. We must realize, too, that the provision of an immense fleet air-arm is not even to the direct advantage of the navy itself. For, given an equal productive capacity of aircraft between two opponents, the one who devotes the larger number of machines to the defensive and closely-tied tasks of fleet-protection, will be at a grave disadvantage when the other keeps the bulk of his air-force fluid and is thus able at will to concentrate aircraft, superior both in quality and quantity, upon the hostile fleet.

War is largely a matter of taking calculated risks in the pursuit of victory and praying that Fortune, which makes or mars so many plans, may be on our side. The concentration of striking force at decisive points—a policy which has always offered the highest prospects of success—is required for the attainment of ascendancy in the air. It can be effected only by a rigid economy elsewhere, that is, with the numbers of aircraft allocated to the navy, to the army, to the direct defence of cities and to the protection of trade.

Let us suppose that two nations A and B each possess a front-line strength, based on productive capacity, of two thousand aircraft, and that A employs one thousand and B two hundred machines with his fleet. It is certain that A's fleet, if by any chance in mid-ocean, will be admirably effective there. It is probable that, in the first few days or weeks of war, A's trade will be the better protected. But B will unquestionably obtain ascendancy in the air. He may then, by shock-strategy, destroy A's will to resist. He will certainly bombard, perhaps to destruction, his ports, centres of communication and his trade, and he will immobilize his fleet and his army.

This simple arithmetic is at the base not only of aerial strategy but of all strategy. Ludendorff beat Gough and Byng because, by thinning out other fronts, he was able to concentrate one million men against three hundred and fifty thousand. Allenby beat von Sanders because, by measures of economy in defence, he was enabled to hurl five men against one at the decisive point. Coronel and the Falklands tell a similar tale. In the air, concentration is far simpler than by land or sea. It will certainly be practised against us. If, therefore, we should insist on depriving an air-force of the flexibility which is its greatest asset, we should be offering victory with both hands to an aggressor.

The practice of economy of force always contains elements of danger and is unpopular wherever exercised. In naval as well as in land-strategy, it will be found that every detachment-commander will complain bitterly of reduction in his command and will magnify the dangers to which he is exposed by such procedure. In this case, the fleet air-arm is the detachment, the Admiralty—the most powerful of the war ministries—is the commander. Only an authoritative higher control can overcome the commander's desire to contribute to his own, at the expense of general, security, and ensure the sound distribution of force vital to victory. As this is being written comes the melancholy news that the fleet air-arm is to be expanded to not fewer than five hundred machines as soon as ships and carriers are ready to receive them. We can only hope, however, that long before production is completed wiser counsels will have prevailed and that the number will have been greatly reduced.

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The Protection of Trade.—The unarmed merchantman (and all merchantmen will be unarmed at the outbreak of war) is a peculiarly easy target for air-attack. It is clearly visible by night as well as day, and the airman,

unembarrassed by fire, can at all times take sure aim. Unarmed merchantmen in convoy are equally exposed. They are easily shadowed and will probably attract a numerous enemy against whom the few anti-aircraft guns possessed by the escort are unlikely to be seriously effective. On the other hand, merchantmen armed with A.A. guns present targets, especially when in convoy, much less inviting. With the millions of calls upon our industries at the outbreak of war there is a grave danger, however, that the merchantman may, as in 1914, be left long in the lurch, unless full provision for his armament and training therewith be made beforehand.

It seems probable that a power adopting shock-strategy will, in the first instance, if its quarry is the civil population, leave the attack of trade entirely to the ocean-raider and the submarine. On the other hand, if its quarry is the opposing air-force, it will send aircraft to assist its submarines the moment it shall have achieved a reasonable degree of air-ascendancy, and will, if still able to dispose of a sufficiency of machines, endeavour to establish an aerial blockade of our coasts.

If the assailant is of a type which, deliberately and at long range, plans sudden and overwhelming assault against civil populations, it is extremely unlikely, except from fear of exciting the hostility of neutrals, that he will observe international law (see p. 124) with regard to the attack, either by aircraft or submarine, on trade. To do so will be to take the edge off weapons which he will have carefully tempered and sharpened. *Inter arma silent leges* is an aphorism of persisting truth. It is even doubtful if any warships will be able to go through the halting formalities of visit and search in an area threatened by hostile submarines and aircraft.

It is clear from the study of the matter in this and in the preceding chapters, that the trade by which we exist is liable to attacks by the submarine no less menacing than those delivered two decades ago, and also by the

more numerous and more mobile aeroplane. Protection, it seems, will best be assured, apart from the hunting of submarines and the arming of merchantmen, not by a great fleet air-arm, many of whose machines will spend long periods in distant harbours, not by large groups of coastal aeroplanes, which are in the nature of enfeebling detachments and are at best but indifferent protective weapons, but rather, as in all matters connected with the mastery of sea-communications, by devoting great efforts to the achievement of air-ascendancy. Even if that were attained in a high degree, we should still suffer a considerable interruption of trade. With the assistance, however, of numerous light craft, and of special escort-vessels now under construction, supplies sufficient for subsistence should be ensured.

It may be asked whether during the inevitable periods when air-ascendancy does not lie with us, the flotilla can ensure reasonable protection to trade, if itself subject to attack by battleships. The question may perhaps best be answered by posing two others: will battleships venture at all into the narrow waters where trade is most vulnerable, and, if so, will they survive the experience? The answers lie gestating in the womb of the future. It is largely because of these doubts that we need a stock of reserves.

For convenience of discussion the threat to trade by ocean-raiders has been left to the last. It is certainly a serious danger, for after the experience of the German fleet from 1914 to 1918, no naval commander will like to have his ships bottled up in harbour, except in last resort. Where, moreover, an aggressor is gambling on a quick victory through the perfection of his preparations and the suddenness of his stroke, and where, too, he is markedly inferior in naval strength, he may be expected to arrange that some of his fastest battleships are on the ocean at the outbreak of war, ready to operate either together or separately as occasion may demand, and with

their supply organized over a considerable period. He may also, in the course of the campaign, attempt the penetration of the blockade by further battleships.

We could deal with this menace by dispatching our three battle-cruisers in pursuit. But that would hardly suffice, for the capture of the *Emden* absorbed twenty cruisers. We might also make use of available aircraft, especially flying-boats, for discovering and perhaps crippling the raiders. Crippled ships, without bases, would soon succumb to continuous attacks of aircraft summoned for the purpose. Furthermore, should our margin of strength admit, we might detail some of our older battleships for convoy-duty.

The utilization of all these resources might, however, fail to achieve the desired results. It would be well, therefore, to lay down a number of small battleships, carrying 14-in. guns and with a speed of 18 to 20 knots, designed specifically for convoy-duty. The raiders, whose whole policy is to strike weakness and avoid strength, would hardly risk engagements with such opponents.

The alternative is the construction, *ad hoc*, of a number of specially fast battleships. But, as already indicated, speed adds enormously to tonnage and cost; and if twenty cruisers were needed to catch the *Emden* we might, after making handsome allowance for improved services of aerial reconnaissance and wireless communication, expect to have to use ten fast battleships for the pursuit. And these vessels would have no higher value in a naval battle than the much less costly battleships of normal speed.

Battleships or Flotillas.—Ever since the advent of the torpedo, the possibility of replacing battleships by flotillas has been debated. The discussion was carried on in lively fashion right up to 1914. Then the defenders of the battleships proved their case by the experience of a great war. But not by a wide margin. When a fleet with an overwhelming superiority in surface ships has to

vanish into the northern mists while an expeditionary force it should be covering is under transport; when hostile submarines nearly reduce Britain to starvation, and destroy half her trade in the Mediterranean; when battleships spend most of their time idling in Scapa Flow while all other naval, military and aerial forces are employed up to the hilt—when all these things happen, it becomes clear at any rate that the question of the composition of a fleet has not reached finality.

Since the Armistice, the case for the substitution of minnows for mammoths has gained ground. The battleship, its defenders have always maintained, is the kernel of a fleet; first, because it alone can meet enemy capital ships in battle on equal terms; and, secondly, because it alone can afford the cover necessary for the smaller craft in their attempt to control communications. The soundness of the first reason is subject to the doubt as to where the fleets will fight. For every admiral will take care, apart from his fear of mines and submarines, not to leave the protection of his own shore-based aircraft and to keep out of range of those of the enemy. Such procedure will tend to prevent contact, as the boldest of spirits may be deterred by the fact that the more resolutely he seeks out an enemy for battle, the greater the disadvantage at which he will fight.

As to the second reason, it has been shown that the battleship is likely to be forced, from fear of submarines and aircraft, to harbour at a point so far distant from the focal areas of trade as to be unable to provide the necessary cover.

Hence it would seem that the battleship is useful mainly for the purpose of fighting fleet-actions, which are likely to be of rare occurrence. With the two chief perils, those from submarine and aircraft, it cannot attempt to deal directly.

Then there is another point. The question of bomb versus battleship, so hotly debated, is likely to be solved

only by the experience of war.[1] Let it be therefore left for the moment with a query mark. But there are side-issues which must be considered. The bomb which cannot destroy may disable. Does the fleet then wait upon the cripple, which has become a target for every enemy weapon above, below and on the surface? If so, will not the whole fleet be in danger?

Again, the bomb which cannot destroy the battleship is quite equal to destroying any of the numerous accompanying craft, which are regarded as essential auxiliaries both for reconnaissance and protection. The battle-fleet would hardly dare to proceed to sea without them; and, in harbour, it would not be of much value to its side.

Add to all these disabilities and drawbacks the vulnerability of the great dockyards, and there appears at best to be no bright future for the battleship. So tremendous a responsibility would rest, however, on the man who decided to scrap what has been the mainstay of fleets for hundreds of years, that no one, either responsible adviser or executive minister, is likely to take the plunge in peace-time.

There is one field where the battleship seems essential, and that is the Far East. The strategic problem in that area is dealt with in a later chapter. For various reasons stated there, the writer does not believe that the Japanese are likely to prove a serious menace to Australia, provided that certain measures essential for countering the attack are taken. But one of the foundations of that belief is that there shall be a battle-fleet, based on Singapore.

In general, it seems, therefore, that, for ocean-fighting, for which occasions will be few, the battleship,

[1] "We have given full consideration to the information already available as a result of the various experiments, and it is plain to us that capital ship cannot be constructed so as to be indestructible by bombing from the air. This would probably be true even if factors of speed, armament and weight were disregarded in the design of the ship, so that the thickness of the defence armour could be indefinitely increased."—Report of Sub-committee, C.I.D.

It may be said, however, with perhaps equal truth, that a battleship cannot be made indestructible against guns or torpedoes.

with its high endurance and the fighting power, will still be needed; and that for fighting in the narrow seas, the flotilla, in all its forms, will, with its power of rapid and repeated strokes, be the only instrument required.

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Big Battleships or Small.—A cognate question is that of the size of battleships. At the moment they appear to be going to rise to 40,000 tons. They will then cost some 10 millions each, and take three to four years to build. Owing to their high cost, numbers must remain small, which means that we can have in our fleet none of the elasticity so desirable in our vast empire. Paucity of numbers also means that every admiral is, and will continue to be, terrified of losing a single one of these precious giants, and will therefore be inclined to exercise an excess of caution. If we add to this reason all the other reasons already listed for the exercise of caution, it seems unlikely that we shall ever exploit that superiority in capital ships in which we place so much trust. Were we to halve size and double numbers, our admirals would be much bolder, and the control of imperial communications would be greatly facilitated, provided (and the proviso is a big one) that two small battleships can be so armed and armoured that they will be able to tackle one large battleship on equal terms.

Again, the responsibility of giving the necessary decision is very heavy. We did everything in our power to obtain an agreed reduction in size. Unfortunately, we failed, and the question is posed as to whether or not we can proceed to reduce size, without regard to the action of other nations in the matter. It seemed possible at one time that the example of the victor at Trafalgar, which has furnished the model in construction for a hundred years, might be followed. But the action of Japan in secretly increasing her tonnages has killed that hope.

Some authorities consider that, by accepting much

lower speeds, and giving up torpedo-tubes and secondary armament, a small ship capable of taking its place in line of battle with the best could be produced. Should the trial be made? It is possible to experiment in such matters in two cases: either when already possessed of a satisfactory superiority in capital ships, or when control of communications is not vital. Thus, in the one case, Britain might make the experiment, in the other case Germany. Certainly, if we stick to our present conventions, with the powers of aircraft and torpedo steadily growing, the size and cost of the future battleship will be monstrous.

Big Cruisers or Small.—Owing to their size and lack of armour, large cruisers are peculiarly susceptible to air-attack and they are ineffective in dealing with submarines and aircraft—the two chief menaces to our shipping. They cannot, moreover, sustain the attack of battleship-raiders on the high seas. With the battle-fleet, they are used for reconnaissance and protection, being considered essential in these roles as a solid support to the lighter craft and for driving back heavy hostile covering forces. The need for them in this capacity has, however, diminished considerably since the advent of aircraft. They possess, of course, a great value for commerce-protection on the oceans and have found a new employment as floating A.A. batteries; but, on the whole, it seems safe to say that there is less need for them than of old.

We still require numerous light cruisers. They should be slightly larger and appreciably faster than the present destroyer and should dispense with torpedo-tubes. They might combine their normal functions as cruisers with the support of the mosquito-flotilla both in attack and defence, thus obviating the need for destroyers.

Future Construction.—At the moment, a hundred and fifty warships are under construction, of which five are battleships, seventeen are cruisers and the remainder are

flotilla vessels. Five more battleships and numerous lighter craft are to be laid down in the near future.

The figure for battleships is wholly in excess of our requirements, except on the supposition that many of them are likely to be sunk by aircraft. It is as well, however, that the first two of the new battleships are to displace 40,000 tons and to carry 16-in. guns; for they may have to encounter Japanese vessels of like type; and the gesture, combined with a similar gesture in America, should convince Japan of the short-sightedness of her policy of attempting to outbuild the two richest powers.

Thereafter, in view of the adequate margin, with regard to probable groupings, in our favour, we might begin the construction of small battleships. In respect to other vessels, the programme might be so arranged so as to cut out the destroyers and the majority of the large cruisers and to build numerous light cruisers and a host of mosquito craft.

In relating design and numerical proportions as closely as possible to function and to the new conditions, we should, in general, aim in our construction at the control of the oceans by battleships and at the control of the narrow seas by light craft.

Airships.—It is a pity that, because of a few disasters, we should have abandoned the policy of building airships. The *Hindenburg* crossed the northern Atlantic 21 times and the southern Atlantic 15 times and, in all, flew 200,000 miles before it met with disaster, a disaster which would not have occurred had helium been employed for inflation instead of hydrogen. German airships have, between them, flown a total of 4,000,000 miles and have carried 400,000 passengers; and they have suffered remarkably few accidents. If our own total casualties incurred in this form of transport be compared to those which occur over an Easter week-end in motor-transport, they will appear insignificant. The Americans, in spite of

much heavier losses, have decided to continue their construction. A member of the committee responsible for their decision stated that " the greatest single factor in beating off the submarine attack " was the airship. We employed it with considerable effect both for the spotting of submarines and for scouting; and our total casualties, out of the 7,000 persons employed in its service during four years of war, numbered only 48.

There are two new uses to which airships might be put. The first has long been suggested. It is that they carry two or more aeroplanes and, thus equipped, should act as convoy to groups of merchantmen, releasing machines against enemy aircraft or submarines as occasion might demand. The second is of more recent date.[1] It is that airships should extend the depth of our system for air-raid warnings by patrolling the Channel and the North Sea as near as possible to the enemy's coast-line. If they can be proved equal to these two functions their renewed employment would add considerably to our general security.

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The Power of the Admiralty.—The navy has been the first line of defence for some hundreds of years. Its glorious services are enshrined and rightly enshrined in the heart of the nation. It has always been a little inclined, however, to point a pistol at the head of the Government in the shape of a declaration that it has a business vital to the existence of the nation to perform, and that it will brook no interference. Reverence for its deeds and fear of its pistol have between them endowed the Admiralty with greater power as a ministry than the other two war-ministries combined. This preponderance has its perils.

The navy claims that it alone should be responsible for operations over the sea and for the control of maritime communications, in connexion with which, divided accoun-

[1] Suggested by Lt.-Col. L. V. S. Blacker, *A. & N. & A. F. Gazette.*

tability would, it holds, be most dangerous. Were the army to make a similar claim with regard to land operations and the air-force to demand undivided responsibility in air-control, we should have the three services working each in its own sphere in complete independence of each other, each so immersed in the business of insisting on its own rights that the thought of combining for battle might be relegated to fourth place.

The air-force, not the navy, is now wholly responsible for the first line of defence, and is partially responsible for the second line, namely, the control of communications. The Admiralty refuse to accept this somewhat obvious view and regard the air-force as an intruder on their preserves. They struggled long and fiercely to win control of the fleet air-arm. In that struggle there was much to be said on their side; but their superior weight enabled them to gain more points in it than they deserved, and they won a victory which will cause overlapping and duplication in respect to such matters as ground-organization and the employment of skilled artisans. Fortunately, they failed to obtain control of the coastal air-squadrons.

The excessive power of the Admiralty has become a danger in other respects also. They are able to capture the bulk of the money assigned to defence, and to obtain, because of their long-established organizations, first consideration for their requirements. Yet were not one other battleship to be laid down now, should we feel in the least anxious? Were twenty new battleships now laid down, should we be relieved from the pervading fears of aerial and submarine attack? The answer in both cases is an unqualified negative. Nevertheless, out of our exiguous supply of skilled artificers, thousands required for more urgent construction are busy, hammer and tongs, at the building of these unwanted leviathans.

Trafalgar was a blessing. But it was by no means an undiluted blessing, for it deprived the navy of the

spur to thought for a hundred years. The War Office can, indeed, pretend to no higher natural gifts than the Admiralty. But the soldiers were fortunate in having their wits quickened first in the Crimea and then in South Africa before they were summoned to face Armageddon. The sailor is always on active service. As captain of a ship from pinnace to dreadnought and within the limits of his command, he has no superior. But, without experience, in a wider sphere, two shocks at least, as with the soldier, seem needed before he can get into his mental stride and think in terms of strategy. The defects which the Admiralty displayed in the Great War stirred the Board, indeed, into an uneasy, mental activity; but Jutland and the eventual defeat of the submarines allowed it to relapse once more into a complacent confidence in its thinking organs. It has spent over one milliard sterling since the Armistice without reaching content as to the strength and composition of the fleet. Throughout, it has held to the tradition that England depends for her existence on an omnipotent navy, and it has aimed to secure the maximum of money possible without serious regard to the necessities of the other services. In the present glut of money, for defence (for which there must be an ultimate reckoning), it has obtained the lion's share and is spending it mainly on battleships although, with regard to probable allies and enemies, already overwhelmingly superior in that class of vessel.

A most interesting phenomenon to note in this connexion is the direction in which pistols are pointing. The German air-fleet consists mainly of long-distance bombers. Against whom are they directed? Hardly against Prague and Warsaw which are close at hand, or against France, which is less vulnerable than Germany in respect to air-attack and can make effective reply, or against Moscow which is too distant; but, presumably, against the British capital, as London is only 275 miles, via Belgium, from the nearest point on the German frontier and only 340

miles oversea from Emden, whereas Berlin is 600 miles from London. To what end, too, is the "Four-Year Plan", with all its attendant hardships, aimed, if not to nullify the effect of a possible British blockade? And may not the attempts in progress at economic control in south-eastern Europe be part of the same design?

Again, Germany, in the naval treaty, demanded and was allowed to build up to 45% of our tonnage in submarines, and she has, quite justifiably, utilized that privilege to outdo us in numbers. By constructing the smaller boats which suffice for action in the narrow seas, she has—built and building—67 submarines to our 56; and it is possible that she is organizing the mass-production of these vessels. She has no doubt realized that a very few powerful capital ships supported by numerous small craft suffice for an effective fleet-in-being, and that submarines are the best commerce destroyers in existence. It is against neither French trade nor Russian trade that she can be aiming, but against ours. Therefore, whether with aggressive intent or in order to place force behind diplomacy, Germany's plans and equipment appear directly to threaten England.

That in some respects is not surprising. What, however, does seem curious is our response. Our air-force is at the moment equipped to act as a deterrent from attack through the threat of retaliation—a policy with which we may not agree but which is understandable. Our navy, on the other hand, with its programme of numerous battleships and a large fleet air-arm, seems to intend to attack either America, which hardly constitutes an immediate menace, or Japan, whose threat is still far distant and unlikely to prove effective.

The Admiralty possess the power of being able to pop their Minister on arrival into their pocket and to keep him there. What they need is a First Lord who will realize that, in the war, they failed in many directions: submarines, lack of bases on the East Coast, convoys . . .

and that they got home by the shortest of short heads, and who will therefore analyse with scrupulous care the advice they give him before passing it on to the Cabinet. The undisputed control of a grasping and uninspired Board over its Minister, and through him over the Government, is one of the most serious of the dangers with which we are confronted. The gravamen of the charge lies not, however, against the Admiralty, who, however mistaken their beliefs, are undoubtedly sincere in them and who are grasping only in what they imagine to be a good cause, but against the Government, who refuse to institute central control in the shape of a Ministry of Defence.

Incidentally, in the matter of this refusal, the Government have the staunchest of backing from the Admiralty, who, no doubt, consider that, good as their cause might seem, uncriticized and unassailed in the home-circle, its virtues might not survive independent examination.

CHAPTER V

The Army and the Air-Force

THERE has never been a serious demand in the army for a military air-arm permanently detached from the air-force; for military commanders, who have in all ages been forced to study strategy, realize the vital importance of the maintenance of flexibility in such a powerful and mobile arm. The army and the air-force may, therefore, be expected to co-operate in future much as they were doing in 1918. There will probably be fewer machines under the direct control of the army-commander for the ordinary occasions of warfare, but there should be even more than of old for the grand occasions. Prior to the assault in a major operation, bombers will take a prominent part in the bombardment of the sector selected by the assailant for penetration and, after the assault, will afford continuity to the operation either by preventing the enemy from reforming or by bombing any fresh positions he may occupy. Machines not devoted to these tasks may be boxing in the area under attack in order to prevent the arrival of reserves.

The part of an air-force in pursuit has been already described. In retreat, aircraft will arrive from far and near, as they did in the retreats on both sides on the Western Front in 1918, in order to retard the pursuer's progress. They will, as of old, attempt to close the gap made by a sudden assault and at least punish heavily the troops passing through it. The two principal novelties will be that aircraft will now be used for blasting the gap, and, as shown later in this chapter, for enhancing, through air-supply, the mobility of petrol-driven forces.

It is clear, therefore, that the air-force, as a friend, can assist the army in many directions. The two services will indeed work in the closest association. Especially will this be the case where the ground-forces are mechanized when, together, they will, for the nonce, form a single, well-knit, powerful, quick-hitting body, in which the air-force will furnish reconnaissance, lateral connexion, a vehicle for the commander, and assistance in battle-supply; and the army, by its mobile fire-power, will be able to utilize the opportunities thus afforded to gain its objective. Moreover, on all ordinary occasions, the army will help air-forces precisely as it has always helped the navy. It will hold their bases, their aerodromes, and their advanced landing-grounds, and it will continually extend their range by seizing more ground.

An air-force as an enemy to the army is a powerful factor both for limiting and for hindering operations:

A. It has been our traditional strategy to dispatch overseas expeditionary forces escorted by fleets in order to win or guard territory, to seize a base for the navy, to assist an ally, or to attack a hostile army in flank or rear.

These operations have, to-day, become extraordinarily difficult. Even when we take what may seem the most favourable case—a force dispatched a short distance to land in friendly territory to assist an ally—grave dangers may be encountered. The ports of embarkation and disembarkation may both be subjected to air-attack and the transports to submarine attack in addition, the latter being particularly dangerous at the outbreak of a war before anti-submarine devices have been put into operation.

In more distant expeditions, the army will usually have to pass through narrow channels (the Skagerak, the Straits of Gibraltar, the Bab-el-Mandel) or narrow seas (the Mediterranean, the Red Sea, the Baltic) where it may be attacked by submarines and, at comparatively short range, by shore-based aircraft superior both in

number and power to escorting machines. If it should succeed in arriving at its destination, it would, having been shadowed all the way, have lost all prospect of effecting a surprise. The enemy, usually acting on interior lines, would be able to make full use of the flexibility of aircraft so that he should, even if greatly inferior in air-strength in the whole theatre of war, be superior at the point of threatened landing. Moreover, he would have the advantages not only of numbers and of shore-based over sea-borne machines, but also those of numerous and dispersed aerodromes, of many well-defined and vulnerable targets and of sure information.

The handicaps to which expeditionary forces are now subjected are, however, by no means wholly to our disadvantage, for the British Empire is no longer an acquisitive but a retentive group of nations. Where an enemy undertakes an enterprise of this kind against us, he will almost invariably have to seize land in proximity to the objective with a view to establishing there a solid air-base, from which the further operations of his army can be supported. Should he attack any of our Dominions or Colonies, the need for establishing proximate external air-bases would prevent him from achieving surprise, and would afford much-needed time to the defenders for completing their preparations. The Dominion concerned, provided it were well furnished with aircraft as, from geographical reasons alone, all the Dominions should be, would, owing to the assailant's difficulty, under air-observation, of staging effective feints, be able to assemble practically all its machines in the threatened area. Moreover, by the time the enemy base was established, even against light opposition, the defending army should be on the spot and aircraft should be arriving from many parts of the Empire to assist it. The prospects of success for the enemy, in view of the impediments indicated above to which all expeditionary forces are subject, would not then be of a high order.

B. The lines of communication of an army from the home base to the front line are likely to be under the repeated attack of aircraft—a danger which may entail:

1. That a safer, though otherwise less convenient, sea-route may have to be adopted—e.g. Avonmouth to St. Nazaire instead of Southampton to Havre.

2. That road transport will have largely to supersede rail transport as being less vulnerable and more flexible.

3. Arising out of (2), that there will be difficulty in finding the necessary motor transport; for but few of our ships are adapted for the reception of lorries, and our ally could hardly be expected to spare many of his vehicles, as he, too, will have been forced off his railways to a great extent.

4. Arising also out of (2), that, when a great army is eventually in action, large accumulations of petrol will be needed, which will form very vulnerable targets.

5. That depots and advanced bases within economic bombing range of the enemy will have to be of a mobile nature dependent on roads and equal to quick change of position.

6. That the art of camouflage will have to be practised more extensively than ever.

C. Considerable ground-forces both at home and abroad will have to be devoted to anti-aircraft work. In this connexion, in order both to maintain the morale of our own troops and to reduce the efficiency of hostile aircraft, every soldier, including those of the R.A.S.C., R.A.O.C., and Labour Companies, should be trained to A.A. work both with rifle and machine-gun, so that no camp, no depot, no vehicle should ever be exposed to attack without the power of reply.

D. Owing to the terrible disorganization of all services which may follow air-raids upon our cities, part of the army will have to be detailed to duties of internal

security, which will include the establishment of necessary police, transport, supply and sanitation services.

E. There may be great difficulty in certain conditions in reinforcing garrisons on our imperial lines of communication. Consequently:

1. They are now being strengthened so as to be able to stand a siege.

2. A central reserve will be needed in the Middle East for reinforcing threatened points in that theatre, and in order to strengthen Egypt and Palestine during the minimum period of six weeks which must elapse, in the event of the temporary closure of the Mediterranean, before those countries could receive reinforcements by the Cape route.

3. We would have, as far as feasible, to use India, and, to some extent, Australia, as supply bases for garrisons east of Malta.

4. Great importance will now attach to decentralization into groups: Home; the Middle East; India; South Africa; Australia and the Far East; Canada.

F. With regard to the bombing of trenches by aircraft in preparation for the assault, it is not clear to whom will be confided the defence of infantry in trenches against aeroplanes covering the assault, whether to the infantry themselves, to the machine-gun battalions or to special anti-aircraft units. The infantry have already a multiplicity of weapons and the machine-gun battalions are now few in numbers, so perhaps the task should be assumed by the anti-aircraft artillery, who might be armed for the purpose with a multiple pom-pom of ·8-in. calibre firing an explosive shell. As support by massed aeroplanes has come to stay, the problem needs consideration both as regards the points mentioned and the most suitable form of protection in the trenches.

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Parachutes.—The action of small, well-placed de-

tachments has often greatly influenced the result of battles. In 1904, for instance, the Japanese victories on the Yalu and at Anping were largely the result of desperate fighting on the part of tiny groups for the maintenance of vital points. Since those days, the machine-gun, with its high defensive capacity, has greatly enlarged the possibilities of such action, provided that, in continental warfare, it be reinforced by the anti-tank gun.

Accordingly, some countries are developing systems of the transport of troops by air, with a view to dropping them from parachutes, or landing them from gliders behind the enemy's lines. The infantry of a Russian division, with its machine-guns and some light field-guns, is said to have been successfully landed by these methods in some recent manœuvres near Kiev; the French are training troops which they call " sacrifice squads " for the same purpose, and the Italians have a scheme by which they parachute a small body of troops in order to prepare an aerodrome, and then land upon it a substantial force with the idea of combining decisive attacks on the enemy from front and rear.

If the task, whatever it may be, is not to be considered as a forlorn hope from which none may be expected to return, it must be connected closely both in time and space with a bigger operation. After the discovery by aerial photography of a suitable area, the Italian scheme might be followed; or troops might, at the outset of a grand attack, be dropped on a position astride communications. Apart from the actual interruption they might cause, the demoralizing effect of their presence behind the lines would be considerable. Other useful forms of parachute-action would be the formation of a bridge-head for securing the passage of a river, and the strengthening by specialists and material of the action of guerrillas with whom it might otherwise be difficult to obtain contact.

There are, further, purposes for which parachute-troops might be effectively employed in which their chances of survival would be negligible. They might, for example, be used to destroy bridges and tunnels, targets which aircraft find exceedingly difficult to tackle; or in the midst of an air-raid, they might be landed on the outskirts of a big city with a view to blocking a few exits, thereby largely increasing the panic caused by bombing. Even for such " sacrifice " action, there would usually be found daring spirits, who would face almost certain death for great ends.

Supply by Air.—The introduction of supply by air is already having a noteworthy effect on strategy. Apart from its emergency use of provisioning isolated detachments, it has two important fields of action—mechanized warfare and savage warfare. It is already being applied to the maintenance of fast-moving mechanized and motorized columns which, without some such aid, are much limited in range and flexibility. In this field it can assist two forms of operation in which supply has hitherto been supremely difficult, namely, wide, sweeping movements and pursuit. In effect, it endows an army with a freedom of action analogous to that possessed by a fleet. The air-supply of mechanized formations and the close combination in general of tanks and aircraft after a crust has been broken, offer possibilities for the highest skill in leadership and for decisive results.[1] Effective pursuits were shown in an earlier chapter to be of rare occurrence. In the new age, they are becoming common both through direct pursuit by aircraft, as evidenced in Palestine and Italy, and through the supply of ground-troops by aircraft, as shown in Abyssinia and China. When it is remembered that three cavalry divisions in Palestine required a train of twenty-three thousand camels; and that, recently, on manœuvres some two

[1] For detailed discussion on this subject, see *Further Aspects of Mechanization*, Chap. X (Clowes).

hundred tanks had to be supplied by eight hundred lorries, the advantages of air-supply become obvious. It will, of course, be essential, in addition, to utilize ground-supply to the utmost by taking some reserves with the force in a few vehicles of high capacity, by pushing forward mobile bases as far as practicable, and also by collecting and distributing the supplies available in the country.

The other field of air-supply is that of small wars.[1] At present a civilized army marches into a new country accompanied by a vast array of pack-animals, and becomes a mere escort to a long train of supplies. It lacks mobility. It moves only by such tracks as its animals can use, so its path can be forecast and surprise denied to it. With its troops dispersed on protective duties, it can have no great offensive power. Replace pack-supply by air-supply, and the column becomes a hard-hitting formation possessed of the power of applying all the principles of war. The Italian military attaché, describing the campaign in Abyssinia to a London audience, said: "It was indeed the use of an imposing mass of aircraft for supplies which permitted military operations to proceed so speedily and gave to the campaign the character of a war of movement."[2]

In campaigns in savage countries, there are but few other co-operative tasks for aeroplanes. There are no reserves or communications to attack; the ranging of guns is but seldom possible; reconnaissance is extraordinarily difficult and not often fruitful of results; co-operation in battle is valuable but only on the rare occasions when the enemy is encountered in force. Hence fighting machines are usually available for employment in the work of supply. Where connexion with the base has been discarded, the problem of evacuation of the wounded in such a system has yet to be solved. At

[1] For detailed discussion, see *The Infantry Experiment*, Chap. II (Clowes).
[2] *R.U.S.I. Journal*, May, 1938, p. 243.

present it is only feasible where landing-grounds, plentiful in some districts, non-existent in others, can be found. But the discovery of a device for picking up wounded should not be impossible in a generation to which aerobatics are a commonplace, and which has seen aerodromes established at the North Pole.

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Strategy is " immutable and timeless ". Working in two dimensions, it was shown to be a matter of principles which do not alter with the constant change of conditions in which they operate. The same will be found to be true of strategy in three dimensions.

In the European War, action in the third dimension, through the agency of the submarine, nearly proved decisive against our communications. The aeroplane, on the other hand, was then strategically in its infancy, and was employed merely to strengthen and extend the normal functions of the navy and army.

With the persistence of submarines and the tremendous post-war development of aviation, action in the third dimension is now likely to prove a paramount influence in military operations. The role of the submarine remains unchanged, but not so that of aircraft. In order to exploit the full value of an air-force, it must be used mainly as one unit in a role, special to itself, indeed, but analogous to the roles of the other fighting services. It will seek as they do to defeat the enemy. It will, in our case, probably fight its first battle defensively. Thereafter, it will counter-attack and will then seek to close, not over its own but over hostile country. Should the enemy use his power of evasion to refuse battle, it will attack his life-lines, his aerodromes and the sources of his supply of pilots and material. Or if they are not available or vulnerable, it will choose other targets of such value to the enemy as to force his aircraft to fight for them. In this fashion, in the first stages of the war, it will be continually seeking ascendancy in the air.

The sailor (with the assistance of the soldier) has always aimed first at the mastery of the oceans and then devoted himself to two things—the support of the army and the attack and defence of sea-borne supplies. So, too, the airman (assisted by the sailor and the soldier) will aim first at ascendancy in the air and will then devote his energies to the assistance of his comrade-services and to the attack and defence of communications.

Thus naval and aerial strategy are, as expected,[1] found to be remarkably similar. There is one exception —shock-strategy—the blow against the morale of a people, for which there is no precedent in maritime warfare.

The old principles appear to stand. Whether an air-force acts independently or in close concert with either the navy or army, the *aim* of ascendancy in the air must be *maintained.* An air-force must start from a *secure* base. That implies dispersed, protected, camouflaged aerodromes and factories, a sound A.A. defence, a careful organization of A.R.P., and, above all, the disciplined morale of the people. *Concentration*, *economy of force*, *mobility* and *surprise* are, as has been stated, functions of that flexibility which, if an air-force is to be effective, must be stringently preserved, both through the maintenance of sound communications (aerodromes and their ground-organizations) and by reducing detachments from the central body to a minimum. Aircraft cannot act as individual units except *offensively*; and an air-force, whatever its early action, must, if it is to be eventually successful, carry the war into the heart of an enemy country.

Co-operation, the last of the recognized principles, can, in these strenuous, complicated and swiftly-moving days, be a matter only of hope and pious endeavour. The air-force will no doubt co-operate with the other arms as best it can; but the combination into a fighting

[1] *v.* Part II, Chap. II.

whole of the three services is a vital matter and demands for its accomplishment something more than a meek aspiration. Its need and its implications will be discussed in the ensuing chapter.

CHAPTER VI

Co-ordination

" In military matters two and two do not make four unless they are brought together in concerted action."—Mahan.

" Our bane during the early periods of the Great War was the incurable tendency of . . . people in high places to argue that measures vitally necessary could not . . . be taken. . . . Every one of these arguments was falsified by the result. . . . The advice of these prophets of the impossible cost us months and years of prolonged warfare."—Lloyd George.

IN the nineteenth century, an army and a navy, even of an island power, did not have a great deal of work in common even in maritime warfare. The navy carried out certain purely formal naval duties. It transported the army to its destination and set it ashore. If the landing were opposed, it covered the disembarkation by gunfire. Thereafter the protagonists took their separate ways. The army undertook whatever operations were required of it on land. The navy watched over the safe transport by sea of military supplies and reinforcements. High-water mark divided the responsibilities of the two services. Nevertheless, as described in an earlier chapter, bitter antagonisms were continually aroused which led to the ruin of many joint undertakings, and created a body of opinion insistent that some form of control and co-ordination of the two services should be instituted, which would regard naval strategy and military strategy as one and indivisible and would direct combined operations.

In the twentieth century, with the advent of a third service, this need was emphasized. The aeroplane knows no frontiers between land and water. There is no clear line of demarcation between its duties with the

navy or its duties with the army. Instead of the strictly-limited and clearly-defined connexions of the navy with the army, the air-force acts in intimate and unceasing concert with the other two arms, and affects their action variously, directly and profoundly in every operation of war. A hundred questions arise both in peace and war as to the distribution of aircraft to the army, the navy and the independent air-force respectively, as to forms of co-operation and as to command. Whatever urge there was therefore of the exercise of control and co-ordination over the two senior services, and for their actions to be considered as a whole, has been multiplied an hundred-fold by the arrival of the newcomer.

The tremendous competition for machines that took place between the R.N.A.S. and the R.F.C. before the two branches were united into the R.A.F., and the opposition to the formation of an Air Ministry and to the creation of an Independent Air-Force have already been described.

Some actual examples of the evils arising out of lack of co-ordination will now be given.

Wing-Commander James, speaking in the House of Commons, said: "While the R.F.C. suffered enormous casualties and were having a very hard time, the R.N.A.S. squadrons were held in reserve for contingencies which never arose." During the battle of Passchendaele, when the R.F.C. were almost exhausted, there were five squadrons of the R.N.A.S. at Dunkirk "taking no part in the battle and suffering virtually no casualties." [1]

Sir Roger Keyes, also speaking in the House, quoted a letter of his written to the Admiralty in May, 1918, in which, after complaining bitterly of the "confusion and inefficiency which had resulted from dual control", and the inadequacy of the air-force allowed him for bombing the torpedo-boats and submarines in the port of Bruges, added: "I submit that their Lordships be

[1] *Hansard*, 15/3/37, Vol. 321, Col. 1714.

moved to take the strongest possible action without further delay to insist on the R.A.F. units of the 5th Group being maintained at the required strength without further interference from the G.O.C. the R.A.F. in the field, who does not seem to understand the elements of the naval requirements on the Belgian coast or the great importance of their bearing on the general conduct of the war." [1] He wished the big bombers of the Independent Air-Force to bomb not Cologne but naval targets. In such a case who is to give an impartial decision? Who is to advise the War Cabinet, when the Air Ministry and the Admiralty press contrary opinions upon them?

The strongest evidence of the need for co-ordination was given by Vice-Admiral Taylor.[2] "At the time the amalgamation took place, there was, under the complete control of the Admiralty, no less a force than 2,800 aircraft of all kinds with a personnel of 55,000 and from 40 to 60 aerodromes scattered about the coast." That is to say, a very large proportion of the available aircraft was consecrated to naval use, and the air-force thereby robbed of the flexibility which is the most valuable of its strategic assets. The machines in question were, however, shore-based aircraft of the first quality and could, therefore, if they were loaned to the army, be used with effect; whereas, in that respect, existing naval machines would be relatively of but little use. It is a terrifying thought for the future that the navy, which has the same dominating power in England that the army has in France and Germany, may be allowed at some future date to build large numbers of sea-borne aircraft whose production would absorb a big proportion of our industrial capacity, to the emasculation not only of the flexibility of our air-force but also of its actual strength.

So much for the antagonisms of navy and air-force. They are so serious that, quite recently, we find a Cabinet Minister, who had controlled in turn both these ser-

[1] ibid. [2] *Hansard*, 10/11/26, Vol. 317, Col. 797.

vices, pitifully seeking " the least objectionable point of contact between " them. They have for the moment subsided somewhat, but, in the absence of higher control, may, at any moment, break out again. That the need for co-ordination is not confined to any one country may be gathered from a speech of Professor Nicholas Murray Butler,[1] who, after mentioning Marshal Pétain's strong advocacy of a Ministry of Defence, went on to say:

" One might think that under present conditions such a step forward in the efficiency and economy of national administration would be adopted promptly and to the great satisfaction of the members of each of the three armed forces themselves. Such, however, is not the case. Any step forward of this kind would be violently opposed in Washington at least, by those who constitute and direct the effective lobbies there installed to agitate for increased appropriations and authority for each of the three services—army, navy and air-force. Nevertheless . . . it will become convincingly clear that the policy which Marshal Pétain so strongly upholds should be adopted by the government of the United States. If it be the national security which is at stake, then the establishment of a single Department of National Defence, with sub-departments for the army, the navy and the air-force, would greatly increase the effectiveness of the means at hand for maintaining that security. As a way of promoting administrative efficiency and governmental economy it would be invaluable."

The claim for a separate aerial service for the army is, as already stated, not seriously voiced. There has, however, been considerable friction between the army and the air-force with regard to the part to be played by aircraft in coast-defence and in savage warfare. The experience, for instance, of the writer in recent operations in Kurdistan was that the campaign could have been brought to a successful conclusion more rapidly by

[1] op. cit.

far, had its conduct been entrusted either to the army commander or the air-force commander, rather than to a system of command by conference. These facts, together with the complete failure of the attempt made during the war at control both by the army and the navy over the air-force, and the friction which has since occurred between the navy and the air-force over the fleet air-arm, indicate clearly the need of higher control over the three services.

It has long been suggested that a Ministry of Defence[1] should be set up, charged in the first place, subject to Cabinet responsibility, with planning our imperial strategy and, in the second place, with exercising operational control over the three services, without interfering in the execution of their individual tasks. The reasons repeatedly urged for its institution are:

A. Imperial defence is indivisible. It must be envisaged as a whole by a body trained to deal with the three services as impartially and connectedly as the general staff, say of a division, deals operationally with the various arms of which the division is composed.

B. The interdependence of the three services demands unity of control. It is of so intimate a nature that any alteration in one service, whether of the weapons, tactics or strength, has immediate repercussions upon the others. Their relations must accordingly remain under continual observation so that, as scientific development leads to change and progress, the necessary adjustments may be effected.

C. There is no impartial, expert person or body to advise the Government on imperial strategy. It may be said that the Committee of Imperial Defence (C.I.D.) exists for that purpose. True, and prior to the European War, it rendered admirable service in administrative co-ordination. But it gave no indication of the

[1] It might better be termed a Ministry of War or of the Fighting Forces, should the Ministry of Passive Defence, suggested in a later chapter, be instituted.

prospects and the perils of that war, and it failed to appreciate the powers of the instruments with which the war was to be waged. It ceased to function during the war, and, since the Armistice, when its activities were revived, it has allowed us to slip from a state of security to one of peril. "Here," said Lord Salisbury, "was the C.I.D. whose business it was to take care of this very thing . . . which was well-equipped to give information and advice. Yet nothing was done." "It has proved," said Mr. Lloyd George, "useful for exploration, but futile in action." It is the only body from which light could have been emitted as to the indivisibility of our defensive task. It has shed no light thereon. It has hardly even acknowledged the existence of a problem in strategic command. It has never surveyed the two new fields of imperial strategy, namely, the effect of the advent of aircraft and of the definitive transition in our policy from offence to defence. It has tended to resolve itself into a mosaic of sub-committees producing documents innumerable but no co-ordination. If it had possessed any serious residual value, the present situation would never have arisen. The mischief lies far too deep for remedy merely by the appointment of a whole-time chairman. Nor is it to be obviated by the introduction of a Joint Planning Committee, the members of which remain directly subordinate to the heads of their respective services, for whom, naturally, they do but little more than devil.

In the existing system, the Chiefs of Staff (C. of S.) Sub-Committee advises the Committee of Imperial Defence and the Government on Defence Policy. Two objections at once arise. The first, that Chiefs of Staff are fully employed at their own tasks. They have therefore not the time to master fully the implications of the wider strategy which embraces all operations by land, sea and air. The second, that, having served long in a particular sphere and regarding themselves inevitably and justly as the trusted guardians of the rights and traditions of

their respective services, they cannot humanly be expected to give an impartial opinion.

Lord Hailsham on behalf of the Government did indeed vouch for the impartiality of the Chiefs, claiming that the Government " in almost every case gets a unanimous report from them ", that any difference on strategic questions was " unlikely to arise " and that the system " works in practice exceedingly well ". Lord Trenchard, however, who served on the Committee for six and a half years, two of them as chairman, stated in a letter in *The Times*[1] that " unanimity has been too often reached by tacit agreement to exclude vital differences of opinion, to avoid issues on which such differences might arise. . . . What is wanted . . . is . . . that means should exist for examination of defence requirements untrammelled by departmental compromises." That is, the interests of the country should not be sacrificed on the altar of harmony. He was supported in his contentions by Lord Milne, of equal experience, who, speaking of occasions when the senior member of the C. of S. Committee took the chair, said: " He is asked to be an impartial chairman and naturally he has his own strong views to press on everybody. The situation is impossible. . . ." In view of these grave disclosures and the outcry which followed them, the Government were forced to yield. They took, however, the shortest possible step in the required direction and appointed a Minister (without staff) for the Co-ordination of Defence, one of whose duties it would be to act as occasional chairman of the C. of S. Committee.

This was the solution originally recommended by the Salisbury Committee which had been appointed in 1923 to examine the problem. As, however, that Committee among their findings stated " that they did not feel competent to form an opinion on the difficult technical questions on which the General Staffs take different

[1] Dated 14/12/36.

views ", it is not clear how they expected an uninstructed minister to perform that feat. Sir Thomas Inskip has been repeatedly attacked in the House on various counts connected with his appointment, chiefly with a narrow interpretation of his duties. But, without an expert staff to advise him, without power of assigning funds or of issuing orders, he was of course in an impossible position. All he could do was to " stonewall " in order to prolong the resistance of the governmental team to true co-ordination; and that he seems to have done with remarkable skill.

The Government have now erected yet another barrier. They have formed what is termed a *United Office* in which are combined the offices of the Cabinet, of the Committee of Imperial Defence, of the Economic Advisory Council and of the Minister for the Co-ordination of Defence. No doubt we shall be told that each of these offices has a number of valuable sub-committees. But control cannot be exercised effectively through what has been variously described as a mosaic, a labyrinth, a rabbit-warren, and a morass of sub-committees. Let us hope the new office is the last of the Government's efforts to deny true co-ordination to the fighting forces.

D. If the Government have no authorized advisers, they go for advice to those without authority, and perhaps without competence, to give it. There are several objections to this: the first, that the adviser bears no responsibility for the execution of his plans; the second, that such action causes the gravest friction between the Cabinet and the heads of the fighting forces; and the third, that the advice, lacking a sound basis of information, may be worthless.

E. The authority which gives advice to the Government must prepare the plans for putting that advice into effect and must issue the relevant executive orders. Neither the C.I.D. nor the Minister for Co-ordination has power of command. It has been urged indeed that

the C.I.D. could in an emergency be given that power. That would be fatal. It would take us back to that futile control by a Cabinet of twenty-two, which nearly led us to disaster in 1914.

The only solution of the problem is to form a general staff drawn from the three services, at the head of which will be a Chief of Staff who, under the authority of the Minister of Defence, will prepare defence-plans and will command the fighting forces both in peace and war.

The writer was once chief staff officer in an important frontier district, which was almost surrounded by potentially hostile tribes. In his lockers were twenty-one plans (such as the C.I.D. may now have pigeon-holed somewhere) intended to cover every possible issue. During his four years of service in that appointment, it fell to his lot to write operation orders for three separate campaigns, none of which were related to the twenty-one plans already prepared. The point it is intended to bring out is that, however much plans may have been elaborated beforehand, there must be in existence some executive body to issue orders in accordance with the actual situation which, in nine cases out of ten, will not be precisely that previously envisaged. An advisory committee, such as the C.I.D., has neither the competence nor the authority to do so.

F. The most powerful ministry or the strongest minister can, in existing conditions, obtain the largest allotment from the budget for his service, without relevance to actual needs. The remedy for this evil is to be found only in reducing the ministries to sub-ministries and imposing over them a controlling ministry advised by an expert staff.

G. There is at present a considerable amount of overlap in services common to navy, army and air-force alike. Considerable economies might be effected, as the Mond-Weir Committee reported, " if and when a unified, executive control of defence was in being ". For example,

the separate branches of intelligence might first be grouped and also those of research, the policy being extended later as found profitable and justifiable.

The last point (G) is, however, of minor importance. The principal object of the institution of a Ministry of Defence lies in formulating and applying a single strategic conception of defence, embracing operations by sea, land and air. Its first task should be an exhaustive, impartial review of our defence problem. The longer the review is postponed, the more intractable will the problem prove of solution.

The proposal in further detail is, first, that there shall be one ministry instead of three, the Admiralty, the War Office, and the Air Ministry becoming sub-ministries.

The reason for this is that, otherwise, the Minister of Defence would be in an impossible position both practically and constitutionally. Practically, because he would be trying to keep to heel three ministers of equal rank all with direct access to the Prime Minister. Constitutionally, because he would be infringing the inalienable direct responsibility of ministers to Parliament for their respective departments.

It is on the point of the reduction of ministries to sub-ministries that the proposal encounters vested interests against whose rock-bound shores the waves of unimpeachable argument have broken vainly. No prime minister cares to relinquish patronage. No cabinet minister wishes to become a sub-minister, no under-secretary a sub-under-secretary. No aspirants to cabinet rank are prepared to sacrifice their hopes, and no chief of staff wishes his views to be subordinated to those of an overlord, chosen, perhaps, from his own service. Totalitarian governments do not suffer from this disease. They possess the immense advantage of being able to sweep away with a stroke of the pen all vested interests which block efficiency.

The other democratic countries have suffered, however, as we are doing. France has just brought in a Ministry of Defence, but only under the pressure of a growing menace. The politicians did all they could to oppose it on account, says General Mordacq,[1] " of an anxiety, amounting to an obsession, for their political future and the consequent necessity of displeasing no one, especially at the time of ministerial crises and of the distribution of offices ". At first, in order to impose on the public they installed in office, just as we did, a Minister of Co-ordination; but the hard logic of events has proved too strong for them in a land which has long lived closer to reality than we have, and they have been compelled to adopt a Ministry of Defence. In this country, under the fast-growing realization of mortal danger, the Government will be forced into the same course.

The second part of the proposal has already been mentioned, namely, that the Minister must have at his disposal an expert military staff.

It is not intended that the Minister should interfere with the detailed working of the sub-ministries or of the services. He will assign them from the budget their grants, which they will spend according to their respective needs. He will allot them their operational roles in peace and war. They will carry out these roles in the way they may think best. The limitations to their financial and operational freedom will be only those set by the needs of co-ordination in preparation and action.

Finally, it is proposed that, in addition to the sub-ministries of sea, land and air, the Minister should control a fourth—a skeleton sub-ministry of supply—containing two branches, one to deal with supply and one to deal with man-power. The duties of the supply branch in peace would be (*a*) to act as the cadre of a Ministry of Munitions and to make all preparations for expansion

[1] *La Défense Nationale en danger*, p. 25.

into such a ministry in war; (*b*) to prepare, in liaison with other ministries, with leaders of industry and with trade-unions for the very difficult and involved task of mobilizing the industrial strength of the nation; and, as a secondary task, eventually, as and where found possible, and without undue haste, to furnish requirements in supply, transport and research in all forms to the three services.

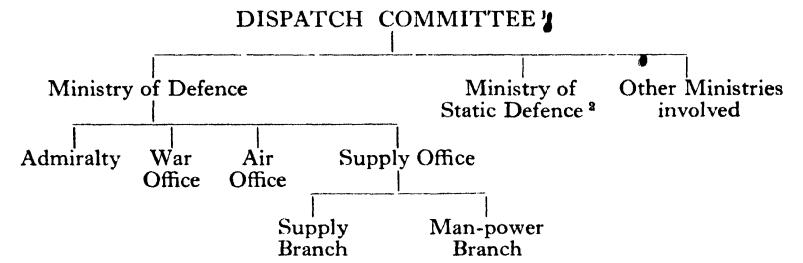
The duties of the man-power branch in peace would be similar, namely, (*a*) to act as a cadre for expansion in war to a National Service Ministry, and to make all the necessary arrangements for that expansion, that is, preparation, in liaison with other ministries, for the mobilization of man-power in all its forms—professional, skilled and unskilled; (*b*) as a secondary task, later, as and where found possible, to act as a recruiting agency for all services, and to control the medical, dental, legal and chaplains' departments.

The institution of a Ministry of Supply is, indeed, being strongly urged at the moment. But that is to begin at the wrong end. Such a ministry would be invaluable in war and might, as in the present emergency, be useful in peace; but, in both cases, only if there were already in existence a Ministry of Defence which had defined the roles and allotted the money for the three services and could settle priorities for them.

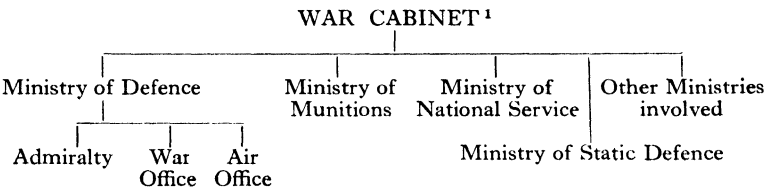
The defence organization suggested would take the shape indicated on page 201.

It is assumed that, in order to solve with decision and celerity the numerous problems at present examined, often superficially, by a body of ministers each fully engaged in the work of his own office, a small "Dispatch" Committee would be instituted (much on the lines long urged by Mr. Amery), and that it would consist of two ministers without portfolio with the Prime Minister as chairman. This committee would have power to co-opt to its meetings such ministers and

PEACE ORGANIZATION OF DEFENCE



WAR ORGANIZATION



other officials as it might desire; for instance, for a discussion on measures of defence, the Minister of Defence, the Chief of the General Staff and the High Commissioners of the Dominions where concerned. The Dispatch Committee would co-ordinate the actions of the various ministries connected with defence, and it would automatically become the War Cabinet on the outbreak of war.

Plans of imperial strategy prepared, in pursuance of policy, by the general staff would be discussed by arrangement at the meetings of the Dispatch Committee (or of the War Cabinet). Between the British Ministry of Defence and the corresponding Ministries of the Dominions the closest liaison would be maintained.

That a change of such capital importance would encounter strenuous opposition was to be expected. It is curious, however, to hear some of its distinguished advocates uttering the word *mañana*. In 1926, Mr.

[1] With P.M. as Chairman.

[2] See Part II, Ch. VII.

Winston Churchill, then Chancellor of the Exchequer, stated in the House that: " No solution of a harmonious or symmetrical character will be achieved in the co-ordination of the services except through the agency of a Ministry of Defence, but it is not possible to create such a body at the present time." Eight years later, again speaking in favour of the institution of the ministry, he suggested that it could not be set up then or even within the next few years. *Suddenly*, to make so drastic a change would be a mistake! So four more years have passed.

Two years ago, Sir Edward Grigg objected that the Ministry could not be set up in the emergency which then existed. But the emergency has persisted and may still persist; and the need for meeting it fully armed with a sound defensive organization grows with the enlargement of the menace. Now, surely, is the time to be strong.

In view of the unquestionable value of unity of control, the lions in the path should be faced and conquered, as they have been in countries where the need is not nearly so urgent as with us who have at once a great navy, a great army and a great air-force to control. In the House of Commons Mr. Attlee stated the case for a Ministry of Defence with great cogency and clarity. His speech was loudly applauded and (except for Cabinet Ministers) opinion on all sides of the House appeared to be strongly in favour of his proposals. Unfortunately, the attitude adopted by the Government throughout the whole controversy has been uniformly obstructive. Sometimes they declare the Ministry to be obviously impossible without stating the foundations of that belief. At other times they advance objections, some of which insult the intelligence of the House, and some are either mere evasions of the issue or distortions of the intentions of the proposers. A few of these may be summarized at this point, together with the appropriate answers.

Objections	*Answers*
1. Amalgamation would kill the spirit special to each of the services.	1. There is no intention of amalgamation. The services remain untouched except as regards the higher control imposed upon them.
2. The Minister must needs be a superman to be equal to the discharge of his gigantic and complicated task.	2. This is a favourite argument. A distinction has to be made of course between the function of giving broad decisions and that of carrying out detailed administration. It is thus that great stores such as Harrod's and Selfridge's are directed, and it is thus that Dictators manage to control their countries, and at the same time personally direct their defence forces. Neither size nor complexity furnishes the criterion. Foch is not rated as more of a superman than Napoleon because he proved equal to the control of armies ten times as large and ten times as complex as those of his predecessor. On the other hand, to effect the necessary co-ordination of the three services in war without previous preparation, without prepared plans, without a trained staff, a superman would indeed be required and would certainly fail to carry out his task satisfactorily. First-class qualifications are, of course, required for the post. It would naturally be unsound to appoint a man who had not proved a marked success in other offices. Nor one whose chief qualifications were speech-making and debating skill. The Minister must possess not only brain but driving power if he is to exercise satisfactory control over sub-ministers.

Objections	*Answers*
3. In time of war, the task would be enormously increased.	3. A matter of organization. In 1870, when Moltke, after intense preparation, launched the German armies on a career which was to prove one of unbroken success, he found himself idle for the first time for many years.
4. The Minister would have to combine in his person the energies of three Cabinet Ministers. He would have to preside over the Admiralty one day, over the Army Council the next, and then over the Air Council.	4. He would, of course, do none of these things. The objection clearly indicates the false basis of the superman theory.
5. Too much power would be put into the hands of one Minister and that not the Prime Minister who is the responsible authority.	5. But " Defence ranks no higher than Finance, or Trade or Foreign Affairs, for which the Prime Minister is also responsible. Moreover, through the Chancellor of the Exchequer and the Secretary of State for Foreign Affairs, the Prime Minister has control of Finance, without which Defence cannot exist, and of Policy, without which Defence cannot plan; so his power would appear to be adequately safeguarded." [1]
6. A distinguished statesman objecting to the Ministry of Defence declared that, on the question of carriers, it took him " months of very hard work and peaceable talk such as only a civilian could have administered ", to bring the navy and air force to agreement.	6. This seems to point rather strongly to the need of co-ordination. We might find it a little irksome in war had our operations to wait while a tactful civilian was spending some months in trying to reconcile the views of two of the services.

[1] *Security?* (Methuen), p. 112.

Objections	*Answers*
7. It would be absurd to have a super-head who would have the power of giving decisions contrary to the views of the expert responsible heads of the three services.	7. But it is not considered absurd that a commander, having heard the respective views of the heads of his cavalry, his artillery and his infantry, should then give a decision by which all must abide.
8. That the time, intellect and energies of the Minister would be overtaxed by having to represent the three services in Parliament.	8. The Minister would deal only with defence as a whole, leaving to subministers the task of representing their services.
9. It has been stated that the matter was submitted to the consideration of three powerful committees, and that they have all reported against it.	9. That is not the case. The Geddes Committee reported in favour of fusing all three services and condemned the existing system from the point of view of economy. The Mond-Weir Committee were not asked to consider the formation of a ministry of defence, but only the fusing of certain departments common to the three services—intelligence, supply, &c. They assumed that "under the new organization set up, the responsibility of the Ministers for the services administered by them would remain unimpaired". Under such an assumption, they could not in reason and, in fact, did not, report in favour of amalgamation. The Salisbury Committee contained the three ministers of war and were therefore unlikely to recommend a ministry of defence. They did, however, state that "the principal need, as regards co-operation and correlation, is closer co-ordination".

Objections	*Answers*
10. Granting the correctness of the theory that the ministry responsible for the plan must also be responsible for its execution, "you cannot stop short of the complete executive unification of the three services".	10. It would be just as sensible to say that when a general makes plans for a battle and issues executive orders on them to his cavalry, artillery and infantry, these branches would be unable to obey without losing their respective identities.

The above are fair samples of the objections raised. It is difficult to treat the bulk of them seriously. They have, in fact, been repeatedly crushed in debate; but the situation still remains effectively unchanged.

. . . . . .

As a further indication of the need of central control, a few questions, out of the hundreds possible, may be asked:

Battles, in which British forces are concerned, are impending in the North Sea and in France. Who shall decide on the allotment of aircraft to army and fleet respectively?

Who shall command the naval and aerial forces defending the approaches to Britain; and who shall settle the numbers of aircraft to be assigned to that duty at various periods of the war?

Who shall appoint commanders of combined forces?

Who shall organize combined exercises in peace and ensure that their results are examined impartially?

Who shall decide on priority in the issue of equipment common to the various services?

. . . . . .

A small but real difficulty arises in connexion with the promotion of officers belonging to the general staff of the Ministry. It might be possible to transfer them from the fighting forces to a special branch in which they would pass their whole future career, as is done in the

case of officers of the Indian Army posted to the Indian Political Service. The objections to such a plan are that the officers concerned would lose contact with combatant forces, and that it does not cater for the provision of suitably trained officers for the command of combined forces. The true object of freeing officers from routine is that they shall clarify their thinking by close touch with realities. Another suggestion (made by Colonel Moore Brabazon) is that in order to ensure impartiality on the part of officers on the general staff, their promotion should be automatic. Objection was raised to this; but the proposal is excellent provided the Minister himself retains in his hands as a stimulant the power of exercising a veto.

The Labour Party has strongly supported the institution of a Ministry of Defence, and its leaders have made most admirable speeches on the subject. They declare, however, that " the only way to get unity in defence is by unity in objective ", and that if " the Government want national unity on defence questions . . . they must first agree on policy ". That is, of course, only partially true. Fighting power is, indeed, the handmaid of policy. But while the *strength* of the defence forces is determined by policy and objective, their *co-ordination* lies outside such matters and should not wait until such time as the Government may have settled whether to build for collective security or for national security.

Some may cavil at the additional expense likely to be incurred by the institution of the new ministry. It is generally accepted, however, that " efficiency is the true parent of economy ". Efficiency cannot be attained in any great organization unless there is a thinking and planning body at its head freed from administrative routine. Lord Haldane once observed that " thinking costs nothing ". In ultimate effect he may have been right. But to free the ablest minds from the shackles of administration, and to set them at the wheel of affairs above and apart from

the distraction of current business, is bound to be a costly process at the outset. Hence some initial expense must be faced.

We may here bring our case to a close. Unless we make a move towards the formation of a Ministry of Defence, we shall soon be alone among the great powers, in the pursuit of a defunct strategy. Marshal Badoglio, the latest conqueror, tells us in his book on Abyssinia: "War, to-day, can only be visualized as a harmoniously co-ordinated use of all the armed forces . . . under the orders of a single Commander."[1] Similarly the great French Generals—Messimy, Pétain, Weygand, Duchène —advocate the form of ministry suggested in this chapter.[2] General Messimy epitomizes the matter in a sentence: "*Nous estimons inadmissible que les armées de terre, de mer et de l'air coexistent juxtaposées, sans que soit prevu l'organisme qui les fera palpiter d'un même rythme et qui leur imprimera une même impulsion directice.*"

The introduction of the Ministry has become an urgent matter at the moment for three reasons: the first, that if we wait for the outbreak of war before instituting it, we shall find ourselves in such confusion that, to collect the reins and exercise effective control, may then be impossible; the second, clear to all observers, is that a state of emergency exists which finds us in inferior strength to potential enemies and, therefore, demands that the utmost value be culled from the forces we possess; the third, that the expenditure of the vast sums we are disbursing on armaments may be effectively directed, otherwise our sacrifices will have been made in vain.

We have stepped up to the desired end with full circumspection and with measured tread; first, the Committee of Imperial Defence, then the Imperial

[1] p. 171.

[2] Actually this form has not been adopted by the French Government, but, instead, one which gives a predominant position to the army always all powerful in France. For a strong and unanswerable criticism of that form, see article by General Duchène in *Revue des Duex Mondes*, 1/3/1938

Defence College, the Chiefs of Staffs Committee, Defence-day in Parliament, the Minister for Co-ordination, the United Office. All have had their uses; all have proved unequal to the tasks of sound control and co-ordination of the fighting forces. For the greater part of the road, a large body of thinkers have been aware of only one true solution—a Ministry of Defence. But citadels in Westminster and Whitehall walled with vested interests, prejudice and tradition have offered a stubborn resistance to reason. Now the walls have been encompassed. Once daily they were ringed when the peril was far; but now, under the spur of impending evil, they must be ringed seven times a day. The trumpets of ramshorn must sound, the people must shout and the walls must fall. With security, with freedom at stake, the decision can no longer be delayed.

CHAPTER VII

Anti-Aircraft Defence

THE most disturbing feature of warfare in three dimensions lies in the capacity of an air-force to fly over armies and fleets, and strike at the heart of a country. When the assailant is overwhelmingly strong, the target an important centre, crowded and weakly protected, and where the people attacked are lacking in courage and endurance, such a blow might prove decisive.

The intention of such an attack might be either to terrorize the inhabitants into surrender through the shocks and the casualties occasioned by the bombardment, or to enforce submission through widespread starvation caused by the destruction of supplies in docks and of communications. In either case the morale of the inhabitants would be the paramount factor in the struggle, and, therefore, its encouragement and sustenance must take pride of place in any scheme of defence against air-attack.

The subject-heading of the chapter will be considered with regard to the defence of the capital where not otherwise stated. London is the largest, the most important and the most vulnerable target in the Empire; and, therefore, whatever system be applied to it, may serve as a model, to be copied on a lower scale, for other towns.

Dynamic defence, by the active operations of fleets, armies and air-forces, has already been discussed. It is the means of achieving ultimate success. To that end, fighting forces must be furnished with a secure base which can be found only in a well-protected home

country. This necessary provision is made largely by static defence in its two forms, active and passive, of which the first will be treated in this, and the second in the succeeding chapter.

The instruments of active defence, if we exclude " fighter " aircraft which have been dealt with elsewhere, are guns, searchlights and balloon-aprons, their density being proportional to the importance of the centre defended. They must always be limited in number; for, only at prohibitive cost in men and money, could great cities be completely covered by rings of fire and of obstacles; and, even then, immunity would not necessarily be obtained. Hence the need of a complementary system of passive defence, in the shape of Air Raid Precautions (A.R.P.), in order to minimize the casualties and the moral and material dangers caused by bombers which may succeed in breaking through the defences.

Static defence, from its very name, can hardly have a strategy of its own. The interceptor-aircraft, the balloon-aprons and such mobile A.A. guns as may be available are indeed the only part of it which can be considered flexible. The assailants have the initiative and can, therefore, choose their targets and their time, and they possess a mobility so high as to preclude the possibility, once an assault has been launched, of transferring ground-weapons from one threatened point to another. Even static defence, however, in its latest guise, must look to the principles of war as a guide. It must regard the moral influences as superior to the material. It must seek to *surprise* the enemy by new weapons, and by new obstacles. Debarred from *concentration*, it must, in its dispersion, exercise *economy of force* in a fashion which will be shown later. Finally, *co-ordination* of effort will have to be applied to the constituents of the defence—fighters, guns, searchlights and balloon-aprons—in order to obtain full value from them.

The anti-aircraft (A.A.) gun of the war was regarded largely as a joke. Nevertheless, it displayed a persistent growth of accuracy, wholly distasteful to aviators, from an effective hit of one in 30,000 rounds in 1914, to one in 10,000 in 1915, and one in 4,000 in the autumn of 1918. The reports from Spain of the success of the German and Swedish A.A. guns in use there, suggest that the standing of " Archie " is now much higher than at the Armistice. It needs to be, for, even to keep pace with modern production, when in full swing, the defence has to destroy a hundred machines a day.

The problem of the location of the target at the time of firing has been mechanically solved, as also, provided that a constant course be maintained, has been that of its location at the time the shell is intended to hit it. The airman knows this as well as the gunner and, against an efficient ground-defence, will naturally help his opponent no more than is essential to the effective performance of his duties. But it is not easy for him to take careful aim with his bombing sights unless he finishes with a straight " run up ". And, where the target is such that a high degree of accuracy is required, the time needed for the run-up will, say at 20,000 feet, approximate to the time of flight of the shell, and allow, therefore, of no wide margin of probable safety for the airman.

A.A. searchlights serve to disclose the assailants both to the " fighter " aircraft and to the guns. They are placed 3,000 to 4,000 yards apart, and are required in even larger numbers than guns. It is better to do without them and to rely on camouflage, concealment and black-outs than to employ a small number which, being inadequate for effective illumination, merely indicate the target to the airman. The work of searchlight-groups involves a high standard of training. They have first to pick up their target (a difficult matter in which they are assisted by a sound locator) and then (which is not so

difficult) to hold it, until they can pass it on to another group of searchlights.

The defence may have to deal with a variety of forms of attack—normal, low-flying, dive-bombing, spraying and the silent approach. In Spain, the bombers appear to have been flying against Government guns, which for long were notoriously inefficient,[1] at about 5,000 feet, and against Franco's guns at about 12,000 feet. Against the powerful and well-organized systems likely to be encountered in the other great European countries, they may be expected, in the normal form of attack, to fly not lower than 20,000 feet. After a few casualties, they may, indeed, take to higher regions, as close to their ceilings as their loads will allow. They lose considerably in accuracy of bombing by so doing, but they are freer there from the attacks of fighters and, though not beyond the range of modern guns, are out of the reach of existing searchlights, except when atmospheric conditions are perfect.

The *low-flying* attack is difficult to counter, because the prodigious angular velocity of the aeroplane at a low height makes it almost impossible to bring fire to bear in the infinitesimally small time available. Nevertheless, all weapons within reach, whether small-arms, A.A. machine-guns or larger guns firing shrapnel, must be brought into play. *Dive-bombing*, which is out of favour at the moment owing to the difficulty of pulling modern machines out of the dive, can be similarly treated, the best counter to it being the multiple pom-pom. *Spray* may be the instrument of a low-flying attack. Otherwise it will produce no great effect, for when dropped from a considerable height, it dissolves into vapour innocuous from its lack of density before reaching the ground. The assailant effects the *silent approach* by climbing to a great height and then, with his engine shut off, planing down at an angle of about 1 in 30

[1] By the beginning of June, the Goverment's A.A. guns were proving so effective that hostile bombers were avoiding Barcelona and seeking less well-defended targets.

towards his objective. Thus, if he rises in the first instance to a height of 30,000 feet and attacks at 10,000 feet, he will have been travelling in silence for 100 miles. Detection would then seem to be exceedingly difficult; and, according to experiences in Barcelona in March, 1938, the first notice of the raid is that given by the bursting of bombs.[1] Actually, however, we possess the means of detecting this form of approach and, therefore, it does not cause us any anxiety.

The *balloon-apron* will probably be a valuable adjunct to the defence, especially at night and during conditions of bad visibility, when the weapons of the defenders are at a discount. Though erected round London and Paris in 1918, it was never put to the proof, and it has not been fully tested since then, so there are a good many " ifs " about it still. It seems certain, however, that it can be raised to a height of at least 10,000 feet, and that its cables can be made lethal to aeroplanes. These qualities imply that it will be specially effective against the dangerous low-flying attack, and that it will reduce the vertical distance, in which interceptor " fighters " may have to operate and shell-barrages have to be placed, from 25,000 feet to 15,000 feet. Its moral effect will be greatly enhanced should it meet with any material success. It is, of course, more than probable that a potential adversary, who intends to stake much or all on the attack of cities, will attempt to find devices for sweeping passages through balloon-barrages.

The efficiency of the defence depends on many factors besides equipment. Among the more important of these is the amount of warning likely to be received. The means at our disposal in this connexion are ships at sea near the enemy's coast and trained observers on our own coasts. As regards London, if we employ these means only, we cannot expect a warning of more than fifteen minutes. That period would naturally be extended

[1] For full description of this method, see *Air Raid*, J. Langdon-Davies.

were Holland and Belgium allied to us, and still in possession of their respective peoples, or were we, as suggested elsewhere, to utilize continuous patrols of airships and aeroplanes.

Another important need is that of all-round depth in the defences. That is, guns should be pushed out to such a distance from targets which the enemy is likely to choose that they may be able to shell him before he is within bombing range. This need of depth cannot always be satisfied. In the case of harbours, for instance, it is usually impossible to obtain sufficient depth on the seaward, that is, the most important side. Portsmouth, covered by the Isle of Wight, and Southampton, with its long approach, are fortunately well-placed in this respect, but that is not the case with many of our other harbours.

Then, with the increase in the speed of aircraft, the distance from the objective at which bombs are released is growing greater and, therefore, there is a natural demand for pushing guns farther out. This, however, is no light matter as the bulk of them are on fixed mountings; and as, with every mile that they are moved forward, the circumference on which they are set increases by six miles—an increase which must either entail the emplacement of many additional guns or the leaving of many gaps in the ring of fire.

In any case, very large numbers of guns, and, therefore, of gun-crews, will be needed. The growth of range in aircraft has unquestionably conferred a benefit on the assailant, in that it entails the exposure to his attack of areas of hostile country far larger than of old, and has thus not only increased his choice of targets but has also greatly enhanced the burden of static defence laid upon his opponent. No part of the British Isles is now immune from air-attack. Naturally, the south and east are the most exposed portions, and important centres in those areas must therefore be heavily protected. But

all targets of a value likely to make them attractive to an enemy have to be given some degree of protection. At present, two territorial divisions are earmarked for A.A. defence.[1] As far as concerns personnel, this figure may well, when the matter is fully investigated and the guns are available, have to be multiplied by ten; and, as to guns, the figure of requirements verges on the astronomical.

The warning being so short and the defences being so far out, it follows that guns must be permanently *in situ*, and that detachments must either live on the guns or close by them, or be possessed of quick transport between quarters and battery. Picture, however, the situation where all attractive targets in the country are guarded by guns and searchlights, and are consequently ringed round with a vast number of working detachments who must be in a permanent state of readiness for action. The enemy may not send over a single aeroplane, but, under threat of attack, the men must " stay put " unless and until the enemy's air-power is subjugated. What a shocking waste of man-power, what a breach of the principle of economy of force, and what gross boredom for the detachments! Surely there is a better way!

There appears to be a much better way, a way which has already been advocated unavailingly. It is that the workers themselves, whether in factories or in shops, should furnish the necessary crews under regional organization appropriate to their particular localities. While operational control would remain as at present in the hands of the R.A.F., command and administration would be exercised by a works-manager, a station-master, a municipal council . . . as the case might be.

To put the scheme into effect, there must needs be consultations between the Government, the Minister of Defence, the employers and the trade-unions. It is

[1] The number is now to be increased to five.

unlikely that any form of compulsion would prove necessary; for few, even among the most pacific, would hesitate to accept, with the privilege of employment, an honourable obligation to defend the fruits of their labour and therewith their homes.

As to time, training-hours must needs be counted and paid for as hours of work. There is no other way. The training should be serious; for the task, in the case of a portion of the crews, is highly technical, and a defence known to be inefficient would not deter an assailant. Government must reimburse the employer accordingly. The money involved would be of no great cost to the country, for it would be spent in the country and would broaden the base of employment.

During the process of organization, instructors would have to be trained in central schools, just as is being done in connexion with A.R.P. For detachments, the gun-position must, as in the case of coast-defences, be the drill-ground. There is no need to waste money on expensive drill-halls all over the country as is being done at present. For any necessary indoor instruction, factory and municipal buildings would be enlisted.

One pressing need would be the shortening to the utmost of the time taken from works to gun. Move must be by alarm-signal; no uniform, except perhaps a badge of honour, need be donned; and transport, of a speed appropriate to the distance to be traversed and the amount of warning expected, must be provided.

The existing system is a temptation to the employment of shock-strategy. Under its provisions but few gunners would be in their places when the blow fell. For, if the enemy uses this form of strategy at all, he will depend on effecting a complete surprise for gaining the overwhelming success which the risks of the enterprise demand. The warning may be one of not more than a few minutes. Only detachments who, ordinarily, live near their guns and have organized quick movement to

them will be on the spot in time. The others may be much delayed; for, once the bombs begin to fall, the destruction of communications will greatly impede the manning of defences.

In the consideration of any scheme contemplating the employment of civilian workers in a warlike activity, discipline is a subject on which doubts are certain to arise; though, curiously enough, when volunteer fire-brigades are formed in factories, as is being done at present, it is accepted without question that the necessary discipline will be maintained. Such discipline as there may be will be exactly that of the factory or other institution concerned. Where indiscipline and consequent inefficiency are reflected in failure to protect either home or works, a warm welcome will await the crews nowhere; for the bombardment of civil populations takes us back, not only to barbaric warfare, but also to primitive conceptions of life and duty. Actually, however, there should be no serious danger of failure; for a healthy rivalry in performance may be expected between detachments, between factories, between localities, marking a revival of bouts of skill-at-arms, once the leisure occupations of our early villagers.

That inhabitants of a town or factory should simply go to earth and allow their possessions, their products and their capacity for contributing to a successful issue of the war to be wrecked, would be something wholly alien to the British character. In the Great War, indeed, hundreds of thousands of hours of labour were lost from this cause. But then we were caught unprepared and had not thought out all the implications of the advent of aircraft. We have no such excuse now. We know the strongly deterrent effect of a well-organized defence against air-attack. We know the help our searchlights and the bursts of our shells give our airmen. We know the terror inspired in German pilots, gallant men as they were, at the sight of 'planes shot down by gun-fire. And

we also know the terribly demoralizing effect of bombs on men who cannot answer back.

In the proposed scheme perhaps 30 per cent of male workers in a particular factory would be employed in A.A. defence and a large percentage of the remainder on A.R.P. Having, in desperate earnest, to fulfil immediate tasks, they would face attack with high morale and, having faced it and having dealt with it faithfully, they would return at once to their occupations, stiffened in their determination to see the country through. The gains both moral and material would be incalculable.

It would be well not to reject this suggestion out of hand simply because it happens to traverse many existing conventions both martial and social. Conventions are merely skins formed as a protection against particular inconveniences or dangers. Owing to the nature of warfare in three dimensions, many of ancient date have been rendered obsolete, and many new ones are in subconscious process of formation.

It is of the utmost urgency that the scheme, if accepted, should be put in operation at once. Otherwise, however obvious the defects of the present system may become, we should soon find ourselves so rigidly bound to it by the spell of rising bricks and mortar, by contracts and by vested interests, that escape from its toils might appear administratively impossible. In consequence, we should squander our man-power in an inefficient ground-defence, and we should expose our people unnecessarily to a moral attack, which would tend to break their resistance and would gravely interfere with our industrial output and our services of communication.

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The question whether ground-defence against air-attack should, apart from operational control, be placed under the War Office or the Air Ministry has been much debated. The argument used on either side need not, however, be reproduced, because it is clear that,

if the scheme here proposed were adopted, no normal form of military control would be appropriate to its implementation. Control of A.A. defence would, as regards organization and administration, best be exercised by a civil ministry, to whose charge A.R.P.—itself a gigantic and complicated responsibility[1]—should also be confided.

This ministry, which would be outside and distinct from the Ministry of Defence, might be named the Ministry of Static Defence. It would, in its two spheres of action, have tasks and duties novel beyond compare and equal to those of any existing ministries. In order that it should assist in the presentation of a truly national front, and that it should be capable of negotiating with both capital and labour in a matter without precedent, the head of the ministry should, perhaps, be chosen from the ranks of the Opposition, and might be excluded from any accountability for the foreign policy of the Government or for any part of their domestic policy outside the confines of his office.

The control of training, equipment, research and operations connected with A.A. defence should be exercised by the air-force. In such a scheme, dual control, which is to be deprecated, would be involved, just as it is in the existing scheme. There is, however, a clear division of responsibility. The one side, which is a purely civil ministry, deals entirely with civil matters; the other, which is a purely military ministry, deals entirely with military matters. There is no reason why they should come into conflict to any great extent if close liaison is maintained between the Ministry of Defence and the Ministry of Static Defence. Should, however, controversies arise, they should be settled by the Dispatch Committee of the Cabinet.

Control should be decentralized to areas in accordance with the conditions of relative importance, size, density

[1] See Part III, Chap. II.

of population and vulnerability peculiar to each locality. Local bodies exercising control should be responsible for the provision of personnel and for administration in their particular areas. Control-areas would vary in extent. Most great cities would form single units. London would have to be treated as one unit, its ground-defence being controlled preferably by the London County Council through such agency as it might establish. Where dangers were less, areas would be larger. For instance, Scotland, north of the line Dundee-Glasgow, might constitute a single unit.

All non-static elements of anti-aircraft defence, such as interceptor " fighters ", balloon-aprons, mobile A.A. units, would remain in the corps to which they belong at present. They would be, operatively, under the Air Officer Commanding, who would be able to utilize their mobility and flexibility to effect surprises either, in case of balloon-aprons, by mere changes of disposition, or, in the case of the other instruments, by sudden concentrations of additional power in or over localities indicated by the intelligence service as likely to offer opportunities for effective action.

PART III

The Home Front

" In looking over the field of foreign affairs I constantly find myself coming back to this country and the home front. No Government can hope to formulate and execute foreign policy without the solid backing of the nation, and no policy is worth much unless the spirit of the nation is behind it and unless the people of this country are inspired by a resolute determination to accept whatever sacrifice is necessary to make that policy succeed. We shall be judged abroad, believe me, by foreign nations not by our policy or by our Government, but by ourselves. If we as a nation can convince others of our purpose and of our moral and material strength, our policy will succeed. If we cannot do that, no policy, however skilfully devised, will bring salvation.

" I believe that this nation is alive to its responsibilities. I believe that it has an instinctive insight into the things that really matter, and I believe also that, once it understands how great a part in shaping the future of the world it may be this nation's destiny to play, it will respond to any effort that is demanded of it."—Lord Halifax (*The Times*, 30/3/38).

CHAPTER I

The Industrial and Economic Front

THE expression " the home-front " in which industry and economics play a principal part, may be taken to cover the whole of the activities, other than military, for creating, maintaining and increasing the national strength. The home-front is charged with the mobilization of man-power and industry, with the provision, transport and distribution of food, fuel and raw material, with the maintenance of internal communications, with nourishing financial credit and the export trade, with the conservation of national morale, with propaganda, with the press and with air-raid precautions. Truly an extensive front. The mind boggles at the scope and complexity of the problems connected with it.

It is the natural complement of the fighting front on which it depends for protection and which it sustains and develops. The fighters are the limbs—relatively few, heavily mechanized and prodigal of machines and munitions; the workers—men and women—are the body of the nation. They provide for the needs of the fighters and for their own.

Mr. Lloyd George attributes immense, but not exaggerated, importance to the home-front. In his *War Memoirs*,[1] he writes:

" Governments have the entire responsibility for the home-front . . . that is where the Great War was won and lost. The Russian, Bulgarian, Austrian and German home-fronts fell to pieces before their armies

[1] Vol. VI, p. 3408. (Quoted by Sir W. Beveridge in *The Times*.)

collapsed. . . . Great care must be taken of the condition and susceptibilities of the population at home, who make it possible to maintain, to reinforce, and to equip armies. . . . The most poignant suffering is not on the battlefield, but in the bereft hearths and hearts of the homeland. If in addition to the anguish of grief women have to witness the pinched faces and waning strength of their children there will soon be trouble in the nation behind the line, and if men home on leave have to carry back these unnerving memories to the trenches their will to fight on is enfeebled."

Ludendorff supports this view by claiming that the German army was still intact at the end of the war, and that it had to acknowledge defeat only because the civil will had collapsed.

He was correct only in part, for the German army had suffered a succession of severe defeats and was incapable of further serious resistance. On the other hand, the weakness of the home-front undoubtedly exercised an enfeebling effect on the army.

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Each constituent part of the Empire has a special problem to consider in its own home-front; but in none of them is the maintenance of that front so difficult or so important as in the Mother Country. The problem is greatly simplified for the Dominions and the principal colonies by the fact that they are practically self-sufficient as regards food. Most of the Dominions, though fast building their own factories, would require considerable assistance in warlike equipment, but it is probable that the procedure followed in the war of assembling Dominion troops for the purpose of training and equipping them, either in England or in some centrally-placed area, would, if conditions admitted, be repeated; and that procedure would greatly simplify supply. In this chapter, the

subject will therefore be studied solely from the point of view of Great Britain.

Pride of place among the problems of the home-front falls naturally to the provision of food; for, in war, to a thickly-populated and highly-industrialized island, starvation is an ever-present danger.

Prior to 1914, our food situation appeared to be so intractable that Germany believed it would keep us out of a European conflict unless we were directly attacked. During the war, we came within an ace of starvation, in spite of the fact that we possessed at the outset immense naval superiority both as regards strength and position. Since then the aerial menace to our communications, both external and internal, has been added to the submarine peril; and, whereas, our population has increased by three millions, our shipping has dropped by two million tons and our land under cultivation by three million acres.

The greater part of our requirements can indeed be met within the Empire, but the imports of food needed by Great Britain herself are enormous: 80 per cent of her wheat, which is her staple food; 50 per cent of her barley and her meat; 75 per cent of her sugar, in spite of the subsidy; 90 per cent of her butter—to give a few figures only. These commodities have for the most part to travel over vast distances, and then arrive by a few constricted funnels where they are exceedingly vulnerable to attack.

The reserves we hold are small. In August, we may have supplies of wheat for three months, in January perhaps for six weeks only. We are in a worse position than in 1914 in every way, except that we know the danger and are now beginning to take the measures necessary to meet it. The Government have already made its first purchases of reserves for storage, but they amount as yet only to a few weeks' supply.

The courses open to us are—to ration the inhabitants; to enlarge production; to create and store reserves; or,

what is unquestionably the best plan, to combine these methods. No agency for filling any part of the gap between consumption and supply should be neglected.

We could enlarge production by increasing the area under cultivation and also by enhancing the fertility of the soil. In either case, we should be embracing a sound, long-range policy, which would add to the true material wealth of the country. By the former course, mainly through a guarantee to farmers of a minimum price and through ploughing up pasture, we could double the quantity of home-grown wheat, and that amount might be considerably enlarged when the Government carries out its promise of increasing fertility. There are several other less important methods of increasing our production; but we cannot, even by concentrating on all of them, hope to come within sight of self-sufficiency.

The creation of reserves is a much quicker form of insurance. It has its disadvantages, however. Unless well-planned, it may be extravagant both as regards purchase and sale. Moreover, distribution and storage in such fashion that the food would be readily available in spite of air-attacks, would be a costly affair. But it has the outstanding advantage that it can be put into immediate effect, whereas a serious increase of production must, unless it is to interfere greatly with the economy of the country, be a slow process spread over many years. There is a conflict among the leading authorities as to the amount that should be stored, some advising a supply for six months, others a year's supply. The essential matter seems to be to proceed with the collection of a six months' supply and with the organization of its storage and distribution so that it will be a real safeguard against starvation in the critical early days of the war. We are good stayers. If we are not wiped out in those early days, we may hope to hold on and win through in the end, though the memory of our experiences in 1917 should save us from any undue optimism in this respect.

It may be argued indeed that, instead of storing reserves, we should build more vessels for convoy-purposes, and thus ensure arrivals by sea. That is a good argument against over-storage, but not against storage. However many escorting ships we may possess, there will almost certainly be periods, on an enforced abandonment of the Mediterranean by merchantmen, for instance, during which there may be a temporary shortage of supplies. Moreover, each war brings surprises, demanding readjustment of force and the provision of antidotes, during which processes it may not be possible to control communications and ensure supply.

In the war, we tried to build up reserves contemporaneously with the process of normal supply, and that threw a considerable strain on our shipping. The creation of reserves in peace will therefore help us in a sphere in which as will be seen later, we have serious grounds for anxiety. In this connexion, it is interesting to note that, when the Byzantine government were expecting a siege in Constantinople, they would order each family among the inhabitants either to provide themselves with a two-years' supply of food or to leave the town. In the same way, during periods when there is no international tension, it might be well for families, especially large households, to furnish themselves with a reserve of tinned foods.

Having solved the problem as far as we can at home, we have next to ensure the arrival, and the proper distribution after arrival, of our supplies from external sources. This entails command of the sea-routes and ascendancy in the air, and, as these matters lie in the realms of tactics and strategy, they will not be dealt with here. The only point to note in this connexion is that history shows the fortune of war to sway both in the sea and in the air, particularly in the latter element. Hence the urgency of providing in the country sufficient supplies to cover dangerous periods.

Next in importance to food comes fuel. Without fuel, the fighting forces and many of the civil services cease to function. The problem of fuel closely resembles that of food, and its solution has to be sought on similar lines: rationing; the enlargement of home production, now a mere 7 per cent of peace needs; the creation of reserves; and the maintenance of security of transport. It differs from the food problem in that petrol is, during war-time, mainly a military requirement and that it is very inflammable. To guard against the latter danger, petrol should be stored in underground tanks or far from dangerous areas, and may have to be connected with the districts to be supplied by pipe-line. Hydrogenation plants are equally vulnerable and require an equal care in siting. The growing employment of Diesel engines, which burn a heavier and less inflammable oil, tends to ease this difficulty.

The fuel situation has changed since 1914 greatly to our detriment. The possessors of inexhaustible stores of the best steam-coal, we were able to supply our fleet, our army, our people, our allies, from the home mines. By the power of withholding coal, we could hamper the action of our enemies and bend neutrals to our will, making them supply us with shipping and submit to a severe curtailment of their trade with the enemy.

All this has changed. Petrol indeed gives quickened life to our external and to much of our internal transport. But it has to be fetched from distant regions. It must pass, to the extent of one-third of our peace needs, through the Mediterranean and to the extent of nearly two-thirds across the Atlantic, which areas may be under serious threats. The main supplies over which we exercise any considerable control—those in Iraq and Iran—travel, especially the former, in dangerously exposed pipe-lines. The British Empire, even with the assistance of Iraq and Iran, furnishes but little more than our requirements in peace. British companies scattered

over the world do indeed produce sufficient oil for our war requirements, but there is no certainty that they will be allowed to export it to England. Such occurrences as the recent expropriations in Mexico entail both a drop in production due to reduced efficiency of management and a decrease of that goodwill which might inspire the wish to furnish supplies in the face of considerable hazards. In Great Britain we have, normally, about three months' peace supply of oil available; but each service has probably been building up its own reserves to some extent.

In an economic respect also the use of oil is a severe handicap. Coal was a valuable export. Now, we are importing oil to the value of £45 millions while exporting less coal than of old; and, by the exchange, reducing our power of purchase abroad. Moreover, whereas, with the collier, both voyages are effective and one of them may bring us food, with the tanker only the homeward voyage has a value. Neutrals, too, will be able to do as they please with regard to our demands and exact their own terms for services rendered.

There are fortunately, however, a few redeeming features in the change-over, though the compensation they afford should not be overestimated. In the first place, though Empire oil is seriously short in the vital area of Europe, it is distributed conveniently and in considerable quantities along our lines of communication —Haifa, Mohammerah, India, Burma, Sarawak; and, consequently, our fighting forces would have sources of supply in many parts of the world. Moreover, if the Mediterranean were closed against us, it would still be possible for oil from Iraq and Iran to pass round the Cape; and we possess an ample fleet of tankers to discount the loss of time involved in the longer voyage. There are, too, so many competing sources of oil that, though selling interests, for the most part, might make us pay heavily for their products, they would do all

they could to supply us. Furthermore, we are likely in this respect to be better off than any of the great powers, apart from Russia and America, and apart from those powers which possess coal and succeed in producing oil from it more effectively than we do. Continental powers, however, are not, as we are, vitally affected, for they can usually receive their supplies by road and rail from neutral countries.

In general, the introduction of oil has proved a grave handicap to Great Britain, and the situation arising out of it must be regarded as definitely dangerous until reserves shall have been created, properly distributed and protected.

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In 1915 and 1916, our imports of timber took up a shipping tonnage of seven millions. We were producing only 8 per cent of our needs at that period.[1] To render ourselves independent, we should afforest an additional million acres. Actually, we could afforest three or four times that extent of land without interfering to any appreciable degree with our production of food.[2] In this connexion, it is of interest to note that the scientist believes in the possibility of being able eventually to extract food from wood.[3] So that, if the belief justifies itself, we should, in fulfilling one important requirement, be creating a reserve of another requirement still more important. Afforestation is, however, a long-term policy and, though it should not be neglected on that account, it will not solve our immediate difficulties.

With regard to raw material in general, including those commodities—food, petroleum and timber—with which we have already dealt, the two matters of outstanding urgency are the first that we shall ensure the

[1] Sir Herbert Mathews, Lecture *R.U.S.I.*, 18/11/36. [2] ibid.
[3] J. B. S. Haldane, Lecture *R.U.S.I.*, 13/10/37; and the process appears already to be far advanced in Germany.

availability, or the arrival as required, of all commodities essential to our life and to the full development of our military, economic and financial power; and the second that we shall deny to the enemy any essential commodities in which he is likely to be lacking.

In the first category we may place cotton—on which much of our export trade depends and which is imported mainly from America; petroleum—the difficulties connected with which have already been discussed; potash—of which a sufficient quantity will soon be available in Palestine. Supplies of other essential commodities for the most part exist within the Empire. But that does not solve our problem; they have to reach England and be available there when needed. A reserve of important minerals such as chromium, aluminium and manganese, required for munitions is already maintained; but, in view of the serious attacks our shipping may have to undergo, the question of the sufficiency of those reserves should be reconsidered. Commodities which, like tungsten, normally pass through the Mediterranean and might have to be deflected round the Cape, would almost certainly need additions to their reserves. Reserves, too, cannot be calculated on the existing state of affairs. New conditions, new inventions, may enhance demands for particular materials. Hence the need in all cases for a liberal margin of safety. There are many links in the chain of self-sufficiency, and the weakness of a single link may spell easy disruption.

The most important commodities of which the Empire possesses a surplus and which it is important to deny to enemies are coal, rubber, nickel and manganese. The totalitarian countries aiming at self-sufficiency are striving to produce commodities they lack by special processes and by development of agricultural and mineral resources. Italy has been perhaps the most successful country in this respect. Largely through the draining of marshes, she has now in normal years a sufficiency of

wheat; and, through an abundant use of water-power, she has reduced her dependence on external sources of coal. Moreover, by profuse subsidies, she has greatly enlarged both her shipping and her shipbuilding capacity. On the other hand, she suffers considerably from a lack of essential minerals, some of which she hopes to discover in Abyssinia.

Germany, in her Four-Year Plan, has set herself the task of obtaining by hook or by crook a two-years' supply of all essential commodities, so as to be equal to weathering another war. She is short of nearly all important minerals except coal and potash, and, at present, though actually successful in producing the substitutes, she is finding her efforts at the manufacture discouraging both as to cost and efficiency. She has indeed succeeded in producing nearly half her peace needs in petrol, but it must be remembered that her peace needs are much smaller than ours, whereas her war needs, with her huge air-fleet and her mechanized army corps, may be almost as great.

Japan imports the bulk of her raw material. She is able to obtain much of her food, iron and coal from Manchukuo and Korea and, with the development of her recent conquests, will become practically independent in these respects. She is, however, dependent on external sources for a large number of commodities essential both to her armament factories and to her highly developed export-trade.

No nations are without their deficiencies. The three most happily placed in this respect are the U.S.S.R., the United States and the British Empire. Great Britain suffers, however, from the handicap of having to transport a large proportion of her requirements over lines of communications, many of them long and precarious, whereas the resources of Russia and America are almost all contained within their land-frontiers. The solution of this, as of nearly all the problems of our home-front,

lies in the first instance in ascendancy in the air and command of the sea-routes.

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Next on our list, and closely bound up with food and raw material in sustaining our existence, comes *Shipping*. Here, too, we have fallen somewhat from high estate. Many nations realized that the Great War had been for the victors a vast amphibious operation which had depended for success almost as much on merchantmen as on navies. They, therefore, set to work to enlarge their respective mercantile marines; and, finding it difficult to compete with the old and well-organized firms of Britain, they gave heavy subsidies both to their building and their transport services, with a resultant increase in their tonnage of 60 per cent. Consequently, British shipyards obtained fewer and fewer foreign orders and are now on a lower establishment than in 1914. On the Clyde, for instance, orders are very far below pre-war levels; and, worse still, both Holland and Germany are building ships for Britain.[1] Much British shipping, too, has been forced off the sea. "The effectual tonnage for the carriage of foodstuffs, raw materials and troops in the event of war is only 14,000,000 gross tons, as compared with 17,500,000 in 1914. These facts are disquieting when it is remembered that 7,000,000 tons were sunk in the Great War."[2] We are weaker now by about 2000 ships out of about 9000, and, in our present tonnage, some 400 tankers, which are useless either for the export trade or for the import of food, are included. The result is that we are now said to be 700 to 1000 ships short of our requirements for food and fuel. As the numbers of our merchant seamen have dropped from

[1] *Amateur Economist.* "Government, Armed Forces and Industry", *R.A. Journal*, 1937, p. 224.
Figures for July, 1938, actually show an adverse balance, more shipping for Britain having been built abroad than at home.

[2] Annual Report, Chamber of Shipping, 1938. Quoted by Mr. Amery in a letter to *The Times*.

180,000 to 100,000 since the war, as we can no longer insist on help from neutrals and as we may be adversely affected by the American Neutrality Act (of which more anon), the position is serious. In 1918, 90 per cent of the world's shipping was at the disposal of the Allies, yet even that overwhelming superiority proved only just sufficient for the achievement of our ends.

Since then, dangers on the sea have multiplied. As already pointed out, the powers of the submarine have been improved as regards range and general efficiency, while the merchantman remains as vulnerable as ever. Anti-submarine devices have indeed also improved; but the whole anti-submarine system is a complicated affair which takes months to put fully into operation, whereas submarines are now fully developed instruments ready for instant action. Moreover, the convoy-system, which proved our salvation in 1918, may be difficult to institute at the outset owing to scarcity of destroyers. Finally, aircraft furnish a grave threat (which had not begun seriously to develop before the Armistice) against convoys and all shipping in narrow waters.

The general effect of these dangers will be that ships from the East and Far East may have to avoid the Mediterranean and take the Cape route—an addition to the voyage, on an average, of ten days; and that the approaches to Great Britain will become more than ever hazardous. In the latter connexion, it is by no means always easy to switch ships from a threatened approach to a safer one, because certain ports are equipped to deal only with particular cargoes. The probability that heavy air-attacks will be launched against some of the larger harbours, such as Grimsby, Hull, Newcastle and Southampton and may destroy docks, derricks, elevators, tanks, &c., complicates still further the problem of the delivery of supplies. In fact, we need elaborate but elastic plans for adjusting our means of reception,

storage and distribution to enforced diversions of shipping.

In the future, there will be an additional call on our shipping if the American Neutrality Act should be applied against us. That Act not only lays an embargo on the dispatch to a belligerent destination of arms and ammunition, but also insists that any trade, apart from the forbidden armament trade, must be conducted on the " cash and carry " system. That is, the customer calls, pays for the goods in cash and carries them away.[1] The Act, however, would operate so disastrously against American shipping that it seems doubtful if it would have a long life in practice.

As the greatest of seafaring nations, we still enjoy many advantages over potential enemies; but it would be foolish to blind ourselves to the fact that, in relation to the critical and perilous year of 1917, our mercantile marine has, from no fault of its own, travelled a considerable distance downhill.

Happily, here, as elsewhere, there are a few bright spots to relieve the gloom of the picture, though they are mainly compensatory features arising out of our new embarrassments. Unless we can attain both command of the sea-routes and ascendancy in the air, it is unlikely, owing to the menace to transports and to difficulty of supply, that we shall dispatch a large expeditionary force to the Continent. Nor, for the former reason, is it even probable that we shall relieve our regular troops in India and on the line of communications by territorials. Moreover, such forces as we may send abroad will be practically horseless, the importance of which point may be gauged from the fact that in the war a greater weight of forage was loaded for France than of ammunition. The ratio, too, of man to weapon will be decreased to an extent that will render fighting forces appreciably smaller than of old. Then our vessels

[1] Professor James W. Garnier; Lecture, Chatham House, 8th July, 1937.

are on the average some two knots faster than they were. The fact, too, that the Government are engaged in the storing of reserves will save transport for, in the war, we had to build up reserves in addition to our normal supplies. Finally, the fact that foreign shipping (and also that of the Dominions) has increased,[1] signifies that we shall not have to lend nearly so many ships to allies as we did in the Great War, when our loans amounted to 23 per cent of our total strength. All these matters may effect a considerable reduction in the demands on sea-transport. Nevertheless, the general position of shipping, as that of food and fuel, is distinctly unsatisfactory.

The means by which we may hope to improve our position are—by additional subsidies in peace, in return for which a further increase in speed should be exacted; by bettering the conditions in the merchant service, which, at the moment, offers insufficient attractions; by an improved war-insurance system; and by insisting that imports to Britain are normally carried in British bottoms. As regards the last point, at present, only half are so carried; and, as we are the greatest importers in the world, insistence, so far as feasible, on this rule would give our shipping a considerable lift.

Owing to the naval and aerial threat to our approaches and the aerial threat to our ports and railways, the whole question of ensuring the arrival and distribution of food and raw material has now to be considered. All our ports on the southern and eastern coasts (and to a less extent those elsewhere) and all the narrow approaches to the United Kingdom are exposed to serious attack, as are the road and rail communications from the coast. It follows then that the essential quality of our measures of supply must be flexibility. Ports, instead of tackling particular commodities only, should be grouped, not by locality but by category, so as to offer alternative routes for the supply,

[1] There has, however, been a fall in French shipping commensurate with our own.

reception and storage of every kind of commodity. Instead of a system which makes London and the south-east of England dependent on the London docks—a certain target for hostile planes—alternative points of arrival, lower down the Thames, for instance, must be chosen and traffic from them with the interior organized. Instead of reliance being placed entirely on railways for transport, arrangements must be made to utilize roads for that purpose. In order to provide the necessary heavy transport, and to render road and rail truly alternative for supply, that excellent " Road and Rail Traffic Act of 1933 " will have, unfortunately, to be amended, and Government will have to take a hold over all heavy transport in the south and east of England, so that it may be concentrated as and where required in emergency.

Even if some such scheme is ready for putting into effect at the fall of the first bomb, there may still be unavoidable confusion and consequent shortages of food and other raw materials; without it, there is likely to be chaos and widespread starvation.

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Financially, though not as powerful as we were in 1914, our position is still one of great strength. Our overseas investments, estimated at 3,700 millions sterling,[1] are of great value in assuring a sufficiency of foreign exchange for payments during the period when our exports are suffering heavily from lack of shipping and man-power.

Nevertheless, the position is not satisfactory. Many of our assets abroad may be either frozen or in hostile hands. Through the rise in taxation from 1*s.* 4*d.* in the pound in 1914 to 5*s.* 6*d.* in 1938, a great reserve of financial power has been fully exploited. Moreover, confidence in the stability of world finance received a rude shock in 1931; and confidence is vital to a vast credit-system.

[1] D. H. Cole, *Imperial Military Geography*, p. 51.

Prior to 1914, the gravest anxiety was expressed as to the ability of world finance to withstand the concussions of a major war. The system was likened to an inverted pyramid liable to be overthrown by the mildest blow. However, the British Government, on which the responsibility for maintaining stable conditions chiefly lay, managed by instituting a moratorium, by increasing the fiduciary issue and by raising the bank-rate, to stave off the crisis. Even more drastic measures may be needed in a future war, and it is likely that, as soon as a crisis appears to be imminent, " governmental control of . . . foreign exchange transactions will be instituted and gradually extended, and that, when a crisis is reached, it might prove necessary to afford considerable assistance . . . in order to maintain the machinery of foreign exchange ".[1] In an emergency, such as might arise out of widespread destruction caused by air-raids, it might also prove necessary to take steps " to arrest the outflow of capital . . . and to exercise control over the bankers so as to ensure that reasonable credits should be afforded to sound and established undertakings ".[2] Such actions might go far to save both financiers and the public from panic, and might prevent important industries from being starved of funds just when they might be wanted, for the benefit of the country, to go full steam ahead.

During the Great War, no special stress was laid upon the maintenance of our export trade; but our credit then stood higher, and there was a stronger probability then than now that we should be able to obtain loans from the United States. Actually, had the United States not come into the War when she did, we would have experienced the greatest difficulty in paying for our essential imports. In a future war, it is probable that we shall have to pay for much of our imports by our exports, and that we may have to devote much of our man-power to that purpose. For that reason it has been

[1] *Amateur Economist*, op. cit. [2] ibid., p. 207.

suggested that " some survey of our existing export industries in relation to war requirements should be carried out and kept up to date ".

It is certain that in a future war, scarcity of reserves will force us to regulate production and distribution for the home market with a rigid economy. America in 1918 was much farther advanced than we were in this respect, and it is said that if " the war had lasted another year, the American citizen would have been restricted to mass-produced clothing and footwear of standard patterns ".[1] We might well adopt this plan, in regard not only to clothing but also to such commodities as food, fuel, furniture, wireless equipment and motor equipment; and not *en dernier ressort* when the war may have been lost, but in the early stages when every economy will tell. Moreover, in the process of thinning our retail trade we should enlarge our man-power. Restrictions to our choice of occupation and our taste in dress are some of the minor hardships which will have to be accepted with a view to the provision of the sinews of war both in men and money.

Recent American legislation may, as has already been indicated, have seriously detrimental effects on some essential requirements of our home-front. Much will depend on the attitude at the time of the American towards the British people; for, not only is a certain amount of latitude left to the President in the Neutrality Act, but a powerful popular outcry in favour of assisting the consanguine Anglo-Saxon would be difficult to resist. On the other hand, a large party, perhaps a majority, of Americans hold the belief that, in 1917, they were inveigled out of their fastness of isolation partly by British propaganda and partly by the urge of their own bankers, who wished to be sure of recovering the loans they had made in Europe; and they are determined that neither of these causes shall draw them into war again.

[1] ibid., p. 210.

The post-war American enactments which may affect us adversely are—first, the Johnson Law, according to which no loans may be made to nations which defaulted on their war debts to the United States; and, secondly, the Neutrality Act, as amended in 1937, which lays down that " no belligerent will be allowed to borrow money in the United States, except (and here is an important qualification) that, when in the judgment of the President it may promote the security and well-being of the people of the United States, he may permit relaxations from this statute ".[1]

. . . . . .

Industrial Mobilization. — Industrial mobilization means the change-over of industry from the footing of peace to that of war. It consists in the main of two great adjustments to new conditions; those of labour and tasks.

Let us take labour first. In the war, volunteers, at Kitchener's call, flocked by the hundred thousand into the ranks. The pick of every class—leaders by character, by education, by upbringing; scientists worth their weight in gold for inventing or combating warlike devices; indispensable artisans; experts in law and finance—they passed over, a splendid array, and were consumed in the fiery furnace. They left us, on the battlefield, in the factory, in the laboratory, lamenting their loss for four years. Moreover, such was the lack of organization, due to an absence of advance-planning, that thousands of men who might have been working in farms or factories were retained idling for weeks in camp, there being no means of instruction, in men or material, with which to train them. The response was fine but, owing to a failure on the part of the nation as a whole to anticipate the demands of modern war, it resulted in a deplorable waste of human power.

After the War, two things were, or should have been,

[1] J. W. Garnier, op. cit.

manifest: the first that, if we were to take part in another great war, we should have at the outset to resort to conscription for military service in order to avoid the many evils which befell us from failing to adopt it in 1914; the second, that, for the British army whose normal task is the policing of the Empire, conscription in time of peace is utterly unsuited and can never be applied.

As regards the first point the Briton was told at the post-war election that he would never stand conscription again, and that the politician would see that he did not get it. Being thoroughly " fed up " with the war and the difficulties of the demobilization which followed it, he was ready enough to cheer such clap-trap. Accordingly, we terminated conscription, both in peace and war, whereas we should have abolished it in peace and retained it for war in a form which would have enabled us to organize our man-power on the approach of an emergency.

Since then, it has become clear that we are in truth a continental nation; for our southern and eastern air-frontiers are everywhere contiguous with those of continental powers. Like them, we shall have to be ready to develop our full strength if we are to survive that struggle for existence which, in spite of the best intentions, recurs periodically. We can no longer, as we could of old, under the shield of the navy, find the time to repair the ravages wrought in our defences by a neglect to make the necessary preparations. There has been a general quickening of the tempo. In an age when declarations of war have become obsolete, we are confronted with dictators who make of the whole of their national resources a weapon ever ready for use in the enforcement of policy. In fact, what with dictators and aircraft, we need a degree of readiness far beyond the dreams of our forefathers.

It is not alone on the military side, however, that conscription is needed, but also in industry: to each man the task for which he is best fitted. Only so, shall

we be able to effect that correct allocation of the available man-power between industry and the fighting forces, which is essential to the full development of our national strength?

The Royal Commission on the manufacture of arms recommended [1] the conscription of industry in time of war. But it would be fatal to delay conscription until the actual clash, unless powers to make the necessary preparations for rendering it effective had been taken beforehand. We have to counter quick strokes by quick strokes, and consequently we need plans ready to fall smoothly into operation on the firing of the first shot.

As a foundation on which to organize conscription, the first need is a clear policy with regard to the fighting forces. What strength shall we deploy in the navy, in the army, in the air-force? What reserves do we need behind them? Until such points are settled, we cannot tell, even approximately, what man-power will be available for industry, agriculture and shipping; nor have we a basis for inquiry as to whether or not industry and shipping can bear the strain involved. In fact, we must first lay down our policy, then discuss the possibility of its implementation in connexion with the man-power available and, finally, make the necessary adjustments so that our civil and military powers may be combined in the most effective fashion.

Then the question of pay must be settled—not in the stress of conflict, but now. During the war, there was considerable ill-feeling because the man in the trenches drew 2*s*. a day and the factory hand perhaps a pound a day. The trouble never came to a head, however, because the two classes were entirely separated, and because the fighter was too patriotic and too busy battling to worry to the point of mutiny about his earnings. Should there be another great war, there will be no serious cleavage between the two. The hard line of

[1] 31/10/36.

division will indeed fade into insignificance. Factories rather than trenches may be the principal targets. A large number of the workers will be also combatants. They may be manning the A.A. defences round the factories in addition to their other work. Others may be employed on A.R.P. duties of a semi-military nature. In view of the increasing replacement of men by machines, tending to the reduction of armies, there may even be more civilians (if such a term can any longer be applied to them) defending Britain than combatants belonging to the regular forces fighting battles abroad.

These conditions, apart from the claims of justice, demand (*a*) that the soldier and the worker shall be paid alike; and (*b*) that, so far as such a measure of simplification is feasible, management in business shall receive the same rewards as command in the field, the industrial hierarchy being made to correspond, roughly, with the military. Such changes demand the closest discussions with the trade-unions, which are intimately concerned. They entail—in the first place, that there must be no profiteering and that a scheme must be prepared by which all profits beyond a fixed point accrue to the Government; and, in the second place, that the interests of the millions of small shareholders and of people, such as those in the retail trade, who are thrown out of work by the new conditions, are safeguarded.

In fact, the closer we approach the problem the more evident does it become that a measure of socialization will have to be introduced in order to enable the nation both to put forward its full power of defence and at the same time to avoid injustices and inequalities of burden. On the other hand, should socialization be taken to imply any relaxation of control or discipline, it would create perils greater by far than any its processes might relieve.

The Government must take complete charge during the war period just as the captain of a team does during

a game. Every use must be made of individual talent, but the individual himself will for the time become part of a great human machine. The battle for existence is not to be won without sacrifice.

For eighteen years the Americans have been organizing their industrial mobilization with zeal and thoroughness. They realized that the signal failure of their industries during the war-period was largely due to an absence of advance-planning, and that chaos and disaster might have resulted had not the Allies stood as a buffer between them and the enemy during the early processes. And this in spite of the fact that American factories had obtained considerable experience by supplying the Allies with munitions during the first three years of war.

In the United States, no definite schedule of requirements was available, and neither the capacity nor the capabilities of industry had been ascertained. No one knew where to place orders or how long production would take. There was no discriminating authority to settle priorities, no distinction between essentials and non-essentials. Production was surprisingly slow and costly. By the Armistice, America had produced four new guns but hardly another weapon. She had been depending for practically all her equipment on Allied resources. She decided that such a state of affairs must never recur.

Now there is a fully organized system, which has spread its net over the whole country. Under a civilian super-agency, which is independent of, but in close touch with, the various ministries concerned, there are a number of agencies, each of which is occupied with some major element of the economic structure.

The plan for this was " elaborated by the heads of the Army and Navy, but it avoids any concentration of authority in their hands extraneous to their natural zones of influence ".[1]

[1] " Industrial Mobilization ", *U.S. Journal of India*, 1936, p. 190.

Drafts of the necessary bills are all ready so that they can be put into force by enabling legislation as soon as a major emergency arises.

In view of the advances of science and of the rule of the unexpected in war, the plan is careful to avoid rigidity. It aims, with every prospect of success, at developing the national resources to the full, with a minimum of economic disturbance, and at making clear to all the parts they have to play and the restrictions to which they may be subjected. Appealing as it does to the practical common sense of the American, it has been widely welcomed, and has received both co-operation and voluntary service from the majority of industrial organizations.

The preparations made by America against another Armageddon are not widely known. They have been stressed because she, as a nation, is as pacifically minded as we are, and because she is to a great extent insulated by distance from the shocks of war and, therefore from the need for instant readiness, whereas we are in a dangerously exposed position.

It is not necessary for us to follow the American plan or any other foreign plan. The Americans, for instance, have not to consider the air-menace and, therefore, have not to bother about the distribution of factories and industrial products. We, on the other hand, gravely threatened, realize that there is a heavy congestion of industrial works in the dangerous areas in the south and east of England, which needs thinning out. We have further to consider the danger, to manufacture elsewhere, of the concentration under one roof of vital parts of machinery or of vital chemical products.

We must adapt our measures to our military, social and economic structures. If, as is probable, we shall shortly possess a Ministry of Defence, and, as a constituent thereof, a Sub-Ministry of Supply intended to expand in war to two Ministries—Munitions and Man-

Power—a scheme containing the best elements of the American organization could easily be elaborated. The general staff would lay down a definite schedule of requirements and a table of priorities, and the sub-ministry would study the practicability of fulfilment and the time and sequence of production. As this study revealed the extent and limitations of our power both human and material, adjustment would be made between the two authorities until a satisfactory scheme within our capacity had been hammered out.

If we are fortunate enough, before the emergency arises to have elaborated a plan of industrial mobilization founded on experience, survey and calculation, it will be possible to form a reasonable estimate of " the reserves of men and material needed to bridge the period between the outbreak of war and the time that factory and man-power schemes become effective ", and also, of the times when " personnel must be absorbed into the fighting forces so that they may be fully trained by the time the machines are ready for use ".[1]

The reactions of military and industrial plans upon each other must be closely watched, not only at their initiation but also throughout the whole process of reaching maturity. When it is remembered that, even as recently as 1914, the navy and army—two services whose whole business is war—entered a war each with a different plan, it will be seen how far we have to advance beyond our traditional delight in watertight compartments if we are to achieve the combination of all services, civil and military, demanded by modern warfare.

[1] ibid., p. 192.

CHAPTER II

Some Aspects of Air-Raid Precautions (A.R.P.)

THE presumption in A.R.P. is that no system of military defence will give complete immunity to the civil population against air-attack.

Literally, every organization for the repulse of attacks by air might be termed an air-raid precaution: the air-force, the anti-aircraft service, storage of reserves, &c. But what is technically known as A.R.P. (we shall give it the singular number) is an extra arm—a civilian arm—devoted purely to passive defence, to the safeguarding of lives and property throughout the kingdom. Even the most hardened pacifist must accept it as utterly unprovocative. Not a single soldier is employed upon it. It is largely the work of volunteers acting under municipal councils, whose actions are informed and co-ordinated by a central body within the Government.

We need A.R.P. because of the danger of air-raids. We need it possibly more than any other nation, because we are one of the most vulnerable countries in the world to air-raids, and, therefore, not only are we likely to suffer most from them, but our counter-action, owing to the lesser exposure of foreign capitals and the lower degree of concentration of essential services in them, is likely to be relatively ineffective.

Great Britain is specially vulnerable:

(*a*) Because of the close proximity of powerful continental nations.

(*b*) Because London, the capital of the Empire, the largest port and the largest distributing centre in the world, is easy of access to aircraft

(*c*) Because other great towns and ports—Birmingham, Southampton, Grimsby . . . . also form excellent targets.

(*d*) Because the whole of Great Britain is closely populated and highly industrialized, and because, in general, those areas nearest to potential enemies are the most crowded.

(*e*) Because we possess complicated and delicate systems for the supply of food, water, light, heat and power, and for drainage; and their destruction might entail widespread starvation and disease and a great loss of industrial power.

Our vulnerability in these respects is indeed the Achilles' heel of the British Empire.

The attack, if it comes, will be delivered by high-speed bombing machines of great carrying capacity. Their freight may consist of bombs, large or small, or of liquid spray or of parachute detachments. The bombs may be armour-piercing (A.P.), semi-armour-piercing (S.A.P.) or non-armour-piercing (N.A.P.). Their contents may take the form of high explosive (H.E.), gas of various kinds, or thermite. We shall consider each of these weapons in turn.

The limit of the size of bombs is naturally the net carrying capacity of the aeroplane over the given distance, and it has been reached at the moment at about 4,000 pounds over 300 miles. Bombs of a weight from 500 to 4,000 pounds are, however, mainly designed for the attack of warships and are of the A.P. or S.A.P. variety. It is expected, as regards H.E., that only the N.A.P. bomb, weighing between 20 and 500 pounds, will be employed in the attack on docks, factories and communications. It is possible, however, that an enemy, in order to increase panic by discrediting protective measures, will drop a few A.P. bombs of the largest size.

H.E. bombs are directly and highly destructive of both life and property. The deeper they penetrate, the

more destructive the explosion. They are, therefore, likely to be fitted with delay-action fuses, which will enable them to pass through several storeys of a house before explosion. Their power increases with size rather in geometrical than in arithmetical progression. It is quite possible that, in order to interfere with rescue and decontaminating parties, a certain number of bombs will be fitted with fuses, whose action may be delayed for periods varying between a few hours and a few weeks.

The gas most likely to be employed, whether in bombs or sprayers, is mustard gas. Tales of devastating gases which will render whole districts uninhabitable for years, crop up at intervals. Scientists agree, however, as to the unlikelihood of any gas more noxious than those in existence being discovered. Mustard gas was prepared and fully described as far back as 1886. Between that year and this, nothing more effective has been found.[1] Moreover, " it is worth pointing out that anything from five years to two generations usually elapses between the discovery of a really new scientific principle and its practical application to industry or to war ".[2] And this in spite of the tremendous advantages that accrue in either field to those who make or exploit new inventions.

Mustard gas, as is well known, operates in two ways: internally by its vapour, and externally, in the liquid state, by blistering the skin. In neither case does it cause a high proportion of death-casualties, either immediate or eventual, but it has a great and painful disabling effect which is operative over a considerable period. It possesses the further quality of remaining for long periods in liquid form in an area which it may render uninhabitable by reason either of its gradual evaporation or the danger of contact with it. It is quite possible that a combination of H.E. and gas bombs will be employed, H.E. being used in the first few trips to break windows and

[1] J. B. S. Haldane, Science and Future Warfare Lecture, *R.U.S.I.*, 13/10/37.
[2] ibid.

destroy other protections against the ingress of vapour, and then gas-bombs in a number of succeeding trips.

Incendiary bombs are missiles, usually weighing about two pounds and containing thermite—a substance which consists of a mixture of aluminium and iron oxide in a magnesium case. They are capable, by the generation of intense heat, of causing devastating fires. They have not been seriously used in recent warfare and for that reason have been discredited to some extent. But there have been solid grounds for this abstinence, unconnected with any question as to the efficacy or otherwise of the bombs. In the first place, as already stated, it is unlikely that either party in a civil war would desire to burn down, without power of discrimination between particular buildings, cities containing perhaps priceless national treasures. Nor would it seem sound policy for Japan to destroy complete towns in a country which she hopes to occupy permanently. Italy, no doubt, felt the same reluctance in Abyssinia, in which country, moreover, except for two towns, there were no buildings of any account to burn.

It is possible, however, that a nation hoping to win a war through pitiless destruction and consequent panic, might use incendiary bombs as its main weapon. The danger from these projectiles may be gauged from the following figures quoted during debates in the House of Commons. The daily number of fires in London is 15, and it is, roughly, for that number that fire-extinguishing appliances are maintained. One aeroplane, in a single journey, might start 150 fires. Consider, then, what fearful havoc 600 aeroplanes might cause, especially if they were to drop their bombs on the windward flank on a stormy day. A measure of the size of the problem is also to be found in the recent fire at Wapping, which lasted three days, although practically all the fire-brigades in London were concentrated on it.

"It is interesting in this connexion to recall that,

in August, 1918, Germany was proposing to drop large numbers of incendiary bombs on London. Fortunately for us, she was heavily defeated by the Fourth Army on the 8th of that month; and the fear that the day of reckoning was at hand caused her to cancel the project.

Another possibility considered in an earlier chapter is that a few parachute detachments might be dropped on the outskirts of big towns with the object of destroying principal road and railway bridges and of increasing panic by sowing the belief that all exits are closed against evacuation. In such case, the utmost care would be needed to prevent the spread of wild rumours.

Air-attack on cities presents many strange and terrible features which may have quick and overwhelming results if the counter-preparations are inadequate. The chief of these features are:

(*a*) The swift approach. Not more than twenty minutes' warning can be given in London. In that short period conditions will have moved perhaps from peace to war, from routine to crisis, from quiet to titanic shocks. And the notice, with the speeding up of machines, is being steadily reduced.

(*b*) The immense scale of the attack, which is likely to transcend all human experience. In the 111 attacks of the Great War, we suffered 4080 casualties from bombs totalling 300 tons in weight. Double that amount could now be dropped in a single day, and might include gas bombs and incendiary bombs, of whose effects we have had no previous experience.

(*c*) The principal aim—the spread of panic among the population. The implication of this is that the responsibility for fighting the first and perhaps deciding battle of the war may be thrown, not on the disciplined soldier, sailor or airman, but upon the civilian prepared or unprepared according to the measures he may now adopt. Prepared, his fortitude may be highly tried; unprepared, it may be shattered beyond recovery.

(*d*) Its inevitability. Attacks, even if we are possessed of the strongest air-fleet and the best organization, cannot be wholly repelled.

(*e*) The immensity and complexity of the problems involved. They are larger and much more complex than those involved in the direction of the fighting forces. But, whereas of the latter we have centuries of experience to guide us, of the air-raids of our expectations we have next to none.

Here then is the situation. We have in London a vital target utterly vulnerable to an attack which may come suddenly out of the blue; and we have other and smaller cities also vulnerable, but to a less extent. What measures must we take to meet it?

Such experience as we and our opponents had in the war showed us that aircraft exercise their greatest effect on workers and populations, not by the actual casualties they inflict, though they are great enough, but rather by the panic they cause. This danger will be greatly enlarged by the increase in the intensity of the assault. Hence our first task lies in the elimination of panic.

The second is clearly to reduce casualties to the utmost; and the third is to ensure the maintenance of communications and of the essential services without which the community cannot exist.

The best counter to panic is to give to every man and woman a task either of self-protection or of public service. The writer remembers feeling very unhappy when dining in an hotel in a French town which was being bombed. Suddenly a man rushed in to ask him for help in bridling his horse. He had been apparently making feverish attempts to do this, and between ignorance and excitement, had tied everything into knots. The result was that the writer had to take the bridle to bits and reassemble it. In the process he forgot all about the bombs, though they were still falling. The occasion was small and the job was small; but they point the moral.

Most people wish to die well. How would they prefer to picture their ending on the film of their imagination? Whether—unprepared, uninstructed—fleeing panic-stricken, and huddling helplessly in any shelter they may reach; or out doing a job of value to the community in the work of rescue or decontamination or the extinguishing of fires?

The second counter to panic is confidence in leadership. That will be largely assured by sound planning, especially in the allotment of tasks, by practices and by evidence of efficiency in the measures adopted against air-raids.

In this connexion, enlightenment of the public is a cardinal factor. The public must be informed of the dangers to which they may be exposed, lest the shock of surprise should be added to other shocks. Moreover, they should know what general defensive action is intended as well as their own part in it. The moral fibre of the country is sound enough, but the strain to which it may be subjected may be intense, and there is no need to add to it. The Government themselves will greatly ease their burden if they can win the co-operation of the man in the street, and that can be done only by taking him fully into their confidence.

When the writer was in Berlin some four years ago he saw so many posters, information bureaux and exhibitions connected with A.R.P. that it seemed impossible for anyone to avoid knowing exactly what he had to do both for the public service and for the protection of his household.

With us at the moment the reverse is the case. Except for a few shining examples—Chelsea, Holborn, Southampton, Nottingham . . . it was, a few weeks ago, hardly possible for the general public to learn the perils of air-raids or the means whereby those perils may be diminished. It is particularly desirable that they should be assisted by the organization of exhibitions at which

ocular demonstrations of precautionary measures are given. These exhibitions should run parallel with and not replace the issue of books. As regards the latter, however, there is always a danger that the purchase of a manual may act as a salve to conscience, and that it may find its way unread to the bookshelf, where it will be handy indeed, but quite useless, when the emergency arises.

Evacuation, which is the third antidote to panic, presents us with perhaps the most thorny of all the complex problems involved in A.R.P. We have to settle who should be evacuated, by whose order and under whose control, in what priority, by what routes, in what transport, to what destinations; and provision has to be made for all the necessaries of life at the destination, including the education of children.

In considering priority of evacuation, the need of maintaining governmental control in the country must have pride of place. The first persons to leave London should therefore be a representation of all departments of the Government sufficient to enable ministries to function outside the capital. The remaining officials would follow as conditions might demand and admit.

In this connexion, it may be presumed that some town far to the north-west has been selected as a temporary capital and is being equipped for that purpose.

Second in priority, and, in fact, beginning simultaneously with the first category, the slum districts round such likely targets as the Docks would be evacuated of all children under fifteen years of age, of the aged and infirm, and of such women as would not be required as factory workers, cooks, &c.[1] The matter requires careful planning, close co-ordination by the Government and intimate co-operation on the part of the various municipal councils concerned. The Government will have a delicate

[1] It is understood that plans are under consideration for the evacuation of 3½ million people.

task in setting the machinery in motion. Too early a decision will cause unnecessary alarm and dislocation. Yet the delay of an hour might result in thousands of avertible casualties.

Certain points stand out clearly in connexion with evacuation:

It must be carefully graduated or communications will be choked.

As far as possible everyone to be evacuated should know the fact beforehand, should understand the action he or she should take, and should be provided with a voucher.

Alternative routes and alternative forms of transport should be laid down.

In so far as mobilization interferes with evacuation, the latter should have priority except as regards the mobilization of the R.A.F. and of the air-defence services.

Control should be of the closest nature and should be vested in the hands of air-wardens, who should be assisted and kept in close touch with the situation by the police.

It would seem desirable to initiate an attempt at The Hague to obtain international agreement to the neutralization of concentration camps containing women and children. That would be a measure in the common interest of all nations and could easily be accomplished by the general use in such camps of an agreed ground-sign.

Evacuation, difficult as it is, has got to be faced, for as has been wisely said, failure or refusal to evacuate might entail a still more formidable problem, resulting perhaps in calamity beyond endurance and in a task in the removal of dead and wounded almost beyond execution.

With regard to the reduction of casualties, it is not proposed to deal with all the various arrangements for protecting the populace, but only with a few points which have been under discussion. The case of London will be considered throughout because precautions adopted

there may serve as a model for those in other towns, due regard being paid to the conditions peculiar to particular localities.

The full provision of shelters against the heavy A.P. bomb would cost milliards. Were we to attempt it we should quickly exhaust the total sum which the nation could afford for protection. And all would have been expended on passive defence, leaving nothing for the offensive by which alone victory can be eventually achieved. Clearly then our aim must be more humble.

The most we can hope to do is to provide shelters against the bombs likely to be used, namely, those of 500 lb. and under, for which a covering of 7 ft. of concrete is held to be sufficient. In acting thus, we should be following the policy adopted both by France and Germany—countries which have long been studying the subject seriously. Even these shelters are, however, too expensive for wide use. All existing forms of cover should therefore be exploited to the utmost. Cellars furnish a considerable protection provided they are equal to the shock of the fall of a large part of the house upon them. In Paris, 27,000 cellars have been discovered, and, where necessary, strengthened. They are said to be equal to accommodating one and three-quarter million people, that is, nearly all the inhabitants left over after evacuations had been completed.

Another type of shelter is the deep, narrow trench, dug clear of danger from falling walls, and given some head-protection. It is easily constructed where suitable ground is available and affords useful cover. Arrangements for its provision in the open spaces of London are shortly to be made. Other types of cover can be improvised according to the nature of building and materials available. Any kind of shelter is better than none, for the slightest covering will keep out the falling shrapnel of our own A.A. guns, and quite thin walls furnish protection against the smaller splinters.

It was pointed out above that, as concrete shelters are exceedingly costly, their numbers must be severely restricted. They are particularly needed in the threatened dockland area, where the tenements are for the most part so dilapidated that they can be made proof against neither gas nor splinters. They are needed also for the protection of air-raid authorities, of first-aid posts and of all public and private concerns which have to function during raids; and a certain number are required as temporary refuges for people caught by a raid in the streets.

The Germans insist that all new buildings must have concrete floors and a cellar, and they consider that such provision affords 90 per cent protection. Concrete floors to rooms are of particular value in preventing incendiary bombs from burning their way through the house from the attic downwards. The French insist further that the roof shall be of the shape of an inverted V specially adapted to cause incendiary bombs to glide off it without penetrating.

This reminds the writer of an experience of war days. He was convalescing in a hospital in Belgrave Square and, wandering in the garden there, he met an old gentleman who complained bitterly that, having erected a steel, ∧-shaped additional roof to his house as a protection against bombs, he had been forced to take it down owing to the complaints of his neighbours. Frightfully selfish of them, he thought. He had unfortunately built his ∧ with the sloping roof at right angles to the front of the house instead of parallel to it.

The question as to whether or not the tubes and underground railways should be used as shelters as it is intended to use them in Paris and Berlin, and as they were used in London during the war (on one occasion by 300,000 persons during a single raid), is a moot point. They are likely to be urgently required for evacuation and, if in working order, should certainly be used for

that purpose. After the evacuation, it would seem at first sight that they might, where at a sufficient depth to guarantee protection, be turned to good account as shelters, particularly for the wounded. There is, however, much to be said on the other side. If the tubes were crowded with refugees the trains could not be kept running, and an invaluable agency for the evacuation of the wounded, for the transport of supplies and for maintaining, through a covered communication, many services which would otherwise have to cease, would thus be lost. There is, too, a serious danger of flooding from damaged pipes. Moreover, were it known that the tubes could be used for shelter, there would be a tendency for people to flee to them in panic and for such as could feed themselves to remain there, to the detriment of the execution of much necessary work above ground.

On the whole, it would appear preferable, though a decision to that effect might be unpopular, not to use the tubes as shelters except, so far as the needs of traffic might allow, as casualty clearing stations and centres of information and direction.

The danger of fire has been already indicated. It is one of which we have no experience to guide us. The prospect of thousands of fires started simultaneously and fanned, perhaps, by a high wind would seem to transcend imagination. Perils, however, but rarely prove as terrible as they are painted; and they incline to fade the more boldly they are faced.

There appear to be two methods of dealing with incendiarism—the individual and the collective; and, of the two, the former at present gives the higher hope. It seems, in spite of jokes of the "spade and bucket" type, to be proved that the householder armed with hand-pump, shovel and sand, should be able to douse the flame of the bomb. But much practice will be needed; and, unless the floors are of concrete, "dousers" will be required on each floor. In this connexion, is it not

time that a halt—a stern halt—should be called to the building of monster blocks of flats? They are death-traps, and, worse still, they would not only burn quickly themselves, but they might well be the source of wide conflagrations.

So much for the individual system. The collective system of fire-control is that of fire-brigades. For them, we must hope for the best. As matters stand, however, telephonic communication is almost certain to be broken in numberless places at the outset of the raid, and, consequently, information and direction will be very difficult to obtain. Moreover, many of the roads may have been badly damaged or be covered with debris. In these circumstances, it is only too probable that each hose will throw its feeble spray on to the nearest fire and the concentration of effort essential to success will therefore be lacking. Large numbers of new and highly mobile fire-engines are being provided, and that is all to the good. For not only may huge conflagrations be caused by incendiary bombs, but large numbers of small fires may also be started by the explosion of H.E. bombs.

There is a possibility here for the employment of aircraft. They would in any case be invaluable for information and control. And, if trials should show that they have as high an extinguishing value with city fires as they have with forest fires, the necessary machines should be built, but only after completion of the building programme for the R.A.F.

Decontamination, the issue of gas-masks and gas-clothing, the gas-proofing of rooms are matters which are dealt with exhaustively in the handbooks on these subjects and contain no seriously debatable points. Whether or not the enemy will employ the gas-weapon may well depend on the extent to which he may expect to find us prepared against it. Where all necessary precautions have been taken for its defeat, it is certainly a less effective instrument of attack than either high

explosive or thermite. On the other hand, where it effects a surprise it may prove annihilating.

Much could be done to deceive hostile airmen by the use of camouflage; for the flyer depends greatly on guiding lines and marks—rivers, lakes, railways—in his approach, and on a clear view for his attack. The best features to camouflage would no doubt be those which our own aviators use as guides.

The supply of the essential services—food, water, heat, light, power and sanitation may all suffer disturbance from air-raids. The consequent disorganization will be of a nature that can hardly be righted by any rule, for it will vary very greatly in nature and in degree. Depots of personnel, tools, materials and food will presumably be distributed according to probable needs. But, in general, each emergency will have to be met as it arises, by improvisation.

Local functionaries already exist for the supply of water, light, heat, power, for the enforcement of order, for the extinction of fires, for Red Cross work and so on. Where damage occurs no one knows better than they what action to take. So far, therefore, as they are not less than forty years of age, they should be retained at their duties. In view, however, of the tremendous scale of possible damage, they should be asked to train large numbers of volunteer reinforcements.

The sound direction of precautionary measures, both general and local, is so important that the utmost endeavour must be made to ensure both a good intelligence system and certainty of communication. The one, which is provided by the normal police service, cannot function without the other. There will probably be too much interference to admit of a wide use of wireless, so it would seem advisable to bury in concrete to a depth of six feet all telephone wires between principal centres of information and direction. Any breaks in them caused by super-heavy bombs could easily be located and repaired.

The question of the relief of personnel in areas constantly under bombardment, appears to demand attention. London is now in the front line. More than that, it is a border town which may be the focus of the enemy's main efforts—a Verdun, but of infinitely greater importance. If operations are prolonged over a considerable period, its garrison and its workers—in factories, A.R.P., Red Cross, Police—will need rest and recuperation just as did the infantry in the trenches, for there is a limit to human endurance. This will demand, in the first place, the extension of training in A.R.P. far beyond directly threatened areas and, in the second place, an unparalleled fluidity of man-power, which can be made effective, especially as regards factory workers, only by the closest co-operation with the trade-unions. Labour (including management) will, in fact, become one great pool from which demands will have to be satisfied according to the exigencies of situations which, though difficult to forecast with accuracy, can be adequately met provided that preparations are planned on reasonable probabilities and on a broad basis.

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Any town in Great Britain can be bombed, and wherever that unhappy event occurs, the inhabitants would seem at first sight to require a full measure of protection. On the other hand, the likelihood of air-attack is lessened where the town is of but little importance, and where it is distant both from potential enemies and from attractive targets. It would seem, therefore, that every town should be given a letter indicating its particular position in order of probability as a target, e.g., A—London; B—Hull, Grimsby, Southampton, Birmingham . . .; C—York, Swindon, Leicester. . . . As the problem before the country is so vast, and as it is likely to occupy the energies of the Government for many months, if not years to come, it would seem desir-

able to concentrate efforts on those towns which are given the earlier letters of the alphabet. The remainder should be warned to expect from Government no immediate assistance except in the way of general advice. Unless a definite line be drawn between essentials and non-essentials, the needs of the greater may be sacrificed to the demands of the less; or, what is even more dangerous, the A.R.P. organization may fail to rise to the level of its responsibilities. In the war, the troops in the forward area had to be given adequate cover, for they were constantly under fire. Those in the back areas had no protection. If, by chance, a shell came their way, it was recognized as a piece of bad luck which had to be endured. An attractive target like Coventry should be treated as if belonging to the forward area and afforded full protection; whereas a town like Shrewsbury, of no great significance either on account of production or communications, should be treated as if in the back area.

Central control will, of course, be vested in the Government, and it seems likely now, with public attention focused on A.R.P., that at least a fully staffed sub-ministry will, as suggested by the Parliamentary A.R.P. group, be introduced into the Home Office, and will contain an inspector-general who will be given certain executive powers on the approach of war. If such a plan were adopted, the new Under-Secretary should be some outstanding figure renowned for a driving power that will inspire respect in departments of the Government and will prevent any lapse towards complacency and negligence. In the event, however, of the proposal made in an earlier chapter being accepted, a Ministry of Static Defence would be created to control both A.R.P. and A.A. defence.

The duties of the central authorities will be mainly of a preparatory nature. Nevertheless, even after the raids have begun, they will be able to assist the local authorities—by the allotment of transport, supplies,

police and military aid, by the issue of maps showing communications—road, rail and signal—free for traffic, by the control of propaganda, by the assignment of reliefs and by the co-ordination of evacuation outside county limits.

One of their tasks will be to establish, for danger areas, a preliminary period which will have to be divided into stages, A, B, C, &c., and the issue of broad instructions (to be developed as to details by the local authorities) as to what is to be done at each stage.

Control in London and in the other large cities will presumably be vested in a director or in a small executive committee. On the receipt of warnings as to the successive stages of the preliminary period, proclamations would be issued initiating prearranged action regarding the issue of gas-masks, the evacuation of expectant mothers, the removal of national art treasures, the initiation of camouflage, the assumption of control over the telephone and over private motor vehicles, the formation of a transport pool, the issue of vouchers to those about to be evacuated, the testing of underground communications and the manning of protected control-points. During this period the householder would be putting his domestic A.R.P. scheme into operation, and would be laying in a store of food, fuel and candles to enable him to survive the first few days of the attack when disorganization of supplies will be at its worst.

During the raids, the controlling authority will be ceaselessly busy in making decisions on a great variety of matters. It would be well were he to decentralize control both by the nature of duties, such as food supply, transport, evacuation, where the directors in each branch should be his staff officers, and by localities which, in view of the probable severance of communications, must have local controllers—preferably senior air-raid wardens. It is most important that he should have a thorough knowledge of the area under his control, of the means at his

disposal and of the people with whom he has to deal. For, were he to enter upon his onerous duties without adequate personal preparation, he would mar the whole organization.

A people which displays fortitude under bombing attacks, as the Spaniards have done in Madrid, is making a stout contribution toward victory. This fortitude is particularly needed in London; for the vulnerability and importance of our capital might induce an enemy to attack us there suddenly in the hope of breaking us to his will by a single knock-out blow. If the inhabitant is prepared, if he refuses to bow to the blast, he will cause the blow to miscarry and he will gain time for the development of the tremendous power latent in the Empire.

It is essential that he should understand that the best eventual method of checking raids is to carry the war into the hostile country with the maximum number of aircraft that can be made available, and that he should understand the reason, namely, that the enemy will be forced thereby to use up his machines in self-defence. Realizing this, the inhabitant will make it a point of honour, however dire the stress, not to demand from the Government the retention of more aircraft for defence than are already allotted for that purpose and which, if the suggestions made in an earlier chapter be accepted, will amount to two-thirds of the available total.

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So long as London continues to invite attack by the lack of the necessary precautions, and offers to a desperate nation the possibility of the quick achievement of victory over the richest empire the world has known, so long will the sword of Damocles remain suspended over Europe.

PART IV

Some Problems of Imperial Defence

CHAPTER I

The Army

"Une race d'hommes, toujours dédaignée ou honorée outre mesure, selon que les nations la trouvent utile ou nécessaire."—De Vigny.

"No country is in a healthy state which has separated, even in a small degree, her civil from her military power."—Ruskin.

WITHOUT introducing any new measures, it would be possible at the moment to mobilize 820,000 men for army service in the Empire. For the navy and the air-force, the corresponding figures are 150,000 and 70,000 respectively. But the navy and the air-force occupy so much of the press and of literature that there is a tendency to forget the importance of the army. The air-force may be the first line of defence and the navy may be vital as ever. But neither can occupy or hold land, and a vast empire must be held by men acting in their natural element. Nor can they operate without security of base, a security which can be afforded only by the army, whether the base be the home country, a naval base or an aerodrome; nor can they, separately, or combined, apart possibly from the case of aerial attack on a particularly vulnerable capital city, win victory unless the army acts as spearhead to their efforts. Moreover, as pointed out by Marshal Weygand, an army is the most reliable of the three forms of force, because a sudden and striking improvement in enemy material might render fleets, whether aerial or naval, almost impotent; whereas an army endowed with stout hearts and skilful leadership can continue to battle under the gravest handicaps.

It is therefore of cardinal importance that the army

should be of sufficient strength and soundly trained and organized for the tasks it has to fulfil.

But that is no light matter. Whereas the airman and the sailor operate in elements which, subject to the vagaries of weather, are constant, and as they have much the same *modus operandi* whoever and wherever the foe may be, the army moves by hill and plain, by swamps, by deserts and forests, and has to train for battle against potential enemies of tactics and equipment of an almost unimaginable variety. Both in training and administration, the army is therefore faced with problems of much greater amplitude and intricacy than those which the navy and air-force usually encounter.

The War Office deals more or less directly with 670,000 troops and, by liaison, with 150,000 more, and, therefore, has a burden of a weight which the public hardly realize. Consequently, it is prone to allow administration to dominate policy. " Our problem in essence," said Colonel Macready, lecturing with the C.I.G.S. as chairman, " is, therefore, the organization of the best and most modern field force *compatible with the limits imposed by the Cardwell system* ".[1] It tends also to pursue tried, traditional conventions and to avoid changes whose implications in a vast and varied field cannot be forecast and are sometimes discovered only in painful experience. It has thus kept faithfully to the Cardwell system throughout every mutation of the conditions in which the Empire has to be defended. The system, indeed, served us well over a period of years, but it now contains many drawbacks. It makes insufficient provision either for the provision of reserves in war or for a reserve army; for the existing army reserve would be absorbed in bringing units up to war establishments, and the Territorial Army would be forced, in spite of promises to the contrary, to step unhappily into the breach and would, therefore, not be available as a reserve

[1] *R.U.S.I. Journal*, Feb., 35. Author's italics.

army. Moreover, it lacks elasticity and cannot be satisfactorily adapted to such conditions as mechanization and the possible rupture of communications in the Mediterranean. How, for instance, is it to provide the strategic reserve now needed in the Middle East when there are already more battalions serving abroad than at home?

It seems that it will prove necessary to have two forms of service, short and long. The latter would afford a life-profession and a pension. It would indeed, entail spending many years overseas; but, on the principle that the citizen must pay, if not in his person, then in his purse, for his defence, funds might be allotted both to enable the professional soldier to spend one year in five either on leave or serving in a home unit, and also to improve vastly the amenities and the accommodation at all foreign stations. Under existing arrangements, most of the extra cost of the long-service army would fall upon India. But, as the demand for better conditions derives from the standard of living at home, it is only fair that England should bear the extra expense.

Short service should be limited to a maximum of two years with the colours; and the period in the reserve should depend on expected requirements for fulfilling all our responsibilities in the Empire and on the Continent, both for drafts and for second-line formations. Service in the reserve would have to be punctuated with refresher periods of training, and officers would have to be procured by the methods usually adopted in short-service armies. No guarantee of employment on discharge would be given to the soldier, but an insurance against loss of work through being called up from the reserve should be effected.

The introduction of a short-service army would eliminate the need of liability to foreign service in the Territorial Army—a matter that always presents difficulties to recruitment—and it would have the tremendous

advantage of narrowing the gap which at present exists between the dispatch of the Expeditionary Force and its reinforcement by some form of reserve army. The Territorial Army, except for home-defence units, would be allowed gradually to die down *pari passu* with the growth of the new reserves, a skeleton only being retained both of the army and of the associations, as a cadre on which to build a national army if so desired, and the officers, including those in the Territorial Army Reserve, being asked to form a special reserve of officers either for the national army or the second-line formations of the short-service army. The Territorial Army has rendered splendid service but its demise might be accepted with equanimity, for it is based on a faulty principle. It is fundamentally immoral that one citizen in ten should bear the burden of defence, and that employers should be asked to suffer in the competition of commerce for their patriotism. Every man who had served as a territorial should, however, be presented on disbandment with a gold medal by a grateful country.

The mind of our present able and energetic War Minister appears to be moving in the direction of the abolition of the Cardwell system. He is sure to encounter certain objections to a long-service army. The first, that it will be costly, which, as regards its initiation, is true. The second, that it will be less valuable than a young army. This is doubtful. With less drink and more exercise, soldiers remain fit nowadays far into middle age. In fact, men who pass a physical test after 21 years service might well be permitted to serve another seven years, being assigned for that period to garrison duties. The third, that the men will deteriorate mentally and physically in the Indian climate. The answer to that is that the present high average of sobriety combined with regular periods of long leave (or service at home) will militate against deterioration. The fourth, that, as regards India, the troops concerned will be en-

tirely at the service of that country. That is largely the case with the existing army in India. Actually, in view of the difficulty of effecting reliefs in a war with a Mediterranean power, the point hardly arises except with regard to the dispatch of reinforcements to the Middle East, which action is itself a form of protection for India and should not therefore meet with strong protest. The fifth, that they provide no reserve. But the short-service army should make ample provision in that respect. The last, that they would find no employment on completion of service. True to a small extent only. They would spend their last year of service learning a trade. Moreover, the whole of the jobs for which people like to have old soldiers would be kept for them, as none of them would be absorbed by the short-service army.

It might seem that a discussion on the Cardwell system lay outside the realm of strategy. That is so, but proposals have been promulgated in this book which could not be implemented unless the Cardwell system were abolished.

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It was suggested that the need for the Territorial Army might be allowed to disappear were a short-service system adopted for the metropolitan army. At the moment, however, it is with us and likely to stay for a long time to come. It must, therefore, be considered in all our plans.

The accepted tasks of the army, that is, for the whole of our ground-forces, are: (*a*) Home defence including: (1) A.A. defence and coast-defence, both duties now performed by the Territorial Army. (*b*) Internal security, that is, the preservation of communications and of law and order, and the maintenance of supplies and sanitation—all matters either for regular or territorial forces as available. (*c*) Assistance to a continental ally. (*d*) Defence of the Empire and Middle Eastern commitments.

All these tasks have been discussed in earlier chapters

under various headings. A few points remain to be noted.

If we enter or are forced into a major war, we must be prepared to deploy every ounce of our national force. The question whether or not we shall send an army abroad to assist a continental ally has, however, been under debate. It is complicated by a great variety of considerations:

A. The army will hardly be able to leave England until either we shall have established ascendancy in the air or until opposing air-fleets shall have hammered each other to mutual weakness.

B. The second point is psychological. No people on the Continent will regard our navy and air-force as anything but auxiliaries. They will not believe in our whole-hearted devotion to the cause unless, and until, a British army shall have landed on their shores.

C. If Germany is facing France she can oppose 80 millions to 40 millions and may also be superior in equipment. There may be a doubt as to whether or not mere numbers count in battle, but there can be none that superiority in men and material exercises a high moral influence at the outset of a campaign.

D. The soil of France and the Low Countries has become almost as important to us as our own because, once an enemy seizes it, he can, owing to the consequent reduction in range, double or treble the power of his aerial assault. Neither ships nor aircraft can afford direct protection to those territories, whereas an army can do so if it arrives in time; and, technically, it has a higher defensive power now than ever in its history.

E. On the other hand, Britain has a tremendous problem to face in the defence of the Empire. Particularly has she to defend London and her maritime communications. Should she fail in these tasks she will be defeated, and her loss will be fatal, not only to herself, but also to the alliance. It is essential, therefore, that she should

place the principal emphasis in her preparations on her air-force, her navy and her A.A. defence; and these services, expanding hourly, absorb a very high proportion of her industrial power and, consequently, also of her man-power.

F. If we have any basis, which is doubtful, for the strength of our army, it is that of the needs of the land-defence of the Empire. There are possibilities in India and on its borders which alone would absorb all our military power. It is not certain, therefore, that out of our existing army we could spare any troops for operations on the Continent, were we being assailed at the time in other quarters.

G. To discover whether or not it would be possible to create fresh armies on the outbreak of war, the whole field of our man-power should be explored.

We have to compete on the seas, where every maritime nation is rapidly increasing both navy and mercantile marine. Our navy with its programme of expansion fully suffices as regards protection, but our mercantile marine has dropped heavily, both absolutely and relatively and is no longer equal to our supply. Much man-power may, therefore, have to be devoted to ship-building. We have to compete similarly in the air. Both naval and aerial services are machine-made to a high degree, and the army, too, is becoming largely mechanized. Although powers of production have improved, machines have become more complicated and more delicate. The result is that a much greater man-power will be needed in manufacture and repair than in the War. In the case of the aeroplane, with all its new instruments, the number of man-hours needed for production has been multiplied by three. Yet there will be the same demand in extent and rate of output as before. The number of men unavoidably retained in the factory will, therefore, reach a very high figure.

Moreover, as our foreign investments are lower by

far than in 1914 and as America may enforce her neutrality law, we shall have to employ a considerable part of our man-power in increasing our exports to a figure well above that of war days in order to pay for our essential supplies.

Finally, one of the key points in the man-power problem is whether we intend to employ, perhaps, 20 territorial divisions in A.A. defence, or ask the workers to defend their own factories.

These matters demand the closest examination by the appropriate sub-committee of the C.I.D. or by a special commission. Not until that has been done will it be possible to discover what man-power, if any, will be available at the outbreak of war for the creation of a national army after all vital demands shall have been met. The first step in procedure is the introduction of the *National Register*, a measure which, though it cannot increase our numbers, will enable the Government to comprehend the nature of our man-power, and thus to arrange for its effective distribution.

It is clear from this brief survey that a basis for answering the question as to the military aid we can render to a continental ally does not exist. But it is equally clear that in view of our alliance with France, we must give her some assurances on the subject, which must hold good until our investigations into man-power shall have been completed. The matter is one for a compromise which can, however, have relevance only to the early operations.

In considering this problem in existing conditions, we may presume in the first place that two out of the five regular divisions in the United Kingdom will have been dispatched as a reserve to the Middle East, and that no reliefs of our forces in garrison overseas will take place. There will then be three divisions plus the mobile division available. If we retain one division for dealing, with the assistance of the Territorial Army, with internal security,

we shall be able to dispatch two ordinary divisions and one mobile division to France as soon as aerial and maritime conditions permit.

Once immediate perils have been averted, the full power latent in the Empire will be able gradually to develop. Territorials will complete their training and the Dominions will be putting forth their strength. It will then, that is, after a few months of war, be possible to say in what direction the man-power surplus to the requirements indicated should best be employed.

In the meantime, it should be decided for what tasks the Territorial Army should be organized and trained. Ideas on the subject are somewhat nebulous; but, in general, the tasks would appear to be:

(*a*) To act, when the state of communications permits, as the final argument in imperial defence; for which action the existing organization is appropriate.

(*b*) In continental warfare: (1) To act as garrison troops, guarding fortresses, bases, lines of communication and aerodromes; and, as occupation troops, occupying ground won by mechanized forces, which purposes they should be ready to fulfil, if required, within two months of the outbreak of war. (2) To man trenches in position-warfare; for which at least four months' training would be needed. (3) To act as battle-troops, whether mechanized, motorized or on foot, ready for any form of fighting—offensive or defensive, responsibilities which would demand at least six months' training.

For (*b*, 1) infantry, well supplied with light A.A and A.T. weapons; and for (*b*, 2) a similar infantry supported by field or medium artillery would suffice. For (*b*, 3) divisions fully organized and equipped on the model of the regular divisions would be needed, supported eventually, when a general offensive might have to be undertaken to bring the war to a conclusion, by heavy artillery on a large scale.

The last point to deal with in connexion with the army is the cadet movement. Practically every school in the country had its cadet corps during the war. After the Armistice, many schools dropped their corps, thinking no doubt that wars were at an end. However, in 1930, when the decision was reached to withdraw Government recognition and grants, cadets still numbered 50,000, and were a valuable national asset. Then came a deep drop. A certain number of units, school and non-school, under the auspices of the British National Cadet Association, struggled gamely on against heavy odds in the shape of lack of money, lack of time and lack of encouragement. Now again in 1938, recognition and the grant have been restored. Owing to the gap of eight years, however, it has become exceedingly difficult either to reform corps or start new ones. Former officers have lost touch with soldiering. Ex-officers with war experience are getting old. Uniforms, equipment and band instruments have been sold. Education committees have crowded every minute of the day with studies.

Moreover the Government grant of 4*s*. a year per qualified cadet is niggardly in the extreme. Apart from the heavy cost of the annual camp, of travelling, of accommodation, of ranges, the expenses amount to £1 per head. Moreover, the cadet officers, drawn mainly from the masters of secondary schools, who usually possess no private means, have to pay all their expenses —uniform, travelling, training at depots and camps. The highest praise is due for patriotism, for sense of values and for pride in corps to those who have persevered and kept their units in being, in spite of every discouragement.

The author made a tour of his county recently. He visited 31 headmasters of schools—secondary, senior and private—out of that number 30 declared strongly in favour of the introduction of cadet corps. They were unanimous in saying that there was a tendency among

their boys to be slovenly, both physically and mentally, and that they needed the educational value of discipline. For the most part, however, they found the obstacles to cadet training insuperable. Besides those already mentioned, there was much pacifist and political opposition on the part of parents and education committees. The 31st schoolmaster, who was the head of an institution well known for its decided pacifism, agreed equally as to the need for discipline, but objected to military methods of inculcating it.

The striking and important matter to note is the unanimity of opinion as to the value and need of cadet training considered from the educational angle. Boy Scout work was regarded as an excellent and healthy form of holiday and as inculcating many admirable principles; physical training as valuable to the individual, but as having only a personal aim, and instilling neither a sense of responsibility nor of service.

Not only from the educational but also from the military point of view, the reintroduction of cadet corps has become an urgent need. The habits of discipline, of obedience and command, of alertness, mental and physical, together with proficiency in elementary forms of drill, render a boy on leaving school fit to take his place with a minimum of additional training in any form of military service or in A.R.P. The advantage, in these days of sudden attacks, of having hundreds of thousands of boys and young men possessed of these qualifications is too obvious to need further emphasis. Moreover, as Colonel Beach [1] says: "Cadets should be the decisive answer of a democratic country to the challenge of the Youth Movement in Dictator States."

Two things are therefore eminently desirable in this connexion. The first that the Government should endow the movement with sufficient funds so that it may in future entail no tax upon parents or masters; the second,

[1] *Rising Strength*, June, 1938.

that the Labour Party, who hold sound views on many matters connected with defence, should withdraw their opposition. United in defence we may, even handicapped in many ways as we are, be able to overcome onslaughts upon us. Divided, we shall certainly fall.

Man-power.—One of the main foundations of strength is man-power. It needs to be spirited, healthy, sufficient, well-organized and correctly distributed. The spirit is there. It is inherently sound, but lacks that keen edge with which a great cause might endow it. That is a fault of our sated condition, and, while we preserve that condition, can be removed only by governmental and public support of adventure, exploration, flying, the cadet movement and the harder games. The best the Government can do in peace time, having made clear to the people the dangers to be confronted, is to institute a voluntary national register. Then, following upon a careful study of that register, they might make a statement of the anticipated requirements in men and women in all forms of national service, and issue a call for volunteers to enrol themselves for the protection of their country and ideals, and prepare themselves for the various tasks which would be assigned to them according to the respective abilities. Such a plan would develop voluntary effort to the utmost, but it would hardly be worth considering unless all parties were united behind it.

Provision for health—the second demand of man-power—can be made by the best of nourishment for children, physical training for boys and labour camps for youths of all classes. Sufficiency of man-power depends first on the exercise of economies, such as the employment of factory workers in their own A.A. defence, and of women in appropriate occupations, and secondly, on sound organization and distribution, which, in their turn, depend on the introduction of a national register and a carefully-drawn appraisal of the needs of agriculture, shipping and trade as well as those of the fighting forces.

In connexion with the last point, the Government should take stringent measures to prevent key-men in professions and industries from joining the combatant forces. As an example of the evils arising from failure to adopt this precaution, it may be mentioned that by the end of the first year of the Great War, no less than 20 per cent of our engineers had gone out to the front, and their loss was very severely felt in many industries. Fortunately, from a recent statement by the Prime Minister, it is clear that there is in existence a plan for compulsory service to come into operation after the outbreak of war and when the necessary consent of Parliament shall have been obtained; and that plan, doubtless, contains regulations for the appropriate distribution of man-power. It would, however, be infinitely better if everyone knew beforehand what task he would have to perform.

That we should be compelled by an emergency to encourage national fitness in order to deal with potential enemies is by no means wholly a misfortune. Wars are comparatively rare. The fitter we are to meet them the rarer they are likely to be. In the intervals between them, which we pray may be long, the nation will enjoy good health, perhaps the greatest of all blessings.

CHAPTER II

Palestine. The Mediterranean

THE future of Palestine is a political rather than a military problem. The country is, however, a considerable factor in Imperial Defence. It guards one flank of the Suez Canal; it is the connecting link between Egypt and Syria; it is a centre of aerial communications and the origin of desert roads to Baghdad; and, on its shores, Haifa, which is the terminus of the Iraqi pipeline, is the best harbour on the eastern littoral. It is, therefore, important that we retain a hold upon the country, either through force or, preferably by far, through an alliance with its inhabitants.

The present situation is—that we exercise a mandate over it; that, in view of the claims of both Arabs and Jews to ultimate dominion there, we sent out a commission which recommended a tripartite division of the land between Arabs, Jews and British; and that, as the Arabs refused to have anything to say to the suggestion, and the Jews for the most part objected to it, a second commission is now trying to find some better form of partition than that suggested by Lord Peel and his *confrères*.

The Arabs, however, remain obstinately opposed to partition of any kind. They hold, with justice, that they are, by a big majority, the ruling race, and that Great Britain has promised to deliver the country eventually into their hands. On the other hand, on the strength of the later, and quite unjustifiable pledge which we made in the Balfour Declaration, 250,000 Jews have entered

the Holy Land, have developed it greatly with their money and energy and have now a big stake therein.

The matter arouses interest far beyond the confines of Palestine. The peoples of all Arab countries, especially those on the continent of Arabia and in Egypt, sympathize deeply with their blood relations, as do all Moslems with their co-religionists; and naturally, vast armies of Jews all over the world are looking forward to the establishment of a Jewish national home in the country which they inhabited so long and with which their religion is so intimately associated.

A settlement might have proved less difficult had not the Zionists proclaimed the domination of the country to be their aim, and had not the Government allowed an influx of immigrants into the land in recent years so large as to cause the Arabs genuine anxiety lest the Jews should oust them from their homes, or at least obtain a majority over them.

The Jews, with the power of the press largely at their disposal, have been able to urge their case strongly to the world; and they have gained strength for it through the expulsion of their co-religionists from Germany and Austria, and the desire of Poland to reduce her Jewish population. The Arabs, feeling that they stood no chance with their opponents in the presentation of the respective cases, took to terrorism and have now for some years kept the land in a greatly disturbed and thoroughly unhappy state. They are secretly, and even to some extent openly, backed in their acts by the inhabitants of the other Arab States either with men or money. We have accordingly had to employ at times the infantry of two divisions, together with aerial and naval forces to quell the disturbances. Yet the terrorism continues; and the visit of the latest commission, which the Arabs boycotted, has accentuated the existing ill-feeling, with the result that all Arab countries, including Egypt, are becoming increasingly hostile to us.

As to the mandate, we have honestly and patiently tried to make it work for twenty years without success. Some new form of governance for the country is therefore long overdue.

In the Peel proposals, the British Government were, from religious and strategic motives, to retain a permanent control over portions of the country. This seems unfair to the Arabs. We said nothing of such an intention when we made our original promise to them, and it would seem both wise and just not to pursue it. Before handing over control, we and the League would naturally exact certain pledges with regard to religious tolerance and to respect for the Holy places, and we could be quite confident that they would be respected. Our strategic needs which, with Palestine held by a friendly people backed by all the Arabs of the Middle East, would be small, consisting of a *place d'armes*, an air-centre and certain rights over Haifa, could be secured by treaty just as they have been to the satisfaction of both sides in Iraq. The more generous and straightforward our attitude in these matters, the more certain it is that our requirements would be faithfully met.

Insistence on an indefinite retention of the mandate or of tripartite division might embroil us with the whole of Arabia. We can, with a division or two, crush a limited rebellion, but we cannot over-ride or ignore the wishes of the Arab race. The Arab and the Briton can be of great assistance to one another. On the other hand, if their views conflict, they can be mutually destructive. Destructive for us, in that our position in the Moslem world would be weakened, our communication with the East endangered. Destructive for the Arabs, in that they would lose our protective, organizational and financial assistance. Destructive for us both jointly, in that we are natural allies and that, except for the trouble over Palestine, we might seek our prospective aims in close and friendly association.

In order to reconcile conflicting claims with justice to both parties (so far, indeed, as justice is possible in this matter), we should consider the possibility of creating a Jewish national home within a Palestinian national state.

A scheme, the feasibility of which might be investigated, is that, Great Britain should ask for a new mandate authorizing her to continue control until such time as the League of Nations should consider the country to be ripe for independence, and should then yield sovereignty to the Arabs under guarantees, firstly, for the Holy places, secondly, for the representation and fair treatment of minorities, and, thirdly, for our strategic needs. A further condition should allow the Jews to retain their present percentage of population, approximating to 30 per cent, to have a privileged position in their quarter in Jerusalem, and to possess a considerable enclave at and about Tel Aviv as their national home, where they could have their headquarters, register their nationality and maintain their traditions and culture. The enclave would be subject to Arab authority only as regards immigration (its population being included in the agreed percentage), defence and foreign affairs. The existence of this small state would not, in principle, impair the sovereignty of the Arabs any more than Monaco and Andorra impair the sovereignty of France and Spain. But the state would be of high importance both to Jewry and to world society.

The Palestinian Arabs, having full power to limit immigration to the agreed percentage, would probably, once the present purely artificial, political antagonisms had been abated by the joint acceptance of a definitive decision, encourage immigration for their own benefit far beyond that mark, provided no stronger representation were allowed. Moreover, the removal of the fear of ultimate Jewish domination might obviate objections to Jewish immigration into Trans-Jordania.

The Arab has an aptitude for rule, the Jew for develop-

ment. The fruitful combination of these two oriental races has a long record in history. The prospect to the now-contending parties of well-developed lands, wisely ruled—a prospect likely to materialize if they can but abjure existing animosities and come to the council board —might attract them by its contrast with the present discontent, savagery and mutual boycott.

The advantages of such a plan are: That it enables us to keep our promise in full both to Arab and Jew; that the Arab would realize his aspiration to sovereignty and the Jew his aspiration to a national home; that Britain would thereby retain the friendship of the Arab without losing that of the Jew, except perhaps that of the extremist; and, finally, that we should be enabled to withdraw many of our troops from Palestine without any sacrifice of power in the Middle East.

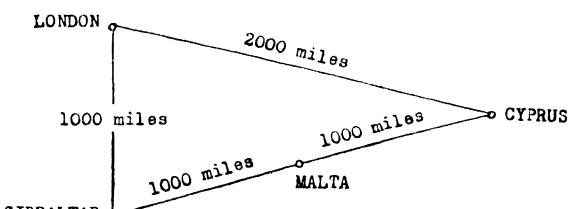
The Government have, of late, proved successful in effecting a number of admirable treaties elsewhere, let us hope they will be equally fortunate in the Holy Land.

The Mediterranean.

British aircraft, unless they have conveniently placed allies, have to fly a thousand miles from England to Gibraltar, another thousand to Malta, and yet another thousand to Cyprus or Alexandria, without any intermediate points of landing. The reinforcement of land-planes in the Mediterranean is thus possible only by bombers and is at best extremely difficult. Moreover, Gibraltar and Malta, especially the former, are unsuitable as air-bases owing to limits both of size and suitable ground.

British shipping passing through the narrow sea may be bombed or torpedoed throughout its route; for it is flanked by potential foes, from whose ports of sea or air may issue submarines and aircraft able to operate at short range and in ideal circumstances.

The Mediterranean is a great highway of the Empire. Fortunately, in view of the conditions mentioned, it is not vital for us as it is to Italy, there being an alternative route round the Cape. As the main route to the East, it came into being only in 1869, when the Suez Canal, in spite of our protests, was constructed. Since then, we have become so accustomed to the convenience of the route that we now regard it as vital. A Prime Minister has even stated that " absolute certainty that the Suez Canal will remain open for the free passage of British ships is the foundation on which the entire defensive strategy of the British Empire rests." And a recent Foreign Secretary confirmed that opinion by saying that " The Mediterranean is not a short cut but a main arterial road. Freedom of communication in those



Sketch 16

waters is of vital interest, in the full sense of the word, to the British Commonwealth of Nations." That is, of course, not the case. The Mediterranean is a short cut to the East and is just one of those several luxuries, such as freedom from invasion, complete individual independence and cheap electric power, which the impact of warfare in three dimensions may force us to forego for a time.

The problem of the Mediterranean is, however, a part, and it may well, according to the method of its treatment, be a vital part, of the problem of imperial defence. It has many ramifications. In order to protect the Suez Canal which, though not vital, is of very great importance to us, we fought many battles in the Great War, and built

up our power in the Middle East by treaties with Iraq and Egypt, by the retention of our mandate over Palestine and by the creation of our air-route from Egypt to India. These commitments, however, are effects and not, as is sometimes supposed, causes of our desire to use the Mediterranean. They might well be discarded except for that desire and except for their bearing on the aerial route to India and the use of Iraqi oil. They are designed to cover both flanks of the passage to the East in its most vulnerable area. If they should fail in that purpose, the eastern end of the sea would be closed to us.

This part of the Mediterranean problem is closely bound up with the decision to be reached in Palestine. If that should prove satisfactory to the Arabs, there would be every prospect of peace in the Middle East and, subject to certain reservations, security to the Canal. Otherwise, not only would Palestine itself be a running sore exhausting our vitality, but the whole of Arabia and Egypt would become inimical to us in feeling where not in deed, and an excellent receptacle for every kind of hostile propaganda. Our air-route would be endangered, our pipe-line from Iraq to Haifa would be severed, wire-entanglements would multiply in the Holy Land, and the Egyptian army might show but little desire to support us in battle. Moreover, our opponents in Europe could exploit our difficulties with but little cost to themselves.

The next point in the problem to consider is whether or not our trade can continue to run through the Mediterranean when we are engaged in war with a major European Power.

The answer is in the negative. In the war, when the only threat to our merchantmen lay in a few submarines based high up the Adriatic, of which more than six were but seldom at sea at one time, the Allies lost 5,000,000 tons of shipping out of a total loss of 13,000,000 tons in the whole theatre of war. To-day, when France and Italy have approximately one hundred submarines each,

and when the submarine is reinforced by aircraft while the seas remain as narrow and the ships as vulnerable as ever, prospects of safe passage become negligible. Even if convoys were employed, and capital ships and cruisers assigned to their escort, the great area covered by the vessels and the possibility of approach from every direction would enable aircraft to execute their destructive tasks without any serious interruption from A.A. fire. There is yet a third factor—the speed-boat, an instrument likely to be particularly effective in narrow seas. Merchant shipping should, therefore, unquestionably be diverted at the outbreak of war to the Cape route. The navy would greet the decision no doubt with great relief, as it would then be able to devote itself to offensive instead of defensive duties.

The loss of Mediterranean commerce and the extra time taken by ships round the Cape route would result in effect to a reduction of 15 per cent of our total trade. In addition, there would be, for some weeks, a dislocation in supply, which would make a considerable draft on our stored reserves.

As regards the use of the Mediterranean by the navy, the issue is much more complicated and doubtful. A fleet must have protected bases where it can be refitted, repaired, supplied and rested. Unfortunately, Gibraltar lies under the menace of continuous shell-fire both from Ceuta and from Spain. It would be possible to defend it, so long as supplies lasted, almost indefinitely; but it would not be possible to protect either the docks or the warships from projectiles. Moreover, the accommodation for aircraft is limited so that, at most, one aerodrome could be provided; and the absence of depth of defence, restrictions of space and the proximity of hostile territory render the port untenable under air-attack. Were Spain to offer us Ceuta, together with a hinterland of a depth of twenty miles, in exchange for Gibraltar, it might be well to accept, even were the transaction to

cost several millions; for, though Ceuta is by no means free from the danger of powerful attack by air, it would be able to reply in the same coin, it would possess all the strategic advantages of Gibraltar without the bulk of the drawbacks, and it should ease our relations with Spain. Both ports suffer from the drawback that they are inside the Mediterranean and that, consequently their traffic to and from the west is subject to gun-fire from the shores of the Straits. Some naval base is, however, a necessity in that region, not only as regards action in the Mediterranean but also to afford cover to our immense trade with the Argentine and South Africa.

Malta, as a naval base, also suffers from many drawbacks: it has no depth against air-attack, to which it is exposed at a time-range on the one side of twenty minutes, and on the other of thirty-five minutes; and space for aerodromes is restricted, though not nearly to the same extent as Gibraltar. No admiral would attempt to remain there under short-range attacks. He would at once attempt to pass his fleet out to sea. But, if the blow fell during that somewhat slow process, before the fleet was clear, his situation would be fraught with peril, especially if a lucky bomb happened to disable a vessel in the narrow exit.

And, after having cleared harbour, where would the fleet go in order to repair the damages it would have received in the initial and subsequent attacks? At Gibraltar, it would be subject to bombing and gun-fire. Alexandria is a capacious port, but neither it nor the smaller port of Haifa has necessary facilities for repair. At Alexandria, indeed, the fleet might be on equal terms in the air with the enemy, but its casualties must inevitably mount. And what would be its function? A battle-fleet gives cover to its cruisers and smaller craft in the attack and defence of trade. But there would be no British trade, and it is unlikely that enemy trade would venture

out except either in neutral waters or for accurately-timed outings under powerful escort out of reach of Alexandria. Moreover, the fleet would be too distant to interfere with the fully-guarded transport of troops between Syracuse and Tripoli. Except for the accurately-timed outings, the enemy battle-fleet would indeed have, to a great extent, to lie up in defended harbours. But, when casualties should have reduced our battle-fleet to inferiority, it would assume complete control of the inland sea. Thus, for a short period our battle-fleet would have been theoretically giving cover, though it is not clear to what, and would otherwise have performed no particular function. An unfortunate effect of its stay in Alexandria would be the retention for its own protection of a number of light craft which might be better employed in seeking opportunities of damaging the enemy's trade, transports, and warships. Reinforcements from England, unable to halt at Gibraltar or Malta, would have to traverse the whole length of the narrow waters and, if they should succeed in arriving at Alexandria, would be able to put no better complexion on affairs, for they would be subject to the same disabilities as the ships they were reinforcing. Part of the fleet might indeed go to Aden, but it could effect nothing of value there, and would be subject to bombing from Assab. Or, indeed, it might return to the Atlantic via the Cape. That would be quite sound. But it might perhaps better have stayed there in the first instance.

The Italian forces in Libya are variously estimated as between 60,000 and 100,000 men though, if the Anglo-Italian treaty comes into force, they are to be reduced to the half of their present strength. Mussolini has devoted great attention of late to a network of communications there, and to the vital factor of the provision of water along the roads leading to the eastern and western frontiers of the province. In Egypt we have perhaps 12,000 troops, to which might be added an Egyptian army in the making

of, say, 20,000. With regard to air-forces, Italy could, if she wished, concentrate the whole of her aircraft in Libya whereas we, owing to the paramount claims of home-defence and the great distance from London to Egypt, could, in the first instance, concentrate but a tiny percentage of our aircraft opposite to her at Mersa Matruh. There would thus be a possibility, which must be faced, that Italian troops might capture Alexandria. What would then happen to our Mediterranean fleet? The Suez Canal would be either in enemy occupation or under close air-attack. Haifa can hold only a few cruisers and is undefended. The fleet would have to return to Malta, there to be bombed to destruction, to the grave diminution of our naval power and of our national prestige.

On the other hand, were there no battle-fleet in the Mediterranean and were there only a flotilla in the Levant, the temporary occupation of Alexandria, except as regards the threat to the Suez Canal, would present no serious danger. Balbo, with his sea-communication continually harassed, would suffer difficulties both of reinforcement and supply and, on the arrival of troops from India and Australia, would find himself in an hazardous position.

It is not easy to understand what useful purpose battleships can serve anywhere except in the broad Atlantic and in the still broader Pacific. Certainly, the worst place in the world for them seems to be the Mediterranean, where their presence and its apparent threat to the integrity of Italy's vital communications has the effect of the trailing of coats, and has excited the apprehension and hostility of Mussolini.

Any detachment from a main force is a crime against the principle of concentration unless it is capable of distracting larger hostile forces from the decisive point or unless it can in some other way, moral or material, justify by its presence or its action the risks of separation. Our

main force is in home waters. Two thousand miles away at Malta is a detachment, impossible to justify, nearly equal in capital ships to the main force.

The Mediterranean fleet would be at once safer and more effective at Singapore than at Malta. It is not suggested that we should send them there at the moment, but merely to point out that six capital ships there with their line of communication by the Cape route well secured would act as a permanent deterrent to an attack on Australia, and would give considerable weight to any counsel we might offer Japan; whereas, in the Mediterranean, operating against a major power in that sea, they could not reach the Atlantic except as cripples. In the latter case, our maritime superiority would have vanished, and therewith that control of communications on which the life of this island and ultimately of the Empire depends.

The problem has been considered largely from the point of view that Italy and Spain are united and that France is neutral. Were France hostile, the situation would, of course, be much worse. Were she an ally and had we the machines available, we should be able in the first place, by attacks from French territory, to force Italy to use some of her many aircraft in self-defence though, perhaps, only after she had destroyed our fleet at Malta; and, in the second place, to control the western Mediterranean, lending such help as would ensure to France the safe transport of her black legions from Africa, should she decide to send them by that route rather than from Casablanca to Bordeaux. Any capital ships we might need for this purpose would be based on Gibraltar, which would in this case be the less exposed to air-attack in that the Spaniard might also be expending air-forces in home-defence.

It is difficult to be sure of future groupings when national conflicts and ideological conflicts are proceeding at the same time in a world charged with electricity, and

subject to changes of the most startling and precipitate kind. We may hope, however, to reach fairly firm ground through a close study of the military problem and of political probabilities.

If we were to abandon the Mediterranean, the Empire would continue to exist. It would be thrown indeed more than ever on to exterior lines, it would suffer economically and, to some extent, militarily, and some of its rivals might expand at its expense. But those would be trifling injuries compared to the disaster which would be incurred by the defeat of one of our two battle-fleets.

No such drastic action as abandonment, however, appears necessary. We should, indeed, remove our battleships, but we should hold the Mediterranean by flotilla forces based on Gibraltar, Malta, Egypt and Palestine. These light craft—aeroplanes, destroyers, motor-torpedo boats and submarines—would attack enemy ships of all kinds and sizes. In harbour, they could be given material cover against bombing attack, their docking needs would be small, and, therefore, the enemy would be offered no target of value for his aircraft. And what could his battle-fleet do? It could not attack Malta or Gibraltar with any hope of success. It could indeed cover its Mediterranean trade and the transport of its troops to some extent, though it might suffer considerable casualties in the process. From many points on the French and other French-owned shores, it could be attacked mercilessly by French and British aircraft and light seacraft. In fact, with no room to manœuvre, never free from the menace of attack from above, from the surface, from below, a battle-fleet could do nothing. It might, indeed, urged by the fact that a very large percentage of Italian overseas trade is external to the Mediterranean, attempt to force a passage to the oceans for its merchantmen past either Suez or Gibraltar. But if it succeeded in such mad action, it would even-

tually encounter and be overwhelmed by our undivided fleet.

We may now examine how the proposed plan would operate first in defence and then in offence. Malta might eventually fall to starvation though not to assault. As, however, it holds no key position when trade is not running its loss would not be serious. It would be recovered by the terms of the peace treaty in the event of victory. Palestine, given friendship with the Arabs, and defended by the flotilla would be unassailable. Egypt might suffer some initial loss of territory owing to attack from Libya but, provided that imperial communications were soundly organized so as to admit reinforcement of the Middle East from India, South Africa and Australasia, and provided that India were well developed for the provision of supplies, the invader should be eventually, though perhaps not quickly, thrown out. So much for defence ashore. On the sea, the modern flotilla, assailant, pervasive, evasive, profiting by opportunities of weather, darkness and an opponent's lack of protection, might be damaged or might suffer occasional defeat but would not be destroyed. It is a resilient instrument which, unlike a battle-fleet, is susceptible of continual reinforcement. In our case, possessed of but three bases stretched upon an immense line, the flotilla system indeed lacks flexibility. But it is hardly conceivable that we should not have a single ally along the Mediterranean littoral to endow us with further bases.

As to offence, we should block both exits from that sea. We should also block wide areas at either end to enemy trade and render the central area at least insecure. We should assail hostile, and protect friendly, communications across the sea from north to south. It is impossible, in the absence of knowledge as to belligerent groupings to prophesy whether or not these measures, stoutly and skilfully executed, would impose surrender upon an enemy. Probably not; as Italy, for instance,

might be receiving supplies over her northern border. It is certain, however, that they would have a powerful influence on the eventual result.

Before closing the subject, certain other relevant points may be mentioned. Gibraltar, *faute de mieux*, would have to be held as a battle-fleet base looking out into the Atlantic, and also preventing egress from the Mediterranean. Were Spain, however, counted among our enemies, and Portugal among our allies, we should probably be allowed to avail ourselves of Lisbon, as a base and, over it, we might hope to establish air-ascendancy. Moreover, from the south-eastern corner of Portugal, which is only a hundred and fifty miles from Gibraltar, we might be able to counter-attack the aerodromes and batteries of an enemy assailing that port.

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The possible intervention of Spain as a great power in the rivalries of the Mediterranean has been widely discussed. It is a matter whose possibilities we must seriously consider in our plans, for a hostile Spain would certainly be an unpleasant feature there. But it need cause us no grave anxiety. In the first place, Franco, should he win the civil war and should he feel antagonistic to us, which is doubtful, would hardly like to expose his extensive coast-line to the attacks of the two principal maritime powers of Europe. In the second place, unless France and Britain should lose the general command of the sea, or unless we " sell the pass " politically, it is not easy to see how Germans could establish themselves in Morocco or in the Canaries, or how Italians could be rewarded for their services by the gift of the Balearic Islands, which things have been suggested as possible results of Franco's goodwill. Germans and Italians could no doubt be troublesome in Morocco with their air-fleets, but can effect no occupation with aeroplanes. An army is needed for that; and its transport demands a control of com-

munications on the part of an enemy most improbable in the Western Mediterranean.

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Cyprus should be lightly garrisoned and held as a base for aircraft and sea-flotillas; but, in view of the opinions expressed above, clearly, not as a base for a battle-fleet. It might be useful to us in certain conditions; for instance as a focus of power to the smaller Mediterranean nations and a check to the Italian airport of Leros. But its chief importance is negative, namely that it would be a considerable nuisance in hostile hands.

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Now for a question of words. A responsible minister stated that we would not " scuttle " out of Malta. In this connexion, when there was imminent danger of war between Britain and Italy, and when it was entirely to the interest of Italy that the British fleet should expose itself as a target in that harbour, the Italian press, under general staff direction, was trying hard to persuade it to remain there. It sought to stir our obstinacy by saying that the British Lion would soon be " scuttling " off with his tail between his legs. Happily, we paid no attention and departed in accordance, not with dignity, perhaps, but with the dictates of common sense. On a future occasion, hypnotized by the statement of the First Lord, we might not be so sensible. Such expressions are, in any case, to be deplored. They have the unfortunate psychological effect of exciting mob impulses to demand that a leader shall be deflected from his considered course. Thus MacMahon was hustled to Sedan, unready Russians rushed to relieve Port Arthur, Franco turned aside from the probable capture of Madrid to relieve the Alcazar at Toledo. Should we decide in war to keep Malta as a battle-fleet base, we might well exhaust ourselves to extinction in trying, as a matter of

prestige, to maintain it in the face of every difficulty and danger. The attachment of too much weight to a fortress is one of the conventional methods of losing a campaign. Even to preserve Malta as a fleet-base in peace must entail a dangerous dissipation of resources. It is not only that we should squander the taxpayers' money in the construction of vast defences for what is indefensible, but what is a much greater evil, we should be sacrificing our prospect of survival to outworn traditions and to a faulty apprehension of values.

The suggestion even of a partial abandonment of Malta is shouted down as defeatism or as a danger to our prestige. Yet we still seem to stand well among the nations in spite of our hurried flight to Alexandria in 1935. The truth is that every strategic problem should, within its political framework, be examined on its merits; and, if the solution happens to be *reculer pour mieux sauter*, it should be adopted. Actually, in this case, the suggestion is one not of recoil but of a more effective distribution of force.

To summarize: The Mediterranean is a valuable but not vital channel to the East. In view of the threat of aircraft and submarines, and the absence of well-protected naval bases, its passage is denied to our commerce in war-time and it would be disastrous for our battle-fleet to dispute its possession. We should endeavour to hold it, however, in the first place by ensuring our position on its eastern littoral through a satisfactory treaty with the Arabs, and through the organized support of our Empire in the east; and, in the second place, by the operation from existing bases of strong flotilla forces.

In this connexion and with regard to maritime operations in general, we should cease to look upon naval strategy in compartments—Pacific, Atlantic, Mediterranean—but rather as oceanic or global. Viewed in this light, it can be readily seen that the Mediterranean is a convenient short cut and nothing more.

CHAPTER III

India. The Far East. Australasia

"THE British Empire, from the military point of view, is a dual Empire compound of East and West. As is natural in a realm born of the sea, the divisions are oceanic. Very roughly, the shores washed by the Atlantic and the Mediterranean limit the Western Empire, those washed by the Pacific and Indian Oceans limit the Eastern." [1] The centre of the Eastern Empire is India, a country which, including Burma, has three tremendous military problems to face. The first its own protection along 6000 miles of coast-line and 5000 miles of mountainous borderland. The second, its internal security amid an unparalleled heterogeneity of races and creeds in a continent where there is one man of the dominant race to 3000 inhabitants; and the third, the part it should play in imperial defence.

The first two problems have not changed greatly of recent years. Russia threatens no one at the moment. Menaced herself by Germany on the one side and by Japan on the other, she is creating prodigious self-sustained forces whose potentialities no seer can forecast, for they are dependent for effect upon a unity and a spirit whose presence is problematic. Russian military power is a gigantic query mark sprawling across two continents. We can say for certain, however, that she threatens no immediate danger. It is probable that in the future she will adopt the defensive militarily, while conducting a strong political, or rather ideological, offensive. Never-

[1] *Security?* (Methuen), p. 157.

theless, we cannot ignore the danger that, for the furtherance of her projects, she might, when she shall have consolidated her power, either strike at India or, as was her wont some decades ago, keep it under permanent menace. She must understand, therefore, that any attempt at penetration into Afghanistan will be treated as of old, as a *casus belli*. Otherwise, we might wake one day to find, perhaps the most powerful of armies and air-forces deployed along our North-West Frontier.

In this connexion, a word on Indianization. It is no insult to the Indian as a whole to say that the valleys and plains of India, in which the bulk of the population dwell, are no breeding ground for the warrior. Until our advent upon its border, hardy invaders had poured in successive hordes over the mountain barriers to be emasculated by heat, fever and an easily-won plenty in the lowlands and then defeated in their turn. That we escaped a like fate has been due to the gift of sea-power, which enables us to refresh and stimulate our mental and physical powers by continual reliefs and by periods of leave in distant lands. It is, in fact, the impact of geography on the nature of man which decides whether or not India shall remain for long a unified political entity. Therefore, while sympathizing with the desire of a government, representative of the people, to make their people provide mainly for their own defence, it is clear that it would be dangerous to the permanency of their system to relinquish one iota of that particular form of strength—namely British strength periodically renewed—which has for the last seventy years buttressed their frontiers. Indianization should, indeed, be encouraged on principle as part of the national development of a democratic country, but it should proceed slowly, and should be subjected repeatedly to the test of frontier service in order to gauge its efficacy, otherwise the defence of the country may be found, in an emergency, to be resting on an illusive foundation.

As to the recurrent tribal rebellions on the frontiers, of which there have been so many serious outbreaks of late, the time seems to have arrived now that every other policy has been tried and has failed, for the initiation of a policy of disarmament. The process will be slow, for it has to break down the traditions and the delights of blood-feuds and internecine strife and to defeat the greed which will seek to perpetuate the arms-traffic. It will necessitate the protection of the disarmed tribes over a long period and its cost, justifiable only on a long-range view, will be enormous. But it is clear that, without it, neither aircraft nor road-building suffice for control. The cardinal point of procedure should be the subjection of the area to complete military jurisdiction; for the weaknesses which have counteracted all our excellent military, aerial and road-making efforts in these regions have been largely due to the great diversity of authorities exercising power there, and to the infiltration of disruptive political influences from discontented or revolutionary bodies in India. Concurrently with the process, roads should be improved, and every attempt should be made to strengthen the powers and increase the sense of responsibility of the tribal leaders. On completion of disarmament, the area should be returned to political control. That was the system by which Lyautey succeeded in Morocco. His problem was simpler than ours, for Moroccan frontiers were ethnological as well as geographical, whereas, with us, tribes—Mohmands, Afridis, Wazirs, Mahsuds—live on both sides of the Durand line. In view, however, of our excellent relations with our neighbours and the desire of the Amir to gain control of his own tribesmen, it is possible that the British and Afghan governments concerned might agree to work to the common end in unison, in which case the obstacles to disarmament should not prove insuperable.

The problem of internal security may be dismissed in a few words. Its solution has been facilitated by the

efficacy of modern weapons and by the improvement of communications. On the other hand, education tends to stir up a discontent, divine perhaps but troublesome, which the press disseminates and exacerbates. Moreover, improved communications, while useful to the one side, also simplify combination on the other, and the delicate mechanisms of modern civilization lend themselves temptingly to sabotage. The balance of benefit from modern conditions lies, however, distinctly with the authorities.

The third problem, that of the rôle of India in imperial defence, has not changed essentially, but has increased in importance for two reasons: the first, that Great Britain may, in the early stages of a great war, be so intensely engrossed in the defence of London and home waters and in the struggle for air-ascendancy, that she may not be equal at that period to the provision of assistance elsewhere; the second, that certainty that, in the event of a conflict with a major power in the Mediterranean, the short connexion with Great Britain through that sea, whether as an artery of trade or a military line of communication, will be severed. Consequently, India must, until communications round the Cape shall have been organized, undertake the supply of our army in the Middle East, which, in the near future, is to include a considerable portion of the imperial reserve. For the execution of such a task, careful preparation is needed, the need being the more obvious when it is remembered that Indian forces dispatched overseas have themselves often in the past been inadequately furnished with supplies. The burden of provision must, of course, lie on the home government which, in this case, and in the exceptional case when it might be necessary to quarter the reserve in India, would have to take special precautions for the passage of troops and supplies through the Red Sea.

It is much too early to judge of the prospects of survival of India as a great democratic Dominion. It

would seem safe, however, to prophesy that she will not be anxious to see her newly-acquired freedom succumb to totalitarian or communist influences or power, and that she will, therefore, be prepared for her own sake stoutly to resist both forms of pressure, apart from any natural desire she may have to be of service to an Empire which is undertaking on her behalf one of the greatest political experiments in history with all its attendant risks. She may, therefore, be expected to provide armies, well up to the scale of her contribution in the Great War, in order to resist encroachment on either flank or to strengthen our hand in the Middle East.

In the event of a war of the first magnitude in India, whether arising out of external or internal causes, both regular and territorial divisions would be needed to reinforce the British garrison. We might, in fact, have to deploy the whole national strength. The Territorial Army should, therefore, have cadres available ready to initiate expansion on a large scale.

In this case, and in other cases of warfare against races not fully matured in the military sense, the time-factor might be of much less importance than in a European conflict. The situation would probably develop slowly to a crisis; and it should, therefore, be possible to train the Territorial Army, and to enlist and train second-line formations in time to play a part in the struggle. It will be remembered that during the Indian Mutiny the voyage of reinforcements lasted six months. To-day, if events moved no faster, six weeks only need be devoted to the voyage, leaving four and a half months available for training.

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Singapore is the greatest of the outposts of India of which the others are Aden, Mauritius and the Middle East. She is the one really good naval base we possess, because not only is she well protected and fully equipped to take and dock the largest battleships, but she is 1600 miles

distant from the nearest air-base of potential enemies. She possesses, moreover, depth in defence, the shield of a strong air-detachment provided with good aerodromes, and resources within and without, sufficient to cover a siege of almost any length. Her only defects, indeed, are an unhealthy climate, a population overwhelmingly Asiatic of 550,000 people and the great distance, 8000 miles by the Suez Canal and 12,000 miles by the Cape, from the home base. She provides at once a direct guard to the Indian Ocean and a flank guard to the Australian group. Her object is purely defensive. No battle-fleet based upon her would dare assail the Japanese in their own seas 2000 miles away. The plain facts of geography would even deny hope of success to joint British and American offensive action in that area. The situation would change utterly, however, were Japan to take the offensive, for she would discard thereby all the advantages of position, especially that of striking at short range with her aircraft, her submarines and her hydroplanes.

Hong Kong stands in a markedly different category from Singapore. Her purpose is defensive only in so far as her fortifications are intended to protect her wealth and shipping. Being only 1500 miles from Japan, she is admirably placed for offensive flotilla action against Japanese communications, and for keeping Singapore and Australia fully informed of Japanese movements.

On the other hand, Japan possesses an air-base at Formosa only 400 miles away which, though too distant as a jumping-board for severe and continuous raiding, is unpleasantly close, and offers no comparable target. Moreover, she has seized a number of small islands nearer the Chinese coast, and she is said to possess, scattered at the moment throughout the Pacific, a fishing and trading fleet consisting of some thousands of small motor-craft[1] many of which could be equipped to

[1] R. T. Barrett, *Great Britain and the East*, 19th May, 1938.

fire torpedoes or to act as minelayers. She has also seized the port of Amoy, which lies five hundred miles to the north, which she may intend to use as a base for an advance on Canton. The position of Hong Kong is, therefore, distinctly delicate. Certainly, it should not be equipped as a battle-fleet base; for offensive action by capital ships in an island-strewn area would afford to hostile aircraft and flotillas many occasions for attack. Nor, were the fortress in serious distress, should any attempt at relief be made from Singapore. It could put up a powerful resistance; but it would have to battle alone. In the meantime, should the Japanese fleet endeavour to justify its existence by undertaking dangerous adventures farther south, the watching squadrons at Singapore might find their opportunity to strike.

America has a thorny problem in the Philippines. They no longer belong to her, but they are under her protection, and their seizure by the Japanese would undoubtedly be a severe blow to her prestige. She is cut off from them both by distance—Pearl Harbour her principal naval base in the Pacific being 5000 miles from Manila, and by a screen of Japanese mandated islands. Her best chance of affording them protection, were she allied to Britain, would be by dispatching her Atlantic fleet[1] to Singapore which, by the Cape route, is but little farther from New York than from London, by basing her battle-fleet on that port and operating with a flotilla from Manila in concert with the British flotilla working from Hong Kong. A main difficulty would be to organize the islanders so as to offer resistance during the long period of the fleet voyage from America.[2] But, even if she were too late to prevent the enemy from effecting a landing, the position of the Japanese expeditionary force, with its communications threatened

[1] Now under process of revival.

[2] According to the *Statesman's Year Book*, there is in the island a regular army consisting of 4000 Americans and 8600 Philippinos, and General Douglas MacArthur, late Chief of the General Staff in the United States, is now busily organizing a national army which is to rise at the rate of 40,000 a year to 400,000 men.

by two powerful flotillas, would be distinctly precarious.

The Australasian defence problem has already been discussed to some extent. It is concerned almost entirely with the danger of Japanese aggression. But a Japanese onslaught on Australia would encounter many difficulties. It would be dangerously threatened from the west by a British battle-fleet based on Singapore, even if the latter were relatively weak, and would be haunted by the fear of American intervention from the east. Then, direct opposition would be encountered from the forward flotilla defence in the archipelagos covering the two Dominions, and from considerable shore-based air-forces which would receive reinforcements from the whole of the eastern Empire and also, probably, from Britain. The prospects of such an operation, carried out at a range of 6000 miles, do not appear bright. For the defenders, the main preparatory protective arrangements required are that Australia and New Zealand should develop their aerial forces to the utmost and, to a lesser extent, their flotilla forces, should improve internal air-communications and combine with the British Government in improving air-communications towards the Middle East. Much might depend on the possibilities of rapid concentration of aircraft to and from that quarter.

A suggestion has been advanced for the institution of a Southern Pacific Defence Board for the co-ordination of preparation for action between Singapore, Australia and New Zealand in the event of hostilities, the board to consist of naval, military and air-force representatives of the governments concerned. In this connexion, the matter of decentralization of control in general might well be examined.

In view of the independence of the Dominion Governments, the system suggested for the Pacific is that best suited to the particular area. India, Canada and South Africa are already more or less independent military units. There only remains to consider the Middle East.

It is suggested that control should be decentralized from Whitehall to an authority controlling all military, aerial and, at times of emergency, naval forces, as well as any military missions in that area. Such a plan would have the advantage of enabling all questions connected with Egypt, Palestine and Iraq to be examined in relation to the Middle East as a whole; it would give rapidity and decision to the settlement of local problems, and it would ease congestion at the Ministry of Defence. In view of the possibility of severance of communications in the Mediterranean, Gibraltar should certainly and Malta, possibly, be included in the Home unit of control. Aden, which should be endowed with a higher status, capacity and strength, should be included in the Middle Eastern unit.

PART V

General

CHAPTER I

Policy

"Lord, who shall dwell in thy tabernacle . . .?
"He that sweareth unto his neighbour and disappointeth him not: though it were to his own hindrance."—Psalm 15.

POLICY in the nature of things should precede strategy so far as the two matters are separable. This book, however, has strategy for its theme and must, therefore, discuss policy only as complementary to the main issue. Strategy has indeed not been treated entirely *in vacuo*; for, without indicating that our foreign policy has taken any particular line, important tendencies have been assumed, namely an inclination to alliance between democratic states and between authoritarian states respectively, and a general antagonism between the two groups. In domestic policy the unity of the Empire, with each Dominion master in its own house, has been taken for granted.

Actually, it is rare for British Governments to look far ahead in foreign policy. They have usually shown a preference for isolation, made possible of old by a powerful navy. When safety, based thereon, appeared to be threatened by the possible dominance of Europe by a single power or combination of powers, they sought allies, strengthened them with men and money and supported them with a fleet. That policy proved successful against Philip of Spain, Louis XIV, Napoleon and William II. Realizing the danger that a selfish or erratic ally might embroil us in war for his own purposes, we have always terminated our alliances upon the conclusion of peace. This policy, apart from its other values, has

enabled us to bring a disinterested and unpledged power to bear on the adjustment of impending conflicts, and has, therefore, tended to the preservation of peace.

Then we made a marked change in direction. We declined to follow Canning's dictum that:

"The British Government will not in any case undertake any guaranty whatever, either of territories or of internal institutions. The scrupulousness with which England is in the habit of fulfilling her obligations makes it the more necessary for her not to contract them lightly."

Instead we subscribed to the Covenant and promised to "preserve as against external aggression the territorial integrity and political independence of all Members of the League".

That pledge held two dangers. In the first place, it was impossible to honour it, for governments are bound to act in accordance with the will of the people, and people will not go to war unless their interests are directly threatened or their passions greatly excited. Therefore, England, who had long prided herself on the moral leadership of Europe, found that she could no longer scrupulously (or even approximately) fulfil her engagements. As she had originally entered upon them with good though misguided intentions, that, in itself, would have cast no slur upon her honour. What, however, seems utterly indefensible is that, having discovered her disability, she did not rid herself of the responsibility for the promise either by obtaining the necessary reform of the Covenant or, failing that, by leaving the League. Her continued acceptance of obligations which she could not (and knew that she could not) discharge was a direct cause of that disrespect for the sanctity of treaties which she deplores so greatly at the moment, and which furnishes one of the gravest threats to our civilization. "If Britain," it is said, "fails to observe

her pledges, why should we?" It is not by a road paved with dishonour that we shall reach that higher world order at which the League of Nations rightly aims.

The second danger lay, as is well known, in the stabilization of the *status quo*, qualified only by the milk-and-watery injunctions of Article 19. The results of one out of a million wars were to be confirmed for all time. Any essay to alter the boundaries so fixed was to be treated as aggression, which all members, including Britain, were to resist. Would aggression in such a case necessarily be a crime? Were peoples, were governments likely to wage crusading wars in such a cause? Hardly. Yet they were pledged to do so; and to fail were rank dishonesty. Such is the brutal dilemma with which we and others are faced. The adherence of nations to the Covenant in its present form is the mainspring of both the chaos and the moral disintegration of Europe.

The Covenant is supposed, however, to hold out the material benefits of collective security. Actually, it does no such thing, as Lithuania, Abyssinia and China can woefully attest. France, ardently anxious to organize collective security against Germany, was persuaded, at our instigation and under the banner of the Covenant, to alienate a friendly Italy and add her to the list of her enemies.

The belief in combination within the League as a cheap and effective form of collective security still persists. The citizen of a sated empire, as was pointed out in an earlier chapter, tends to apathy. Apart from that verity, however, every man, wittingly or unwittingly, seeks, for the attainments of his needs, the path of least effort. In the Briton, possessed of all requirements, the acme of desire is peace, wherein to enjoy the fruits of labour and of conquest. How can it be most easily obtained? Seemingly, by binding together for the defence of their respective territories, all those interested in the defeat of aggression, namely, the possessor-nations,

each of which would make a contribution proportionate to its size though small in relation to the force it would have to maintain to protect itself in isolation.

The issue is confused somewhat by the argument constantly adduced that, as collective security, sponsored by the League, aims at peace, it must be both a right and a righteous policy. Therefore, it claims adherents from all religious, benevolent and pacific folk, as well as from the vast apathetic body which is ready to accept uncritically any seemingly easy recipe for safety.

The prescription sounds infallible. Unhappily, Nature is a jade who rejects perfection from her system. Nations are guided almost entirely by self-interest, and will only take concerted action when it is to their common interest to do so. True, there is safety in numbers, but there lies in them also an obvious danger. The nation which has prepared to make a limited contribution to pooled security may suddenly, on a leakage of the pool, find itself exposed, with but light protection, to the wholehearted onslaught of a fully-armed aggressor.

Therefore, both on moral and material grounds we should sever our connexion with the Covenant. There is no objection, of course, to collective security. It has been, in fact, our policy to turn to it on all occasions when our position has been threatened or our offers, as an unpledged power, to stem dangerous torrents by advice and conciliation have been refused. In such cases, we have sought allies whose interests were identical with our own. The resulting conjunction we called an alliance or a grand alliance or a balancing of power. But it was, of course, collective security, so far as we could make it collective, though not consecrated by the Covenant. In future, owing to the advent of aircraft, we may have to look not to a temporary but to a permanent form of collective security.

Aggressiveness of speech and action on the part of a nation or group of nations may have the effect of tem-

porarily enforcing a form of collective security among those states which regard themselves as directly threatened, either in their interests or ideals. At the present moment (September, 1938), for instance, the military preparations and the aggressive attitude of Germany under the leadership of an ardent visionary have had this effect. Czechoslovakia is directly threatened. Russia believes that Hitler has long had his eyes on the Ukraine. France has engagements with both those countries and, for her own part, is never free from the fear of further invasion. Even Germany's best friends, Britain and Italy, have been regarding her recent actions as dangerous to the peace of Europe and as an enthronement of power-politics. The result has been a joint diplomatic approach which, without dispelling tension, has succeeded, over a period of four months at least, in averting war.

It is important not to confuse this action with collective security under League auspices; otherwise we may be led to pursue the questionable path already alluded to. The powers named merely coalesced under what appeared to be an immediate or ultimate threat to their respective ideals and interests. But, while this was going on, China was still suffering from the aggression of Japan without obtaining any of that collective security supposed to derive from membership of the League.

Whenever collective defence or collective restraint has been effectively exercised, the success gained should not be regarded as the herald of a new era, for it merely represents, as a rule, the victory of one combination of selfish interests over another. Yet it might well be turned to profit as a first step towards an improved world-order were the well-endowed proponents of international morality to seize the opportunity thus presented to establish collective justice. And were they to show clearly that they wished to exercise no monopolies, and that, though prepared to fight to the death against aggression, they were ready to submit any par-

ticular case to third-party judgment. The aggressor does not go to war for fun, but in order to remove some grievance, such as lack of food or space, which has become intolerable. Should he be compelled by events to recognize the failure of force as an instrument of remedy, his claims might be examined and, if justified, his wrongs might be righted. It is easier by far to make concessions from strength than weakness.

Collective security may, apart from alliances, be aimed at in several ways. There is, for instance, a certain degree of collective security in a wide recognition among nations of such principles as the sanctity of treaties and the settlement of disputes rather by arbitration than by force. Moreover, when a powerful nation like Britain, which stands for peace and justice, not by repeated profession but by a long moral tradition expressed through a century of domination at sea, shows herself determined to look to her own defence, she becomes the natural focus of all elements which stand upon the same ground. Whether or not the direct interest of any member of so tenuous a grouping will draw it into a defensive alliance over any particular issue will usually be uncertain. But the same doubt will afflict a potential aggressor.

What follows from all this preamble? In the first place, it is our bounden duty to our repute and also to civilization in general to insist on a revision of the Covenant, especially of Articles 10 and 16. Except in that respect, we should throw our whole weight in support of the principles of the League.

In the second place, we should adopt such appropriate agreements for collective security as lie within our capacity for observance; and, in order to render them of value, we should maintain our programme of rearmament until clear grounds shall have been established for its discontinuance. Beyond that point, we should remain, as of old, unpledged, but armed and ready to brave events

as they occur. Where our vital interests are threatened or our emotions in a great cause seriously aroused, we should seek allies whose interests or whose feelings are identical with ours.

We may now turn to the military side. The Covenant commits its signatories to fight for Spain against France or for Poland against Russia or for any other country against which a case of aggression may have occurred; but these obligations are of so indefinite a nature that it is impossible to plan seriously for them. Under modern conditions, where degree of readiness is likely more than ever to be the decisive factor, the military value of any form of collective security is doubled where combined plans have been made beforehand. This is easy enough in some cases, between France and Britain, for example, where alliance is taking a permanent shape. It is much less simple, however, in the case of sudden combinations formed to meet an emergency. It seems, then, that, wherever an identity of principles exists, and also an identity of interests, however limited, preliminary and entirely non-committal conversations might take place as to action in certain eventualities. The necessity for this will appear evident from a consideration of the military time-table which, regarded as one of the primary causes of the Great War, is as important and dangerous an affair as ever.

Prior to 1914, nations prepared their mobilization tables with meticulous care, because they knew that a few days' pull over an adversary in time of deployment might place them in an advantageous strategic position. In 1914, the same cause forced nations to issue their mobilization orders in almost insanely hurried fashion.

To-day, conditions have changed in two respects. The first that it is the rate of mobilization, rather of national power than of armies and fleets, which will count. This alteration enhances the danger; for programmes of industrial expansion will tend to work to a

peak moment of superiority when every favourable condition will have been exploited to the utmost. No government harbouring aggressive thoughts will care to allow that moment to pass without profit to their plans.

The second change is that a large part of the military strength of a nation will now be on a permanent war-footing, that is, ready to strike the moment the pistol is fired. This applies particularly to air-forces, whose readiness for action might enable an aggressor to take an opponent by surprise and either overwhelm his air-force to such an extent that the latter might never be able to leave the ground, or else crush the morale of his civil population. The assailant, having won a quick victory, might then present the *fait accompli* to the world.

Flustered by the surprise and weakened perhaps by the elimination of one of their most powerful members, states banded on a loose principle might be shocked into acceptance of the new situation. They might then expect in a near future a repetition of the assault by the strengthened aggressor which they would have to face with reduced forces. And so the process would continue to the final triumph of aggression. Clearly steps must be taken to meet this peril.

Though an air-force is a priceless asset to an aggressor, it may be equally valuable to a group banded in one shape or another, against aggression. It is so mobile and so flexible that, provided preliminary conversations have taken place and necessary arrangements for receiving and supplying the aircraft arriving from the various countries have been made, the banded states might well be able to bring superior aerial strength against the aggressor soon after he has struck his initial blow. Therefore, even when there is no immediate danger of aggression, and when the bonds of mutual interest are slight, the preliminary talks and organization are advisable. They

will prevent the enemy from gaining an overwhelming advantage in time.

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While we are arming, while we are seeking appropriate allies, it still remains our business to explore every avenue which may lead to general amity. We have suffered greatly in recent years from a refusal to consider valuable suggestions, such as the abolition of bombing, because they happen to emanate from a state possessed of alien political ideals. It would seem desirable, where proposals, whatever the source, coincide with the general trend of desire, that the originator should be asked what arrangements he envisages for their implementation; and, if they seem reasonably sound, he might be asked to call a conference upon them. For example, Germany is regarded at present as the danger-spot of Europe. But it might occur at any moment to Hitler that his country is geographically more vulnerable to air-attack than any country except England; and he might, therefore, renew his offer to abolish bombing. Then, his interests having, in one important respect, become identical with those of other nations, and a common table having thus been found, it might be possible to discover other points of agreement tending to the construction of the edifice of goodwill and peace.

We may now turn to the situation of Britain in the existing turmoil of international politics. In the first place, we have a treaty with France. We are unquestionably correct in departing from our traditional policy of isolation to that extent, for France and Britain are, since the advent of aircraft, strategically one country. There is some danger, however, in the connexion, for France is weak in her political and financial structures, and she is failing now to close her ranks even under imminent military menace. That makes it more essential than ever that we should close our own ranks and place our defences in a thorough state of repair.

In the second place, Belgium is neutral, her independence being guaranteed by her three great neighbours. So long as neutrality is maintained, that arrangement suits us excellently, for she interposes a buffer state between us and potential enemies which is of particular value in the matter of range. We might, indeed prefer that she and Holland were grouped with France and Britain in a western pact for mutual defence, for that would enable us to make those preliminary preparations together, the value of which has been repeatedly stressed in this book. Apparently, however, those two countries do not consider that there is a sufficient identity of interests among the peoples concerned to justify so important a step.

Then Portugal—most ancient of allies—is still bound to us; and, in existing conditions, the connexion might be of considerable mutual benefit. Whatever force we may exert to protect our own communications, will also protect the communications of the Portuguese Empire. We shall be able to help her, too, in the immediate defence of her considerable colonies. In return, as already stated, she can loan to us Lisbon as a battle-fleet base of very great value, and allow us the use of aerodromes from which forces assailing Gibraltar might be counter-attacked, or other aerial operations undertaken against a hostile Spain. For Portugal to contract any alliance hostile to Britain would be to sign the death-warrant of her independence.

We have two other commitments, apart from mandates, and they are our alliances for mutual defence with Egypt and Iraq. These alliances safeguard our maritime and aerial routes to the East and the Kirkuk oil-supply; but, to have confidence in them, it is essential that we come to a satisfactory agreement with the Arabs of Palestine.

With Russia, we have no immediate causes of friction so long as she prevents any propagandist activities of the

Comintern in the Empire. We may, in fact, find our interests identical in certain theatres: the Far East, the Mediterranean, Central Europe. Without, therefore, ever placing much reliance on aid from a state in which military and political purges are endemic, and without entering into any arrangement which could possibly be interpreted as being an entente or alliance and thus suggest the word *Umringung* to Germany, we shall be well advised to maintain sound relations with her.

In Spain, we have held with skill and patience to our policy of non-intervention, under provocation from many sides. We cannot do better than pursue the same course and hope for a speedy and happy issue.

With the United States, we should conserve our traditional friendship cemented by common ideals and a common moral outlook. But we should neither ask nor expect anything more than a general sympathy should we have the misfortune to be drawn into another great war.

In brief, then our policy should be: a renunciation of the militant articles of the Covenant, combined with support of the other principles of the League; a firm, proclaimed alliance with France for mutual defence; similar alliances with Holland, Belgium and Germany, should those countries desire them; an Anglo-Italian treaty as arranged; and the maintenance of all our clearly-defined commitments. Otherwise, we should keep free from pledges. It was our position as an unpledged power that enabled us to intervene in Czecho-slovakia.

So far is fairly clear. Beyond this line, our policy must depend for success on skilled opportunism based upon abiding principles, of which no better example could be furnished than the action now being taken in the Czecho-slovakian affair: a firm stand against aggression coupled with a skilled and earnest attempt to discover a peaceful solution.

As this book goes to press, the news of Mr. Chamberlain's great achievement is announced and is welcomed with a world-wide, tumultuous enthusiasm. Such an occasion (as the Prime Minister foresees) may well be used as the starting-point for the organization of general appeasement both political and economic. Nor could there be a more appropriate moment; for, not alone Central Europe, but also Spain, China and Palestine are testifying to the ineptitude of force as an instrument for the solution of refractory problems. It is possible now that the dictators, who have so many great achievements to their credit in domestic policy, may see the dangers implicit in their foreign policies and be ready to discard them for seats at a table from which the threat of sanctions has been removed, where, perhaps, America may preside and where consultation, conciliation and third-party judgment may yet take the place of war.

To imagine that these things will come to pass immediately would be a fantastic dream, but there is in the world at the moment an overwhelming desire on the part of all for peace, and the needy nations will therefore find that their more fortunate brethren will be ready for a sacrifice of territorial and economic advantages provided that weapons are laid aside and reason, not force, is made the instrument of change.

CHAPTER II

Conclusion

THE two immediate perils to Britain and to the peace of the world lie in the defencelessness of London, and the exposure to destruction of the British battle-fleet at Malta. These deplorable and obvious weaknesses in our armour present alluring temptations to potential assailants. Aggressive totalitarian states look upon the British Empire as the principal obstacle to the achievement of their desires for expansion and for improved standards of living. They see before them, in the one case, a capital highly organized, populous, rich, vital; and, in the other case, the half of that British navy which has ruled the seas for centuries: both targets lying open to blows which, if prepared secretly and delivered suddenly and forcefully, could hardly, they think, fail of immediate success.

It would probably come as a surprise to many Londoners to learn that they are far more dangerously exposed to aerial assault than were the Abyssinians whom they pitied so greatly and so ineffectively a short three years ago, and that the City, on any day at noon, might be the scene of an irreparable disaster tragic beyond conception. The shock to London and the starvation in that town and its dependent area, caused by the destruction of supplies and of the arrangements for their distribution might well prove beyond the power of resistance of an unprepared people. Consequently the completion of the defences of the capital in their three forms—aerial, anti-aircraft and A.R.P.—must take pre-

cedence of all other needs; for, where the heart is destroyed, the organs and the limbs cease to function. Fortunately, day by day, we see that this truth is becoming more and more strongly realized.

The crippling or the destruction of the fleet in Malta would not necessarily prove a mortal blow. But it would be terribly damaging to our prestige, it would endanger our naval supremacy, it might cause wavering Mediterranean powers to drop down on the wrong side of the fence, and it would give complete control of the middle sea to our opponents. Replace the battleships and the cruisers there by flotilla craft, and both the temptation and the danger vanish.

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The measure of our defence problem is given by the magnitude of the military defence budget—1½ milliards sterling (and more to come), spread over 5 years. Hard thinking is necessary before we allow ourselves to become fully involved in this immense expenditure; for a faulty direction given at the outset will not be easy to remedy. Once the wheels are geared to a particular line of policy, they will be difficult, in the event of a change of opinion, to unmesh. New plants will be in operation, and a whole horde of new interests vested in the completion of the original plans will have been enlisted. For this reason, and for others already stated, the institution of a Ministry of Defence has become an imperative necessity. It will entail some sacrifices of political patronage, of political prospects, and of the individual independence of the war-ministries and the Services; but in a worthy cause. The Government have the power, if they have the will, to settle the matter in an hour. They may, indeed, encounter opposition from the former First Lords and other connexions of the Admiralty, but the support they will receive in both Houses and from public opinion will be overwhelming. When the Ministry is in existence, all the remaining

problems discussed in this book, in so far as they are directly connected with the fighting forces, will come under expert and impartial examination by a single general staff.

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Although the foregoing pages make it manifest that the British Empire is already faced with problems of a size and a complexity undreamed of by our forefathers, it is certain that the future, fraught as it is with the probability of the invention of new weapons, has in store many developments against which the most careful of present prevision and preparation may prove abortive. Consequently, in the course of a campaign, improvised and perhaps hurried action, both operational and industrial, will often be necessary and, if it is to take a sound direction, will need a tried foundation on which to plan. That can be found only in those ancient principles whose validity, having, as has been shown, survived intact the most radical change ever known in warfare, may now be safely trusted for all time.

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In our past history, until the dawn of the twentieth century, the chief, initial aim of the fighting forces was the attainment of the command of the sea. That command, owing to the advent of warfare in three dimensions, is unlikely ever to be completely realized. Moreover, though still vitally important, it has, as an objective, been forced into second place. For now the first aim of strategy is ascendancy in the air which is, itself, the primary pre-requisite for maritime command. To its achievement, both navy and army must contribute, negatively and positively—negatively, by a ready sacrifice of their individual interest in favour of those of the air-force [1] and, positively, by action, such as the gaining of ground, helpful to aerial operations. Without it, they

[1] The recent decision of the Navy League and the Air League to collaborate is noteworthy and wholly admirable.

will be immobile and impotent; and without it, the whole country they are designed to protect will be exposed to havoc and starvation. This revolutionary change must be expressed in all our preparations, our plans and our actions if we are to display that strength which is the best curb to an intending aggressor or, indeed, if we are to render, as of old, a good account of ourselves in battle.

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Broadly, at the moment, there are two opposing groups of nations: A, the possessor-nations, which are also the democracies, and B, the needy nations, which are also the totalitarians. Russia furnishes an exception, being at once a possessor-nation and totalitarian, but it may be included (with a query mark attached) under group A.

There are also two opposing groups among the instruments of war—those of attack and defence. The former fall naturally to group B and consist of—bombers, submarines, tanks, guns . . . working by speed and shock with shattering power. The latter fall to group A and are composed of—fighters, fortifications, A.A. defence, A.R.P. . . . weapons which, in combination, are immensely difficult to overcome if fully organized.

Given that the forces on either side are evenly balanced and that both are equally prepared, the collision, when it comes, will, seemingly, be one of irresistible force against immovable rock. The resultant crash, without affording benefit to either belligerent, might shatter the base of civilization and bring tragedy to millions of homes.

Strategy, however, does not operate in such fashion. It works not in three dimensions but in four. Time is the vital factor. Only when the aggressor fails to forestall his intended victim, will the concussion have a negative outcome. Should he strike his blow before his opponent's normal defensive arrangements are complete or, more effectively still, by surprise prior to the declaration of

war, he will have every prospect of swift and overwhelming victory. Where he sees no such opening, he will postpone his stroke.

Fortunately, it is unlikely, if for geographic reasons alone, that an aggressor—either group or nation—will, at the outset of a war, be equal to eliminating more than one member of the opposing group. Hence time should be available for the combination of the remaining members of the group and also for the mobilization of world opinion should the assailant, in his opening stroke, have borrowed from the methods of the assassin.

Of unhappy augury is it that, from the composition of the opposing groups, our geographic relations to potential adversaries and our lack of preparation point to the British Empire as the member likely to be chosen for elimination.

The Government do not realize the implications of national war. A state to-day must be as ready and as fully equipped as an army or a fleet. A commander in the field makes his plans and preparations and then launches his force to the fight. In the succeeding chaos, when communications are broken and trusted leaders are falling, he knows that he can affect the battle only by sending up supplies and reinforcements, and that the struggle must run its course influenced largely by the outcome of local actions.

The Government should act in similar fashion. They should arrange that the state goes into action fully prepared to operate in accordance with a considered plan. Just as in the field, disorganization of communications and general chaos will set in and direction will be taken out of their hands to a great extent. Their task will then be to handle all the resources of the state outside the battlefield so as to afford the utmost support to the fighters and to the cause in general.

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If British citizens, having read these pages, still

question the need of preparing themselves spiritually, physically and materially for defence, let them ask themselves what action they took with regard to the fleet of a defeated Germany. Then let them inquire in their minds what a conqueror will do to Britain. The answer, they will discover, is that, having mulcted us of our fleet, he will by the act, or the mere threat, of cutting off our food-supplies, control not only our policy, but our every action; and that without the need of keeping a single soldier on these islands except for purposes of observation. Incredible as it may seem, once the decision has been reached, no fierce courage, no iron resolution will avail to redeem initial failure. Let us take warning from the fate of opposition parties in Russia, Germany, Italy. *Vae Victis* indeed! We should be a nation enslaved.

Is it into this pit of irredeemable disaster that our boasted freedom is leading us? Surely no Briton will suffer himself or his country to be so degraded, nor condemn his children to such a fate! Surely labour and capital, left and right, pacifist and militarist, will unite in a sturdy determination to avert the peril. It is for the Government to warn the people in clear, unmistakable terms of the issues at stake, so that if, on the one hand, democracy is to die (for, with our death, it dies, at least in Europe) it must, upon its own shoulders, bear the responsibility; if, on the other hand, it is to survive, as it must and will, then the canons and the precepts necessary to its survival should be established clearly and put forthwith into practice. The period during which we shall have a choice, during which we may master our destiny, is limited; but to what extent it is impossible in an unsettled world to prophesy. At least it is certain that, where so much remains to be done, we should, one and all, be up and doing with all the power that is in us. But the Government or, better still, the voice of the united parties should give the lead.

APPENDIX

LIST OF PROPOSALS

1. That a small Committee of the Cabinet be formed with the special rôle of ensuring the quick and efficacious dispatch of the business of government.

2. That a Ministry of Defence be instituted, containing a combined general staff, and that the three existing war-ministries be reduced to sub-ministries.

3. That the principal stress in our defensive arrangements be placed on the defence of London and that, connected therewith, our policy of aerial retaliation, with its need for large numbers of bombers should, to a large extent, be replaced by one of defence with a need for numerous fighters.

4. That civilians, however employed, be asked to undertake their own A.A. defence in Great Britain.

5. That a Ministry of Static Defence be instituted to control A.A. defence (except as regards operations) and A.R.P.

6. That, in view of the hazards which battleships and large cruisers incur in narrow seas, the emphasis in new naval programmes be laid less upon their construction than upon that of flotilla craft.

7. That the battleships and cruisers now based on Malta be replaced in the Mediterranean by a powerful flotilla of small craft.

8. That ascendancy in the air be regarded as the first aim of strategy.

9. That the proportion of aircraft permanently assigned to the navy and army respectively, should be kept at a low figure.

10. That, in order to facilitate the concentration of the aerial strength of the Empire on any front, and also the development

of civil aviation, communications, including sea-dromes, should be developed to the utmost.

11. That a further trial should be given to airships, and that command in the air, air-supply and the parachuting of troops should be diligently practised.

12. That tanks be treated not as an instrument of assault but as a weapon of opportunity, and that they be employed against weakness rather than strength and against troops in movement rather than troops in position.

13. That the Cardwell system should be abolished and that two categories of service, long and short, be introduced for the army—a system which will, as the size of the reserve produced by the short-service army grows, lead to the gradual reduction of the Territorial Army to cadre.

14. That a voluntary National Register be introduced, and that, thereafter, a call be made to National Voluntary Service on a scale appropriate to the emergency.

15. That an immediate examination be made into our man-power to ascertain its strength and how it should best be allocated, and to discover to what extent it will be possible to assist a continental ally with an army after other military, maritime, industrial, commercial and agricultural needs shall have been satisfied.

16. That an inspector-general be appointed for the army.

17. That the cadet movement should be strongly encouraged.

18. That the Government lend their cordial help to everything that tends to improve the physique and the adventurous spirit of the youth of the nation.

19. That larger reserves of food, oil and certain other necessary raw materials be maintained, and that the Government insist on British imports being carried in British ships to a much greater extent than is the case at present.

20. That the fighting forces in the Middle East be organized as a separate combined command.

21. That India be organized as a supply base for the Middle East and the Far East.

22. That, in connexion with A.A. defence, A.R.P. and the production of munitions, the question of the relief of operators in areas under continual attack should be considered.

23. That in every Government department and in the fighting forces, the question of time be studied and re-studied; as regards the former, more especially in the departments of design and manufacture and, as regards the latter, particularly in connexion with collective mobility, including the chain of command and the issue of orders.

24. That every endeavour should be made to effect a quick and satisfactory solution of the problem of Palestine preferably on the lines indicated in Part IV, Chap. II, of this book.

25. That we adopt and adhere to the principle that we enter into no engagement which we are not sure that we shall be able to fulfil. And, further, that we keep all commitments under close observation so that, where conditions change, we may amend them accordingly.

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INDEX

Aboukir, 22.
Abyssinia, viii, 34, 76, 98, 128, 138, 141, 184, 185, 208, 234, 313.
Aden, 158, 291, 303, 307.
Admiralty, power of, 173–7.
Afghanistan, 301, 302.
Age, and command, 64–5.
Air-attack in cities, 253–4.
Aircraft, 128–56.
— and Dominions Defence, 180.
— and Mediterranean, 286.
— attack on naval bases, 158–60.
— carriers, 157.
— choice of target, 151–3.
— civil, 153–4.
— exclusion from warfare, 138.
— fire-power, 144.
— in future warfare, 143–56.
— in Great War, 131–6.
— in recent campaigns, 139–42.
— naval requirements, 161–4.
— powers of, 129–3.
— production of, 128–9.
— range, 144.
— shock strategy, 155–6.
— simplification and standardization of, 153.
— use of, 186–7.
— vital factor, 325–6.
Air force, 318.
— and army, 178–88, 192.
— and defence, 148–51.
— and navy, 157–77, 190–1.
— flexibility, 143.
— object of, 145–51.
Air Raid Precautions, 137, 147, 211, 249–66.
— by civilians, 216–9.
— shelters, 258–60.
Air-raids, 136–9.
— civil, 181.
— fire-control, 261–2.
Airships, 172–3.
Aisne, 52.
Alcantara, 16.
Alexander, 65, 71.
Alexandretta, 49.
Alexandria, 290, 291, 292, 298.
Allenby, 13, 70, 134, 149, 164.
Almaraz, 16.
America, 234, 321–2.
— and Philippines, 305.
— industrial mobilization, 246–7.
American Neutrality Act, 237, 241, 242.
Amery, 200.
Amherst, 112.
Amiens, 74.
Amoy, 305.
Anti-aircraft artillery, 182.
— defence, 181, 210–21.
— guns, 212.
— searchlights, 212–3.
Anti-tank guns, 80, 88, 91, 92.
— rifle, 44.
Arabs, 282–6, 289, 295, 298, 321.
Arbitration, 3, 316.
Argenteau, 58, 59.
Armaments, defence budget, 324.
Army, and air force, 178–88, 192.
— need for strength, 69–71.
— short service system, 271–3.
Arras, 135.
Assals, 291.
Attlee, Rt. Hon. C. R., 202.
Australasian defence, 304, 306.
Australia, 182, 293.
— and Japanese menace, 169.
Austria, German invasion of, iv, v
Automatic rifles, 42.

Badajoz, 16.
Badoglio, 34, 98, 208.
Baghdad, 50, 284.

Balance of power, 316.
Balbo, 292.
Balearic Is., 296.
Balfour Declaration, 282.
Balloon-aprons, 211, 214.
Battleships, *v.* flotillas, 167–70.
— big or small, 170–1.
— future developments, 172.
— in Mediterranean, 292.
Beach, Colonel, 279.
Beatty, 122.
Beaulieu, 16, 57–60, 65.
Beersheba, 133.
Belgium, 320.
Benedek, 29.
Bilbao, 21, 141.
Bloch, M., 67.
Blockade, 37, 107–8.
Blücher, 16.
Bombing, abolition of, 319.
— by aircraft, 137–9.
Bombs, 41, 250–1, 252.
Boscawen, 112.
Brabazon, Col. Moore, 207.
Bren automatic rifle, 45, 94.
Brindisi, 103.
Browning, semi-automatic, 45.
Butler, Professor Nicholas Murray, 114, 192.
Byng, 164.

Cadet movement, 278.
Cambrai, 17, 74, 77.
Canada, 306.
Canaries, 296.
Canning, 108, 311.
Caporetto, 17, 50, 75.
Cardwell system, 270, 272, 273.
Cartagena, 113.
Cavalry and aircraft, 139.
Ceuta, 291.
" Chain " system of command, 28.
Chamberlain, Neville, 322.
Chatham, 113.
Chetwode, Sir Philip, 68.
Chief of Staff Committee, 209.
China, 128, 138–41, 184 313, 315.
Churchill, Winston, 202.
Civil aviation, 153–4.
Clausewitz, 3, 7, 64.
Clemenceau, 37.
Clive, 114.
Collective restraint, 315.
Collective security, 313, 314, 315, 316, 317.
Colli, 60.
Collingwood, 103.
Command, art of, 61–73.
— suggested training for, 72–3.
Communications, attack on, 49–52.
— effect of aircraft on, 181.
— maintenance of, 100–4, 125.
Concentration, 13, 33, 39, 58, 163, 294.
— aerial, 134–6.
Condé, 65.
Conscription, 243.
— industrial, 243–8.
Convoy system, 121, 150.
— and airships, 173.
Co-operation, 29, 59, 111–5, 187–8.
— army and air force, 178.
— navy and air force, 157.
Co-ordination, 30, 115, 189–209.
Corbett, Julian, 111.
Coronel, 164.
Cotton, 233.
Covenant of the League, 312–7, 321.
Coventry, 152.
Cradock, 101, 104.
Crimea, 112.
Cruisers, size, 171–2.
Ctesiphon, 133.
Cyprus, 299.
Czecho-slovakia, 315, 321.

D'Aché, 113.
Dardanelles, 112, 115.
Davis, President, 49.
Decontamination, 262.
Defence budget, 324.
— Minister for the Co-ordination of, 195, 196, 209.
— Ministry of, 115, 177, 192–209, 220, 247, 307, 324.
— Ministry of State, 220, 265.
Demolitions, strategy of, 82.
Depth-charges, 121.
" Despatch " Committee, 200–1, 220.
Discipline, 36.
Dive-bombing, 213.
Drake, 112.
Dreadnought tanks, 87.
Dresden, 23.
Dundas, 113.
Dunkirk and air-raids, 138.
Dupleix, 113.

Economy of force, 13.
Egypt, 182, 282, 283, 288, 291, 292, 294, 295, 307, 320.
Emden, 104, 167.
Eugène, 29.
Evacuation, 256–8.

Falklands, 164.
Far East, 169, 304.
Finance, 239–42.
Fisher, Lord, 115.
Flexibility of air-force, 143, 164.
Flotillas, 167–70.
— for Mediterranean, 294–6.
Foch, 70, 203.
Food supply, 227–9.
Foreign policy, 313.
Fortresses, 52–5.
Four-dimensional strategy, 7, 61.
France, and Covenant, 315.
Franco, 95, 97, 296, 297.
Franco-British alliance, 319–20.
Fuel supply, 228–30.
Fuller, General, 74.

Garibaldi, 101.
Gas, 18, 139, 251–2, 261.
Gaza, 133.
Geddes Committee, 205.
German air fleet, 175.
— air-raid shelters, 254.
— " Four Year Plan ", 176, 234.
— home front, collapse, 226.
— influence in Mediterranean, 296.
— naval strength, 176.
— roads, 97, 98.
— submarines, 119–23.
Germany and Czecho-slovakia, 315.
— and future policy, 319.
Gibraltar, 158, 159, 286, 289–91, 293, 294, 296, 307, 320.
Gough, 11, 13, 164.
Grigg, Sir Edward, 202.

Haifa, 282, 284, 290, 292.
Haig, 29, 76–8.
Hailsham, Lord, 195.
Haldane, Lord, 207.
Halifax, Lord, 223.
Harper, Admiral, 71.
Henderson, Col., 17, 31.
High Seas Fleet, 122–3.
Hindenburg, 71.
Hindenburg, 172.
Hitler, 4, 317, 321.
Holland, 109, 322.
Home Front, The, 223, 225.
Hong Kong, 304–5.
Hood, 113.
Hood, 160.
Hotham, 32.
Hötzendorf, Conrad von, 70.
Howe, Lord, 62.

Imperial Defence, 267–307.
— College, 208.
— Committee of, 114, 193–6, 208.
Incendiary bombs, 252–3.
India, 182, 299, 306.
Indian army service, 271, 272–3.
Industrial and Economic Front, 225–48.
— mobilization, 242–8.
Infantry, 86–90.
— and aircraft, 139–40, 182.
— and weapons, 41–6.
Initiative, 23–24.
Inskip, Sir Thomas, 196.
Interceptor machines, 151, 211, 214.
Iraq, 307, 320.
Iraqi pipe-line, 282, 288.
Isolation, 311, 319.
Italy, 184, 233, 296, 313.
— forces in Libya, 291.

Jackson, Stonewall, 14, 31, 50, 64.
James, Wing-Commander, 190.
Japan, 169, 170, 172, 234, 293, 304–315.
Jena, 32.
Jerusalem, 50.
Jews, 284–8.
Johnson Law, 242.
Joint Planning Committee, 194.
Jutland, 71, 101, 128, 175.

Kellerman, 56.
Keyes, Sir Roger, 190.
Kitchener, Lord, 62.
Kurdistan, 141, 192.
Kut, 23.

Labour Party, 207, 280.
La Bourdonnais, 113.

League of Nations, 4, 284, 285, 312–4, 316, 321.
Lee, 14, 21, 49, 64.
Leipzig, 23.
Leros, 299.
Libya, 291–2, 295.
Liége, 37.
Lisbon, 320.
Lithuania, 313.
Lloyd George, 194, 225.
Lodi, 59.
London, and air-raids, 50, 136, 146, 148, 150, 153, 210, 221, 254, 265–6, 323–4.
London Treaty, 124.
Louis XIV, 311.
Low-flying attack, 213.
Ludendorff, 4, 11, 13, 25, 49, 71, 76–8, 163, 226.
— on qualities for command, 61.
Lynch, Major-Gen. G. A., 45.

M'Clellan, 14, 18, 21, 64.
M'Dowell, 14.
Machine-guns, 41, 43, 94.
MacMahon, 297.
Macready, Colonel, 270.
Maginot line, 54.
Mahon, Lord, 113.
Malta, 151, 152, 158, 159, 286, 290, 291, 293, 294, 295, 297, 298, 307, 323, 324.
Man power, British, 269, 275–7, 280–1.
Marlborough, 29, 52, 64.
Marmont, 15, 63.
Marne, 26.
Martel, Col., 99.
Massena, 17.
Maubeuge, 53.
Maurice, Sir Frederick, 112.
Mauritius, 305.
Mechanization, 74–99.
— and strategy, 81.
— and tactics, 85–99.
Mediterranean, 286–98, 324.
Megiddo, 13, 34, 134, 149.
Merchantmen, 164–6, 233–7.
— Mediterranean in wartime, 289.
Messimy, 208.
Middle East, 307.
Middleton, Lord, 114.
Milne, Lord, 195.
Minefields, 121.
Mobility, 25–8, 60.
— and supply by air, 185.
— naval, 105–7.
Mobilization, rate of, 317–19.
Moltke, 204.
Mond-Weir Committee, 197, 205.
Montcalm, 64, 112.
Montenotte, 16, 58.
Moore, Sir John, 112.
Morale, 35–8.
Mordacq, General, 199.
Morocco, 296.
Mortar, 42–4.
Mottistone, Lord 114.
Müffling, 31.
Munitions, Ministry of, 200–1, 247.
Mussolini, 4, 138, 155, 291–2.
Mustapha, 113.
Mustapha Kemal, 71.

Napoleon, 7, 11, 13, 16, 22, 23, 26, 27, 39, 47, 52, 62, 64, 66, 68, 71, 109, 203, 311.
— Campaign in N. Italy, 55–60.
— on qualities for command, 61.
National Register, 276, 280.
— Service Ministry, 200.
Naval and aerial power compared, 131.
— bases and air attack, 158.
— — and bombing, 151.
— — Mediterranean, 291.
— strategy, 100–10.
Navy, and air force, 157–77, 190–1.
Nelson, 29, 32, 71, 102, 103, 112.
New Zealand, 306.
Nile, 29.
Nivelle, 37.
Norreys, 112.
North-West Frontier, 300–1.
Numbers, 38–46.

Offensive, principle of, 19.
— *v.* defensive, 20–4.
Offensive-defensive, 22, 150.
Oil. See *Fuel.*
Osman Pasha, 23.

Palestine, 182, 184, 282–6, 288, 294–5, 307, 321.
Parachutes, 182–4.
Passchendaele, 190.
Peace, attainment of, 313–4, 319, 322.

Peel, Lord, 282, 284.
Penn, 112.
Pétain, Marshal, 29, 192.
Petrol. See *Fuel*.
Philip of Spain, 311.
Philippines, 305.
Piali, 113.
Pitt, William, 13.
Poona, 23.
Policy, 311–22.
Porter, General, 15.
Portugal, 206, 320.
Potash, 231.
Poulain, Capt., 149.
Power-politics, 315.
Profiteering, 245.
Propaganda, 8, 37.
Pursuit, principle of, 31–4, 134, 184.

" Q " ships, 121.
Queen Elizabeth, 106.

Raleigh, 112.
Raw materials, 232–5.
Rearmament, 317.
Rennenkampf, 25, 49.
Reserves, food, 227–9.
— fuel, 230–2.
— minerals, 233.
Richmond, 14, 49.
Richthofen, 136.
Rifle, 43.
Rifle-grenades, 41.
Riga, 17, 75.
Robertson, Sir William, 71, 115.
Royal Air Force, 132. See also *Air Force*.
Royal Flying Corps, 131.
Royal Naval Air Service, 131.
Russia, 234, 319, 315, 321.

Sadowa, 29.
Salamanca, 16.
Salisbury, Lord, 194.
Salisbury Committee, 195, 205.
Samson, 104.
Samsonov, 25, 49.
Scapa Flow, 103.
Saunders, 112.
Schlieffen, 24.
Searchlights, anti-aircraft, 212–3.
Security, principle of, 18.
Selborne, Lord, 114.
Self-sufficiency, 233–5.
Shahur Tangi, 141.
Shipping, 235–9.
Shock strategy, 75, 77, 154–6, 163, 187, 217–8.
Silent approach, 213.
Simonstown, 160.
Singapore, 102, 105, 127, 158, 169, 293, 303–5.
Somme, 135.
Soult, 15, 63.
South Africa, 306.
Southern Pacific Defence Board, 306.
Spain, 36, 80, 95, 97, 108, 128, 138–41, 149, 153, 212, 213, 214, 289, 291, 296, 320, 321.
Spray, aircraft attack, 213.
Stanhope, Colonel, 112.
Strachan, 113.
Strategy, 11, 46–55.
— aerial, 129.
— and political interference, 49.
— co-operation of naval and military, 111.
— naval, 100–10.
— time factor, 326.
Sturdee, 105.
Submarines, 40, 119–27, 150, 186.
— French, 288.
— Italian, 288.
Sueter, Admiral, 132.
Suez Canal, 282, 287, 288, 292, 294.
Suffren, 114.
Supply and transport, 96–9.
— by air, 184–6.
— Ministry of, 199–200, 247.
Surprise, 16, 37, 60, 75, 77, 84, 326.
Syracuse, 291.
Syria, 282.

Tactics, 11.
Tally, 113.
Tanks, 74–80, 86–91, 92–4.
Tannenberg, 25.
Taranto, 103.
Taylor, Vice-Admiral, 191.
Tel Aviv, 315.
Tel el Kebir, 32.
Territorial Army, 271, 273–7.
Three-dimensional strategy, vi.
Timber, 230.
Togo, 104.
Torres Vedras, 17.

Totalitarian governments, iv, 38, 198.
— and self-sufficiency, 233–5.
— attitude to Britain, 323.
Townshend, 34, 133.
Trade, protection of, 164–7.
Trafalgar, 29, 101, 109, 110, 174.
Transport, 96–9, 239.
— by aeroplane, 141–2.
Trønchard, Lord, 195.
Tripoli, 291.
Turenne, 52.
Two-dimensional strategy, vii.

Ukraine, 315.
Ulm, 47.
United Office, 196, 209.

Venables, 112.
Verdun, 37.
Vernon, 113.
Villars, 64.
Vittorio Veneto, 134.
von Sanders, 164.
von Spee, 101, 104.

War, aim of, 12.
— averting, 4–5.
— human factor in, 9–10.
— nature of, 3–7.
— principles of, 11–60.
— study of, 7–10.
Washington, 35, 50.
Waterloo, 32.
Weapons, 38–46. See also *Anti-aircraft* and *Anti-tank*.
Wellington, 15, 17, 26, 51, 52, 63.
Wentworth, 113.
Wetzell, 76.
Weygand, Marshal, 269.
William II, 311.
William of Orange, 35.
Wolfe, 64, 112.
Wolseley, Lord, 115.

Zionists, 283.