THE RESTORATION OF ENGLAND'S SEA POWER

A Few Press Opinions of the First Edition of this Book

THE TIMES: "He (Captain Acworth) undoubtedly poses some awkward questions in relation to the present naval and air policies."

THE TIMES LITERARY SUPPLEMENT: "The book is vigorously and incisively written. It gives food for much thought, and those who dissent from the conclusions must furnish adequate answers to the reasoning."

DAILY TELEGRAPH: "As a warning of the grave risks we incur by failing to maintain adequate naval strength the book is timely and valuable."

MORNING POST: "One may disagree with the author over several matters, but his arguments are so powerful as to be difficult to refute. His case should be examined by all thinking men, and particularly by the authorities, for Captain Acworth claims to give us security at little over half the cost of our present insecurity."

NEWS CHRONICLE: "This is a powerful and disturbing book by one of the most acute naval minds in the country."

YORKSHIRE POST: "Captain Acworth's plan of construction will probably weather the storm of controversy which it will undoubtedly arouse."

DAILY MAIL: "Captain Acworth is the first naval critic to deal seriously with the dangerous effect on our British defences of the White Paper Policy in India. His examination of what would have happened, had the Pacifists a year ago had their way and forced our weak Navy into war with Japan, deserves the closest attention."

SCOTSMAN: "Captain Acworth's views may be highly controversial, but they are supported by his persuasive arguments, which, at the least, make a strong case for a serious reconsideration of our position in regard to the vital problem of national defence."

OBSERVER: "The book ought certainly not to be ignored, for it is a notable contribution to a matter that, in the last analysis, affects everyone. It is destructive in its criticism, but it is also constructive."

PORTSMOUTH EVENING NEWS: "Is the Royal Navy to-day in a position to defend our overseas possessions and to ensure our food supplies? The answers the author gives are alarming and altogether out of keeping with the general, and we might almost say the popular, view on these problems."

WESTERN MORNING NEWS: "*The Navy and the Next War* is described by the author himself as a sequel to his former book, *The Navies of To-day and To-morrow*. The latter volume attracted almost world-wide attention at the time it was published."

BIRMINGHAM POST: "Many of his facts and figures are startling, and it is plain that those who resist his conclusions will have to argue and not merely to deny."

ARMY AND NAVY GAZETTE: "Captain Acworth surveys the whole field of national defence. His case against the efficacy of air control in Iraq is complete."

LLOYDS LIST: "In his opening chapters he successfully challenges the exaggerations indulged in by certain air enthusiasts."

DAILY MALTA CHRONICLE: "A grim picture of a naval war between Great Britain and Japan in 1936 is drawn by Captain Acworth."

JOHN O'LONDON'S WEEKLY: "The title is perhaps unfortunate. It suggests that the author is a fire-eater who thinks war the noblest of human activities. He is nothing of the sort. On the contrary, nobody

could speak with greater horror and indignation of the sacrifice of human life that filled the terrible years 1914-18."

NATIONAL REVIEW : " It is refreshing to meet with a writer who knows his own mind and views his problems in the light of common sense. . . . This is a book for Bishops and for all who preach peace where there is no peace and substitute sentiment for reason."

LISTENER : " The book, written in a clear emphatic style, is stimulative to thought over a wide field of naval considerations."

SUNDAY TIMES (SINGAPORE) : " He has no difficulty in destroying the reputation of existing ships, but he displays real constructive ability when he re-builds a fleet worthy of its purpose. His ' New Navy ' would be an incomparably better weapon than the old, and would cost less than half as much as its predecessor.

" This excellent book should be widely read, for there is not a dull page in it.

" Jingoes need not read it, for it deals solely with a defensive weapon—the best and surest in the world."

" It is in fact as well as name a ' vindication of Sea Power.' "

CAPE TIMES : " The author of this startling book is a well-informed and hard-hitting controversialist, who claims to stand for a considerable body of opinion among naval officers. Even before the war there was a revolt against the school of megalomania and meccano inspired by the late Lord Fisher. Since the war, Fisherism has run riot. Policy has been governed by a craving for size, novelty, and mechanical gadgets. Captain Acworth demands a return to simplicity, value for money, and due attention to strategy and politics.

" Captain Acworth has an easy task in ridiculing some of the monstrous freaks of machinery which the post-war followers of Lord Fisher have produced.

" It is hard to resist the author's opinion that the Royal Navy as it now is would be far less capable than his proposed new Navy of attaining the ends which it exists for—blockade and convoy.

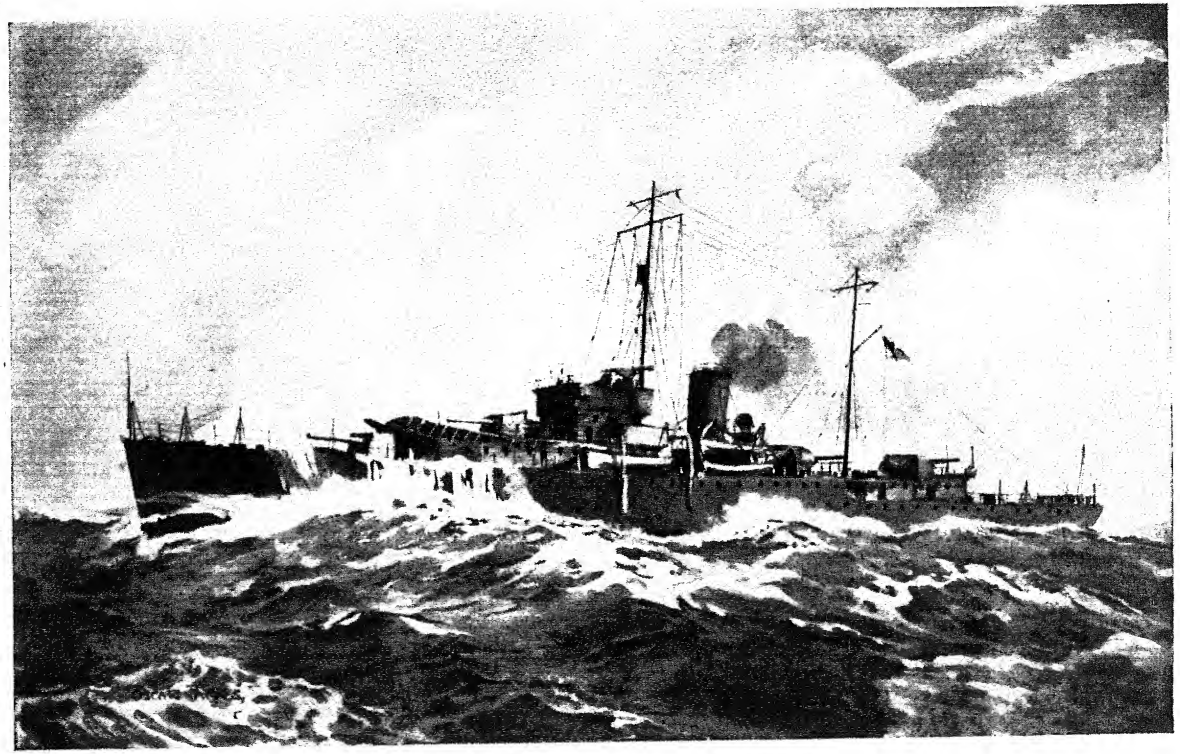
" Captain Acworth will have everyone with him when he says that Singapore will not be of much use as a base if we ever have to fight Japan."

CAPE ARGUS : " Another service to the cause of public sanity has been rendered by Captain Bernard Acworth, R.N. His book *The Navy and the Next War* provides an antidote to the assertions continually made about the sudden destruction that will overwhelm the world."

TRUTH : " I recommend everybody who takes an intelligent interest in the subject of our naval defence to read this book, because it provokes much thought."

RAND DAILY MAIL : " Captain Acworth states a sound case for the re-examination of all the beliefs upon which modern British naval policy is based; and whatever may be the outcome of such examination, the Navy has everything to gain and nothing to lose if it is undertaken by those competent to pass judgment."

BRISBANE COURIER MAIL : " Such a book is particularly opportune because it indicates very plainly—much more plainly, perhaps, than some of us care to admit—that Britain is not in a position to defend her Empire if it were attacked. . . . The book ought to be especially interesting, too, to Australians, because Captain Acworth emphasises that the Australian policy is a challenge to other nations, and he points out that should a clash occur with Japan the fate of Australia would not be decided in Australian waters, but in the naval struggle in the China Sea, thousands of miles distant from Sydney."



PROTECTED CONVOY CRUISER

(Unrestricted by Clause 8 of London Naval Treaty)

THE RESTORATION OF ENGLAND'S SEA POWER

being a second edition of

THE NAVY AND THE NEXT WAR

with four new chapters, including "Collective Security," "Air Power and Sea Power" and the "Anglo-German Naval Treaty"

by

CAPTAIN BERNARD ACWORTH
D.S.O., A.M.I.N.A., R.N.(retired)

author of

THE NAVIES OF TODAY AND TOMORROW; THIS BONDAGE; THIS PROGRESS; BACK TO THE COAL STANDARD, ETC.

1935
EYRE & SPOTTISWOODE · LONDON

TO

ADMIRAL SIR REGINALD CUSTANCE

AND THOSE

OFFICERS AND CIVILIANS

WHO STOOD FOR SOUND NAVAL DOCTRINE

THIS BOOK IS RESPECTFULLY DEDICATED

FOREWORD TO SECOND EDITION

WHEN the first edition of this book appeared last year there was a widespread disposition to deprecate the possibility of a "next war" and consequently an indisposition to consider its nature and the dangers with which it would confront us.

In so far as a contemplation of war was tolerated the public mind was systematically directed to the aerial aspect of such a calamity, the Navy having, seemingly, sunk in the estimation of our rulers, if not of the ordinary citizen, to the rôle of an auxiliary.

In the previous edition of his book the Author, undertaking the dangerous rôle of a prophet, showed the position with which the country would be faced at sea on the lapse of the Washington and London Treaties. How accurate was that forecast, in the political as well as in the strategical and technical spheres, subsequent chapters will, he thinks, confirm.

He drew attention to the confusion in the public mind as to the relative importance of the part that would be played by the various arms in the event of hostilities. He showed that previous International entanglements and commitments would, so long as Great Britain was bound by them, almost inevitably involve us in another world war if other European nations, or Japan, kicked over the traces. He also showed in detail how unsuited, qualitatively as well

as quantitatively, were our men-of-war to fulfil their responsibilities should the necessity unhappily arise.

The danger of war is admitted, not only by a Government which recently refused to consider it, but by the nation as a whole. Steps are being taken at the eleventh hour to rectify past errors and misjudgments, but are the measures contemplated, or in process of execution, the right ones? Will the scores of millions to be spent on strengthening our defences give the nation, in fact, security?

The author, rightly or wrongly, believes that we are misdirecting our efforts by exaggerating the air menace and by overlooking that, whatever its extent, aircraft are admittedly not a defence against it except by the very ancient and modern, and ineffectual, method of reprisals.

As a short chapter is devoted to an examination of the relation between air and sea defence, he will here confine himself to suggesting that the sea, so far from having been supplanted as our first line of defence, is more than ever before in English history the key to our security, and the guarantee of our independence without the necessity of bloodshed on a great scale.

It is in the hope that he may be able, in these dangerous and difficult times, to contribute something of real value to the great problem of national defence that this second and expanded edition of *The Navy and the Next War* is offered to the public.

CONTENTS

PART III

A New Navy and the Next War

LIST OF ILLUSTRATIONS

IN

gion
eir

tion
e C
epar

ckli
spo

vil-

ner
on

INTERNATIONAL CONFUSION

" *This blessed plot, this earth, this realm, this England.*

* * * * *

This land of such dear souls, this dear, dear land,
Dear for her reputation through the world,
Is now leas'd out,—I die pronouncing it,
Like to a tenement or pelting farm:
England, bound in with the triumphant sea,
Whose rocky shore beats back the envious siege
Of watery Neptune, is now bound in with shame,
With inky blots, and rotten parchment bonds:
That England, which was wont to conquer others,
Hath made a shameful conquest of itself.

RICHARD II., Act ii. Scene 1.

INTRODUCTORY

I

COLLECTIVE SECURITY

"COLLECTIVE Security" is a term seldom off the lips of the politicians of all parties. Although no effort is spared to persuade the people that the idea of collective security is based upon high moral principles, the plea of morality, even here, is wearing thin, while on the Continent and in Japan it is not unnaturally regarded as something akin to humbug when preached by Great Britain. How could this be otherwise when successive Governments have allowed England's sea power to sink to a point at which we are liable to catastrophe at the hands of Japan, or of two, if not one, of the European nations with whose aid we propose collectively to secure ourselves? Can we reasonably expect other countries to defend us on our own terms? Assuredly we cannot, and it is therefore not surprising that those who are responsible for reducing Great Britain to her present state of unparalleled weakness should do their utmost to persuade those they have bemused that the fears and animosities of other countries, not excluding Russia, must now be treated as our own.

We are still bidden to look to the League of Nations as our refuge and strength in time of trouble.*

* Strictures on the League of Nations, as now constituted and functioning at Geneva, are in no way criticisms of the con-

But no amount of special pleading can any longer disguise the League of Nations as anything but a dwindling confederation of the frightened nations allied in the late war, and the dictators of a Peace Treaty which the country is almost unanimous in regarding as a Treaty now rendered invalid by actions of our late Allies as well as by Germany and Japan.

The dominating position occupied by Russia in the Councils of the League is, in view of Russia's militant antagonism to Christian civilisation, sufficient commentary on the moral aspect of the League of Nations which it is now the practice of some of the Bishops, as well as of politicians, to glorify as " the only hope of the world."

Happily it is no longer necessary to expose the pretensions of the League as the architect of the millennium, or as the bulwark of security in a wicked world.

If justice, as many still believe, is the only stem upon which the flower of true and lasting peace can bloom, Geneva stands condemned.

Are its judgments, its lectures and its meddlings, always directed against the strong and on behalf of

ception of a true League of Nations for which millions of Christian men and women, including the author, yearn.

At the Council Chamber of a Christian League compromise with justice and truth could find no place, because its President would be the Prince of Peace.

In the existing Council Chamber the name of God is not reported as being mentioned; on the contrary, the atmosphere of Geneva is non-Christian, the Presidential Chair having recently been occupied by M. Litvinoff.

the relatively weak when unjustifiably threatened by the strong? Does it command the obedience of those who dispute the justice of its pronouncements when it has, as is seldom the case, the courage to make them? Is it, in fact, anything more than a thinly veiled coalition against those who repudiate the new gospel of Internationalism?

If we insist upon regarding it as an impartial body, and as the Citadel of Peace, we deceive ourselves and the truth is not in us. On the contrary, by its military impotence and its verbal aggressiveness it has become war's chief guarantor in Europe and a sure means of involving Great Britain in a second blood-bath.

Happily, Sir Samuel Hoare's speech on foreign policy, in the House of Commons on July 11, is likely to extinguish, once and for all, the nation's respect for the so-called League of Nations, and its trust in collective security. In almost a single breath he spoke of the sanctity of the Covenant, the authority of the League, and the vital nature of collective security; and in the next threw Abyssinia, a member of the League invoking the Covenant, to the wolves. He blessed Italian expansion and lectured Japan, whose need for elbow room is greater, and whose opportunities are incomparably less than those of Italy, against whom the unpeopled spaces of the world are not, as in the case of Japan, barred and bolted.

In championing collective security he refused Abyssinia the protection of this very system, and

he made it clear, once and for all, that for Great Britain this catch-phrase means obedience to the dictation of any Great Power which we have good reason, thanks to our maritime defencelessness and fuel dependence, to fear. From start to finish there was an atmosphere of unctuous humbug in this statement of British foreign policy which has turned the stomachs of the great majority of ordinary English men and women.

In the Far East, the original meddling by the League of Nations led to the exasperation of Japan and her resignation from the League, while anticipations in China of collective support, and of an arms embargo on Japan, were unjustified. In the present Far Eastern situation it is difficult to decide whether China or Japan has the greater cause of resentment against this international body, fast becoming a figure of scorn to the few, of distress to the many, and of fun to most.

So far as Great Britain, the leading Western Power in the Far East, is concerned, collective security is likely to prove a broken reed except in so far as we may be tempted to join hands with Bolshevist Russia, or to rely upon the aid of America which, above all other countries, has declined to have anything to do with what she rightly regards as collective insecurity. The truth is that the term "collective security" is another name for a League of Nations which does not include America or the Great Powers against which, like a pack of frightened sheep, we are trying to secure ourselves.

Indeed, had not Great Britain, through the mouth of Sir Samuel Hoare, turned a deaf ear to Abyssinia's appeal to the Covenant, the League would by now have become an alliance between ourselves and Bolshevist Russia, an alliance which only a modernist Bishop, in blessing the League, could bless as a holy one.

Now we are threatened with an "Air Pact" which, if ratified, can, and almost certainly will, condemn Great Britain to another world war. Champions of this dangerous Air Pact defend it as the only means of saving London from a bombing, and they speak of "united air action" as though such action could be limited to a sort of "police bombing." But is it seriously believed that if our bombers were let loose for reprisals on behalf of another country, a world war, involving armies and navies, would not ensue? Who is to ensure that a few aircraft will not be loosed by *agents provocateurs*, with whom the capitals of Europe and New York are crawling, against Paris or Berlin?

The two alternatives to "collective security" are the return to what is rightly anathematised as the balance of power, or to a policy which admits of strategical independence.

The balance of power, now losing its balance, was materialising through the League of Nations which, as already emphasised, was a confederation of the late European allies against Germany and any friends she could bring into the scale to make the balance less unfavourable to herself.

We are thus, in reality, faced with the alternative of an independent foreign policy which can contemplate the neutrality of the British Empire in the event of a European conflict, or a war in the Far East, or which would enable us to join such a conflict on our own terms, and therefore within limits decided by the British people as a whole, and in accordance with what they consider, when an issue arises, to be right rather than expedient. This latter policy depends upon the restoration, without delay, of the essentially maritime strategy which is considered, and advocated, in subsequent chapters of this book.

II

AIR POWER AND SEA POWER

FOR some years the author has been expressing the view, and substantiating it with reasoned, and still unanswered, arguments, that the air menace is exaggerated, and that aerial defence, in any case, is ineffectual. The reasons for this view are given shortly in succeeding chapters and have been considered at greater length elsewhere.

It appears to him to-day, as in the past, that if reprisals are to be regarded as the only means of defence against enemy bombs, they might be more effectually and inexpensively employed, as a means of defence, by seizing thousands of hostages in England on the outbreak of war. These innocent folk, regardless of sex, could be put to death painlessly in exchange for casualties and maimings inflicted by indiscriminate enemy bombers on the civil population. This form of reprisals would enable the nation, if it so desired, to discriminate in the case of children. Such methods would admittedly be a reversion to barbarism, but equally so are aerial reprisals as at present contemplated. They would, however, cost only a few shillings against hundreds of millions of pounds by the methods we are preparing.

For the purpose of the argument, however, the author will assume, as he admits may possibly be the case, that his criticisms of the military value, and decency, of aerial bombardment are unjustified and that a great expansion of the Air Force is a necessity, and in harmony with the best interests of the country. How far does a greatly strengthened Air Force affect the question of sea defence? Is it true that air power could, to some extent, relieve the Navy of its responsibilities? In considering this question it may be useful to set down certain facts which will not be disputed and which will not, therefore, be confounded with opinion.

1. Food, fuel, and the raw materials of our industry cannot be imported by air. Ships must be employed, and these ships must be defended on the high seas as well as near the shore. If we assume, with insufficient warrant, that their defence is practicable by aircraft in the near approaches to the ports, it is not claimed by the most ardent aerial strategist that our merchantmen can be defended by shore-based aeroplanes outside their limited range. The mere shifting of the Navy's responsibilities a few miles out to sea does not diminish them in so far as trade defence is concerned.

2. A great increase in the number of our aeroplanes increases proportionately the fuel required to enable them to operate. This fuel, except for a small proportion, must be sea-borne. If the importance of the air is what is claimed for it, it follows that an enemy would naturally concentrate on attacking the tankers that carry its motive power.

From the foregoing it is thus plain that the greater the Air Force the greater the number of vessels required to carry its fuel, and the number of men-of-war essential to defend the tankers. In this vital respect, therefore, the greater the Air Force the greater are the responsibilities of the Navy and Merchant Marine.

3. The aeroplanes that operate in the outlying parts of the British Empire would, in most cases, require to be conveyed in merchant ships to the scene of operation. It is commonly believed that shoals of aeroplanes could fly to Australia, South Africa, Canada, India, and so forth, in the same way as occasionally a spectacular non-stop flight is carried out in peace time. It is apt to be overlooked, however, that in peace time aircraft are permitted to land and fuel on foreign territory which in war time, in the absence of an alliance, would be closed to them. Furthermore, on these long-distance flights aircraft carry petrol and nothing else. Warfare, however, involves an enormous ground personnel and war material which it is not even suggested that aircraft could convey for themselves. It therefore transpires that the greater the expansion of that portion of the Air Force designed for work overseas, the greater must be the demand on our already insufficient number of merchant ships to carry them, and of men-of-war required to convoy them. Thus the machines, their pilots and ground personnel, their war material and fuel, increase the demand on sea power. In this connection it may be opportune to draw attention to the conditions attached to the financial facilities which the Government is now placing at the disposal of the Merchant Service in what is known as the " scrap and build " policy. By present arrangement, two old ships

must be scrapped before money is made available, at the expense of taxpayers, to build a single new one.

To the man in the street the Government " scrap and build " policy is interpreted as an attempt to influence the owners of obsolete tonnage to destroy two steamers and build a new *steamer*, thus benefiting, in their judgment, the owner, and giving work at the same time to the shipbuilder. The man in the street is, however, being deceived. A well-known ship-owning firm has disposed of six steamers which burned coal, and employed six crews, and is replacing them by three new Diesel vessels that employ three crews and use foreign oil. This policy is being pursued in other quarters.

That the Government should encourage the adoption of Diesels and oil burning, thus giving a wrongful impression that steamers are not in all respects as profitable for the majority of trades, is inexcusable. The Governments of other countries—*e.g.*, Germany, France, Sweden, Spain, Chile, etc.—are by every possible means encouraging the use of national fuel at the expense of foreign oil.

Apart from the strategical dangers which we are multiplying, the subsidised " scrap and build " policy is, every day, increasing the need for greater subsidies to the " distressed areas."

Such a policy, if only from the stategical aspect, must certainly be reversed if an expansion of our overseas Air Force, disregarding increased mechanisation of the Army, is undertaken.

4. The foregoing considerations are concerned with shore-based aircraft capable of operating only a short distance from the shore when the return journey is taken into account. Those who argue that aircraft operating over the sea, at great distances

from the land, will take the place of ships, overlook the fact that fleets of ships will be required to carry and operate the aeroplanes which, it is alleged, will in the future perform the duties hitherto performed by cruisers. But it is notorious that aircraft-carriers are, of all classes of ships, the most vulnerable to those orthodox ships which foreign countries show no sign of abolishing. Sea-borne aircraft, like those which operate from land, increase the need of ships to operate them and of cruisers to protect them.

* * * * *

In three spheres of aerial warfare it thus seems clear that increased air power involves increased sea power if aeroplanes are to be enabled to carry out the functions which the new strategy allots to them. It is only fair, however, to refer to one sphere in which, on the face of it, expanded air power can relieve the Navy of one of its duties.

The author refers to the defence of these shores from invasion or sea bombardment. Invasion, as opposed to raiding, by air is out of the question, because invaders stepping out of aeroplanes on to English territory could be dealt with by the police. The claim made, however, seems to be that our Aerial Defence Force could deal with an invading fleet and transports without the aid of the Navy.

The notorious combined exercise carried out in the Firth of Forth does not, however, bear out this contention. It was forgotten that the date, time and place of the attack by a few ships was pre-arranged

with the Air Ministry, and that such co-operation between the opposing Staffs cannot confidently be relied upon in war. The close co-operation between the Admiralty and the Air Ministry enabled the bulk of British air power to be concentrated at a single point. The necessary arrangements to bring this about extended over several weeks, and the remainder of the British coast-line, hundreds of miles in extent, was denuded of all aerial protection. To make good the deficiencies over this huge area, at any point of which the enemy, in the absence of agreement, might have struck, would necessitate not hundreds but tens of thousands of aeroplanes. Furthermore, it is relevant to point out that although direct hits by bombs on the battleships were widely reported, not a single bomb was dropped or, indeed, carried by the defending aircraft, in view of the weight which had to be sacrificed on behalf of fuel and life-saving apparatus.*

But apart from these weaknesses of aerial defence against sea bombardment or invasion, it is well to remember that the bombardment of the coast by hostile ships is not an operation which could in any way effect a decision. Furthermore, no invasion of these shores would be contemplated by an enemy

* Neither were the bombing aircraft subjected to gunfire from the men-of-war, the devastating nature of which was disclosed to the public for the first time when the King witnessed the gunnery efficiency of the Navy. In this demonstration the aeroplane was brought down at long range by 4·7 inch guns. The new and deadly multiple pom-pom did not come into action.

until its sea communications, over their whole length, were secure. The real defence against invasion is not by opposing it when it is being undertaken, but by threatening the enemy sea communications which, if cut, would involve an invading army in disaster. Only in the case of France could the sea communications of an invading fleet and army be threatened by aeroplanes over the whole of the sea route. This limitation of aircraft does not apply to the Navy which can attack a long line of communications at any point, near our own shores or far away.

In this case of invasion it is a matter of indifference to this country *where* the enemy communications are cut, so long as they *are* cut. From this it seems to follow that the Navy can still protect the country from invasion so long as it is adequate to challenge the opposing fleet, as it must be for purposes other than preventing invasion, whether we have a great fleet of aircraft or none.

If, in conclusion, this argument against regarding aircraft as a substitute for ships as a bulwark against invasion and bombardment is not considered conclusive, it is at least plain that when the other aspects of aerial warfare are brought into the picture, the possibility of regarding expanded air power as a means of safely reducing sea power is untenable. Indeed, it seems evident that, on balance, extended air power involves increased sea power if, in the day of adversity, we are not to learn, too late, that we have entrusted our existence as a nation to a myth.

III

FUEL AND FOREIGN POLICY

IT will be shown in due course that the formidable French Fleet must necessarily exercise a powerful influence on British foreign policy. There is, however, another influence more potent, because all-pervading, and that influence is—fuel. It is through fuel that we derive our power to move the Navy and a third of the Merchant Marine, to operate the mechanised army, and to raise our aeroplanes off the ground. Without fuel our land transport comes to a standstill and our industry closes down. What then is to be said of the strategical position of an island country, and of a maritime empire, whose entire fighting forces, and a great proportion of whose merchant ships, transport and industry, are absolutely dependent upon oil, 2 per cent. of which only has its source in the British Empire, and all of which has to be transported over thousands of miles of sea?

It is not proposed to consider here the technical advantages which engineers rightly claim for oil in preference to coal, nor yet the economic aspect of the question, important as it is. The author will instead confine himself to a glimpse into the obvious. A nation which cannot defend itself, which cannot feed itself, and which cannot carry on the day-to-

day activities of its civilisation without an almost limitless supply of a fuel situated in, and therefore controlled by, foreign countries, is self-evidently a nation in chains.

Any British Government, faced with this state of bondage, which made itself responsible for a foreign policy that might jeopardise, or alienate, the sympathy of those nations* which control our motive power would be guilty of treason. Furthermore, oil, in war, would be the chief of war materials, the supply of which by a neutral might reasonably be regarded as an unneutral act by our opponents. Alternatively, if the supply of oil was not subject to an embargo for reasons of state, non-oil-bearing belligerent countries could,

* The insecurity of Persian and Iraq oil is admitted and, in the case of Persian, was recently demonstrated by the cancellation of the D'Arcy Concession.

Russian and Rumanian oil becomes sea-borne in the Black Sea, and Turkey proposes to fortify the Dardanelles in contravention of the Treaty of Lausanne.

In the Far East, Dutch oil, in the event of war, would be at the mercy of Japan. There remains American oil, which would be available, and only available, so long as Great Britain's policy were in harmony with American wishes. Thus a friendly naval understanding with Japan, as well as with the U.S.A., is difficult, if not impossible, in view of our dependence on American oil.

In all the circumstances, therefore, it is not surprising that Mr. Baldwin should recently have said that, so long as he had any responsibility for British affairs, he would not sanction the use of the British Navy for blockade without first finding out what America would do.

and seemingly would,* be held to ransom by the oil industry.

* Under the heading "Petroleum Concern's Power" in an article on "the oil industry's post-war problems" in the *Financial Times* of June 17, 1935, Mr. J. A. Little says:

"The most important factor in this question of war in Europe, and the most effective embargo on the transport of the oil required, is that none of the distributing companies will supply fuel of any description to any combatant nation against payment of paper currency. This common-sense decision," he adds, "obviously rules out of the oil market as serious purchasers all countries save Britain and France."

In plain language, Germany and Japan, for example, can be prevented by international finance from resisting attack by countries to whom oil would be made available in exchange for gold.

In these circumstances, it is hardly surprising that Germany and Japan are making every endeavour to free themselves from this stranglehold, an effort for which our old ally Japan has received some sharp notes of protest from the National Government on behalf of the oil industry.

How effective is the pressure on behalf of the International Oil Combines by the National Government was revealed in a startling manner by a Special Correspondent from Yokohama in the *Morning Post* of June 28.

After referring to the recent restrictions imposed by the Tokio Government for safeguarding the mobility of the Japanese fleet, he says: "The authorities have now abruptly given way, probably as the result of the representation made by the British and the American Governments, and have consented to be satisfied with the maintenance of three months' stock of oil instead of six." This statement confirms, as is becoming common knowledge, that British foreign policy is increasingly concerned in protecting the interests of oil, not a drop of which exists in Great Britain.

To this aspect of an embargo Mr. Lambert drew attention in the House of Commons during the debate on the Naval Estimates (Hansard, March 14, 1935).

In other days British foreign policy rested, in the last analysis, upon British sea power which was free of foreign influence or control. To-day the chief aim of our foreign policy must be, or should be, to ensure the means of moving our food ships and tankers, as well as the Air Force and mechanical Army, and the Royal Navy which can alone defend the lot. The position is, in fact, reversed: our foreign policy is now at the discretion of foreigners.

It has been argued that oil is more widely distributed than coal and, therefore, a source of added strategical strength to those dependent upon it.* That oil is more widely distributed is unhappily true in the sense that it has been made more readily available in the ports of the world. It is not true,

* Speaking in the House of Commons on March 12, 1934, Captain Euan Wallace said: "It is perfectly true that, if the main Fleet were operating in the immediate neighbourhood of these islands, coal would have an advantage, but that advantage would completely disappear if the Fleet were engaged elsewhere." The first part of this statement is noteworthy when it is considered that a large portion of the Fleet, if not the major portion, may operate in home waters. The latter part is incorrect, because a British Fleet operating from ports of the great British Dominions would, as in home waters, have unlimited supplies of indigenous coal available at its base. In the case of oil, the Navy's first concern will be to defend the *incoming* supply of fuel from foreign ports instead of, as in the case of coal, *falling back* on it.

however, when we consider the limited sources of supply from which the streams of oil emanate. The British Empire, except for the dribble obtained from Trinidad and Burmah, is destitute of oil supplies.

On the other hand, Great Britain, the Dominions and the Colonies are richly endowed with unlimited coal resources.

That we are no longer a free country, and that our foreign policy is compromised through fuel, is now widely recognised, and from all quarters there is arising a demand that our country shall be freed from this intolerable situation.

It is believed by a diminishing number of people that the solution to the predicament lies in the conversion, by one means or another, of our coal into oil. By this means, it is alleged, we can obtain the best of both worlds. A simple calculation, however, will make it abundantly plain that the quantities of oil required for maritime, aerial, military, industrial and transport purposes is, in peace, utterly beyond the capacity of oil from coal plants if the country is to remain solvent. In the event of war Admiral Sir Edmond Slade, a great fuel expert as well as a distinguished Admiral, estimated, as long ago as 1926, that we might need from 30 million to 50 million tons per annum. During the past nine years our oil dependence has increased. How impossible it is, in any measurable time, to meet the needs of an exclusively oil-fired Navy from our own resources was emphasised by the Financial Secretary to the Admiralty in the debate on the

1934 Naval Estimates (Hansard, 12th March, 1934). He pointed out that, at the present time, it would probably be impossible to obtain more than 10,000 tons annually.

On the question of substitutes for petrol, as used in aircraft, tanks and motor vehicles, Mr. J. A. Little, in the article already quoted from the *Financial Times*, writes as follows:

"In this country we have not been stampeded into foolish waste in this direction. Up to the present, the hydrogenation plant at Billingham has cost £5,500,000 to produce 150,000 tons of motor spirit a year. *It has not yet hydrogenated any coal.* . . . Even so, this plant would, on a full year's working, only provide us with fourteen days' supply of motor fuel (petrol). Twenty-seven such plants would be needed, without any provision for emergencies or breakdowns, to meet the full demands.

"Though their cost would probably be proportionately less than that of the plant already created, they would take a number of years to build and could only exist at the expense of the Treasury."

He might have added that these enormous erections would almost justify the construction of a hostile bombing fleet, and that the hydrogenation patents of Imperial Chemicals Ltd. are the monopoly of I.C.I., Royal Dutch Shell, and Standard Oil of New Jersey, international companies which thus enjoy the subsidy paid by British taxpayers.

But vast as is the quantity of petrol which enthusiasts hope to see replaced by subsidised hydrogena-

tion and distillation plant, we are still faced with the provision, by these subsidised methods, of the millions of tons of heavy fuel oil that would annually be required to give mobility to the Navy and Merchant Marine. Furthermore, as the demand in war would greatly increase, we should be compelled to maintain reserve plant in idleness if we were not to be stranded in an emergency.

What then is the solution? Surely it is to be found in adopting the common-sense proposal of Admiral Sir Reginald Hall, Sir John Latta, and marine engineers of distinction, that all future men-of-war and merchant ships should be equipped with bunkers and the means of burning either coal or oil alternatively.* Alternative firing is not a new

* During the debate on the 1934 Naval Estimates Captain Wallace said: "So long as foreign nations use liquid fuel for their warships the British Navy must do the same." This statement would naturally lead the House of Commons and the public to imagine that foreign Navies are, in fact, exclusively oil-fired like the British.

According to the Official Return of Fleets, the Japanese battle fleet, consisting of vessels of 30,000 tons and over, and with a speed varying from 23 to 26 knots, with a single exception burn coal alternatively with oil. Of her fleet of twenty-nine post-war cruisers, twenty burn coal alternatively with oil. Their speed varies from 31 to 33 knots.

In the case of France, her entire battle fleet is alternatively fired with coal, except for the three oldest ships, which are exclusive coal burners. In the case of French cruisers, four of their latest ships, of the *Suffren* class, are equipped for alternative firing.

These facts are not given as an argument in favour of alter-

idea. Indeed, until comparatively recently it was the common practice, on somewhat primitive lines, in the Navy, as it is to-day in the Merchant Marine by up-to-date methods.* In the case of one of our greatest and most thriving shipping companies, 118 out of 119 vessels burn coal. Of these 118, thirty-seven are equipped to burn coal or oil, thereby enjoying a great advantage over their exclusively oil-fired rivals. Not only can they select coal or oil according to price, but when actually bunkering oil they not infrequently obtain it at a cheaper rate than other vessels in the same harbour because they hold the threat of coal in reserve.

Many Naval Officers on the active list, as well as those in retirement, share the author's view that

native firing in British men-of-war, because our own case rests on its merits irrespective of the policy of other nations. They are given as one example, out of many, of the manner in which the truth about the fuel position is distorted in responsible political quarters.

* A very brief description of alternatively fired furnaces is contained in the following extract from the report of a world-famed firm of engineers :

" Regarding the technicalities of changing over from coal to oil in a dual-fired ship : these vary with the system adopted for coal firing. If modern mechanical coal-fired systems were adopted on the score of efficiency and reduction in personnel, then with mechanical stokers the grates would be left *in situ*, suitably protected by portable brickpans, oil burners, fitted at the back ends of the boilers, being brought into action.

" If hand firing is adhered to, with a somewhat lowered efficiency compared with oil or mechanised coal firing, then oil burners fitted to the furnace fronts would be brought into operation after the grates are either suitably protected or removed, either operation taking only a matter of hours."

the extreme horse-powers which it is now the fashion to install in men-of-war and merchant ships are a source of weakness rather than of strength, both in the military and economic spheres. When this view prevails in the Admiralty and shipping offices it is reasonable to suppose that coal will once again become the basic fuel of British sea power as a whole, oil being relegated to the position of an emergency fuel in a coal-bearing country.*

In the meantime, alternative firing will enable the present speed craze to be humoured, because the dual-fired vessel can achieve all that can be accomplished by the exclusively oil-fired ship. The ability to carry and utilise coal in emergency only involves a modification in design, and a slight increase in the over-all tonnage of the ship. Surely good sense is on the side of those who plead for the strategical freedom which alternative firing in men-of-war and steam merchant ships would bestow.

Though oil from coal cannot meet the requirements of British sea power on an exclusively oil-using basis, it may, in due course, be able to supply the Navy's needs as an alternative, and emergency, fuel.

* The ability to use oil as an emergency fuel will be strategically and economically invaluable so long as a small and subversive section of trade union officials are in a position to immobilise British sea power as a means of achieving their ends. When this threat is removed it may be found that a return to the simplicity and economy of exclusive coal firing is in the best interests of British men-of-war and merchant ships alike.

One thing is certain: not until British sea power is in a position to operate without the permission of foreign countries and fuel dictators, whether of the international or trade union variety, can we presume to call ourselves a free country.

It is difficult to believe that the provision of coal bunkers in new construction, and thus the ability to burn coal or oil in the furnaces, should either be unavailable, can be repugnant to a National Government and to the British representatives of the international oil republic.

Oil can still remain, if our oil dictators, and the National Government, so decree, the motive power of British sea power in peace and in war so long as it is available, even though the " distressed areas " remain a charge on the pockets of taxpayers, and on the conscience of the Admiralty and of the National Government. These coal bunkers need not carry a lump of British coal until starvation faces the people. They may then carry salvation.

IV

THE ANGLO-GERMAN TREATY AND A FUTURE NAVAL CONFERENCE

DURING the past few months events have taken place which can hardly fail to exercise a profound influence on the future of British sea power. Japan has repudiated the Washington Treaty which for fifteen years had regulated, and stereotyped, the international balance of sea power in the sphere of heavy ships. Germany, whose Navy had been left out of account in the post-war Naval Treaties, has now repudiated the Naval Clauses of the Versailles Treaty and has signed a separate Naval Treaty with Great Britain.

This Anglo-German Naval Treaty, considered, as it should be, in conjunction with the Japanese repudiation of the Washington Treaty, may well prove a memorable sea mark in the future maritime policy, not only of Great Britain and Germany, but of the world. Its salient features may be summarised as follows:

(*a*) Germany accepts, as a permanent basis, a total tonnage two-thirds below that of the British Empire as a whole.

(*b*) Germany's adherence to this ratio will not be affected by the building programmes of other nations unless the general equilibrium is violently

upset by abnormal construction by a Power other than Great Britain. In other words, Germany will reconsider her ratio if Great Britain's sea-power continues to sink, while that of France or Russia, for example, expands.

(*c*) The German one-third ratio is applicable to special categories of ships as well as to total tonnage, but with freedom to increase the tonnage of one category at the cost of a corresponding decrease in another.

(*d*) Submarines constitute an exception to (*c*), Germany having the right to possess a submarine tonnage equal to that of the British Empire. Germany, however, will in practice keep her submarine tonnage down to a figure of 45 per cent. of the British unless a situation arises with other countries which, in the view of Germany, necessitates an increase of her submarines above this 45 per cent. standard.

No variations in the terms of this Agreement will be made by Germany without close and friendly discussion with the British Government.

Criticisms of this Anglo-German Treaty have been plentiful, both in England and on the Continent, and very particularly in France. English critics, remembering the havoc wrought by German submarines in the late war, fear a repetition of a German submarine threat, though remaining indifferent to the creation of the great French submarine fleet which could operate, as German submarines could not, from the Channel ports. These same critics treat as valueless the solemn undertaking of Germany never again to employ "frightfulness" in sub-

marine warfare, an undertaking tantamount to sterilising the value of submarines as commerce destroyers.

The author believes, rightly or wrongly, that the perpetuation of this mistrust of German undertakings is unjust, and therefore unwise, especially in view of the fact that Germany has herself urged, as in the case of bombing aircraft, the abolition of submarines.* But however this may be, the critics overlook that convoy has been proved a reliable counter to submarine attack on trade, and that the means of detecting and destroying submerged submarines have made great advances. These facts, perfectly well known to Germany, have no doubt strengthened Germany's decision to advocate submarine abolition.

But there is another important point affecting the

* Sharp criticism of the agreement has been made by pacifists led, strangely enough, by Mr. Lloyd George, on the ground that the submarine clauses do not contain a declaration that Great Britain proposes to the world the abolition of submarines, substituting for such a declaration acquiescence in an increase of German submarine tonnage.

In view of the British Admiralty's oft-repeated desire to see the submarine universally abolished the reason for not pressing the proposal in this agreement is clear. The Government is afraid of irritating France still further, and possibly to a point at which, instead of abolishing her submarine armada, she might threaten to use it.

As it is to pacifists that we owe our lack of vessels to checkmate this French submarine threat, their denunciation of the absence of a stronger note in the submarine clauses in the Anglo-German Treaty is characteristic of the pacifist mentality.

submarine agreement to which attention should be drawn. Not only is the submarine not a counter to the submarine but such vessels, if not employed against merchant ships, are of little value. This was amply proved in the late war; indeed, Germany turned her submarines against merchant ships because they had failed to reduce British Naval superiority, the purpose for which they were built, and the mission upon which they were engaged in the opening years of the war.

In view of all these facts the Anglo-German Agreement should enable a majority of the maritime nations to reach agreement on abolition. Should France and Italy refuse to scrap their submarine fleets, such a decision, so far from constituting a reason for the retention of our own, should act as a potent argument for their abolition and for the substitution of large flotillas of small convoy cruisers to counter them.

Another, and more valid, criticism of the Agreement is that a German fleet one-third the strength of the whole British Navy will give her, in practice, a great deal more than " parity " in home waters when the necessary dispersion of the British fleet is taken into account. Furthermore, the British fleet for the most part consists of over-age vessels, the replacement of which is strictly governed by treaties which prevent the restoration of the Navy to modern standards for many years. Because there is no restriction on the speed at which Germany can acquire her ratio of one-third of British tonnage it

follows that in the near future the German Navy will be a new Navy and the British an old one, thus making the relative strength of the two fleets apparent rather than real. This objection can only be met by a slow and extended construction programme by Germany, or, alternatively, by a great acceleration of British replacement in the near future.

These criticisms will remain sound ones so long as Great Britain, unlike France and Italy, allows herself to be rigidly bound by treaties to a naval strength, and by replacement restrictions, which, as at present, leave her with a Navy incapable of meeting its responsibilities in home and European waters, and in the East. That our responsibilities are exceptional, necessitating a large margin of vessels for trade defence, has been implicitly, if not explicitly, admitted both by Germany and Japan.

The Washington and London Treaties are, however, lapsing, and we must assume that in the near future British sea power will be restored to a standard in battleships, and in the heavier class of cruisers, which will equal the strength of the next two strongest sea powers, including, in the absence of a very close and cordial understanding with Japan, Japan herself, but excluding, as we are all prepared to exclude, America.

In the absence of a restored two-power standard, the German Agreement, like the Japanese proposals, is a manifest danger. Given the two-power standard in battle fleets, including the cruisers attached

thereto, it constitutes a sound basis for future international agreements.

There is, however, yet another technical aspect of this naval agreement which deserves notice, and which is intimately affected by subsequent chapters in this book. Not only has Germany specialised in small battleships of 10,000 tons, but she has advocated the abolition of aircraft-carriers. Germany also favoured, if earlier reports were true, total tonnage limitation without "category" restrictions.

It must therefore be presumed that her consent to the British taste for 25,000 ton battleships (a purely arbitary tonnage), to the perpetuation of aircraft-carriers and submarines, and to the category system of limitation, is a measure of her anxiety to establish a firm and friendly understanding with Great Britain rather than of her conversion to the technical preferences of the British Admiralty.

The German technical proposals, for the moment seemingly modified to suit current British ideas, are singularly like those of Japan in the Anglo-American-Japanese "Talks" in London, and it therefore seems possible, as the author believes it to be desirable, that at a future Naval Conference of all the maritime powers at least an Anglo-German-Japanese Agreement can be reached which will embody the major proposals for the restoration of British sea power which the author advocates in this book, and which are, in essentials, identical with German and Japanese views.

French and Italian criticism of the Agreement, unlike British, is political rather than naval. This is not unnatural in view of the fact that the French Navy alone, in 1936, will be more powerful in home waters, and in some respects outside home waters, than the British, and incomparably more so than the German if we reckon strength in material and disregard the quality of the personnel which, though the decisive factor in war, cannot safely be taken into account in estimating naval strength. The same is true of the Italian fleet in the Mediterranean, while combined, the two Latin sea powers could, if material alone counted, dominate European waters.

With the political criticisms of the Anglo-German Agreement the author will not concern himself.

Let us now turn from a general consideration of the Anglo-German Treaty to a short consideration of the generally conflicting proposals, and established facts, which will perplex any future International Naval Conference that may take place.

Germany,* for sixteen years the Rip Van Winkle of

* Every feature of this German programme has given rise to alarm in some quarter or another. The small calibre of the heavy guns of the "pocket battleships" and projected battle cruisers is treated as a menace, probably as a result of the execution wrought by 11-inch guns in the late war. The smallness of the submarines, enabling large numbers to be obtained on a moderate total tonnage, raises apprehension, and a questioning as to the value of size on which we and other nations have concentrated. Furthermore the German destroyers, of greater tonnage and better armed than our own, raise doubts

Europe, is laying down two 26,000 ton battle-cruisers mounting 11-inch guns; two 10,000 ton cruisers; sixteen large destroyers mounting 5-inch guns; twenty-eight 250-ton submarines. It is hinted that she will start 35,000 ton battleships and aircraft-carriers next year, but these ships may be regarded as bargaining counters in view of her preference for small battleships and aircraft-carrier abolition.

Italy, bitten with the "wonder ship" craze, proposes to lay down, if she has not already done so, 35,000 ton battleships.

France, who, like Italy, did not sign the London Naval Treaty which binds Great Britain till December 1936, has been actively engaged, as already shown, in constructing a great ocean-going fleet of 110 submarines against which we have prepared no defence. In addition, France is building 26,000 ton battle cruisers and has nearly completed a fleet of powerful smaller cruisers which include 32 high-speed heavily armed vessels of 2,450 tons, against which our destroyers would be at a grave disadvantage and our new convoy sloops helpless. Furthermore, France is credited with the intention of laying down 35,000 ton battleships to replace her older ones.

Japan, at the Naval Conference in London between herself, Great Britain, and U.S.A., advocated a large

as to the soundness of our own poorly armed torpedo craft. Indeed, the comments that have been appearing on the new German ships give unsolicited support to the author's criticisms of our own Navy which are contained in this book.

reduction in the tonnage of future battleships and the abolition of aircraft-carriers. She has expressed, in addition, her readiness to abolish ocean-going submarines if other nations will, with herself, abolish aircraft-carriers.

Japan has, moreover, proposed the substitution of a system of total tonnage,* or *global*, limitation, in place of the present system of limitation by *categories* and individual tonnages. Her general proposals, in short, were almost identical with the policy advocated in the subsequent chapters of this book. The same was true of Germany, which, like Japan, proposed the *global* system of limitation favoured originally by France and Italy but opposed by Great Britain and America. Germany's proposals have, as already shown, been subsequently modified in order to ensure agreement with Great Britain, whose taste for the *yardstick* has grown with the passing years.

America, on the other hand, insisted upon the retention of the monster ship, the retention if not the increase of aircraft carrier tonnage, and the present system of limitation by *categories* and individual tonnages, or, to stick to jargon, *yardstick* limitation.

Great Britain, as has now become her habit, assumed a tight-rope attitude, with a bias towards the American proposals. This is the more surprising

* Japan has refused to sign a *qualitative* agreement unless reinforced with a *quantitative* agreement, to use current jargon.

in view of the Admiralty's formerly expressed desire to reduce the tonnage of future battleships and to abolish submarines. Thus political considerations, coupled with the unaccountable British taste for aircraft-carriers, seem likely to present a barrier to the realisation of vital British maritime interests.

The more the Japanese and German proposals are scrutinised, the more closely in harmony do they appear to be with the naval needs, as opposed to the present political exigencies, of this country, particularly as both of these countries have acknowledged Great Britain's absolute need of a great predominance in vessels for trade defence and other unique requirements of a world-wide maritime Empire.

Aircraft-carriers, which Japan proposes to abolish, and which do not figure, except in the case of a single ship, *The Bearn*, in the French, German and Italian Navies, provide the only means by which the bomb terror can be kept alive in America and Japan, and in the majority of the countries which form the British Empire.

As American citizens of the coastal towns are being intimidated by their own Government with the threat of bombs dropped from aircraft conveyed to their coasts by British or Japanese aircraft-carriers, the American rejection of Japan's offer to abolish them is curious. Equally surprising is the reluctance of Great Britain to dispense with these monstrosities, by whose agency alone can Australia, New Zealand or South Africa, for example, be subjected to bomb

raids against which great Aerial Defence Forces are contemplated. Is it not clear that those interested, for one reason or another, in the perpetuation of the bomb terror are influencing policy?

The foregoing facts and proposals reveal the state of confusion that now overshadows naval ideas in the various countries of the world. There emerge, however, certain important points upon which substantial agreement exists, or has existed, and upon which at least some of the maritime nations should be able to reach agreement if another Naval Conference takes place.

For the sake of clearness it may be well to summarise the ideas and proposals of the various countries in the case of classes of vessels round which controversy rages. This summary, though believed to be correct, cannot be guaranteed owing to the variations which from time to time arise in the interminable talks and conferences in which British sea power has got itself entangled.

Battleships.—Great Britain, Japan and Germany favour small, or smaller, replacement battleships; America, France and Italy mastodons.

Aircraft-Carriers.—Japan advocates their abolition, while France and Italy have only one between them and none projected. America advocates their retention, as apparently does Great Britain. Germany was prepared to forgo them, though under the *category* arrangement of the agreement she is now likely to build them. Thus Great Britain is responsible for this addition to the fleet of Ger-

many, if not of the fleets of the world. If, on the other hand, Germany decides not to build aircraft-carriers, an interesting point, and an uncomfortable one, will arise as to her disposal of the tonnage thus set free among other *categories*.

Cruisers.—As in the case of battleships, Great Britain, and apparently Japan and Germany, favour a reduction in future size. America favours big ships, while the attitude of France and Italy is in some doubt.

Submarines.—Though the maritime nations have from time to time varied their proposals on the submarine question, the abolition of submarines has been advocated by Great Britain, America, Germany and Japan. Italy, unless the author is mistaken, has at one time consented to their abolition. France* is thus the principal stumbling-block in this direction.

Destroyers.—The proposals with regard to the

* The French, unlike German submarines in the late war, can operate from the Channel ports, as can the fifty-six cruisers which she will possess in 1936.

It was believed in the late war, and has since been argued, that fleets of hostile cruisers and submarines in the Channel ports would render Great Britain's position untenable. It is this view, no matter how unjustifiable it may be, which was mainly responsible for the tremendous commitment of the Locarno Treaty, and for the insistence of successive Governments on binding this country, in the event of war, to Continental military strategy. It is presumably in large measure responsible for Mr. Baldwin's astounding statement that for the future the Rhine is England's frontier, because France *does* occupy the Channel ports. This statement was

future of destroyers are not clear, but the tendency in foreign Navies, particularly in those of France, Italy and Japan, is to increase the gun armament of these craft to a point at which they become small cruisers rather than torpedo craft* and thus a threat to the British trade routes. In the British Fleet, on the other hand, the tendency is still to emphasise their torpedo function at the cost of their gun armament. On this question, as on most others, the author finds himself, unhappily, in harmony with the ideas of other navies and at variance with those of his own.

* * * * *

Turning from purely technical disputes to the question of the policy of future limitation, Germany and Japan and, unless they have changed their minds, France and Italy, advocate that future limitations on the size of fleets shall be on a *Global* basis, with recovered freedom for each nation to

thus tantamount to a promissory declaration of war on Germany at the dictation of France.

One thing is certain: the French Fleet, free of our self-imposed bonds under the London Naval Treaty, is now a dominating factor in our foreign policy, second only in importance to the fuel threat which has been considered in the last chapter.

* France and Italy have insisted on merging light cruisers and destroyers in a single class, combining the tonnage allowed for each class into a total tonnage for both. It is to this policy on the part of France and Italy, and to the reverse policy on the part of Great Britain, that we now very largely owe the threat to our sea communications from light surface craft as well as from submarines.

build what ships are considered desirable within the total limit. Great Britain and America still, apparently, favour the rule-of-thumb, or yardstick, method of category and individual tonnage limitation, and rigid rules governing the calibre of guns.

The case for freedom of design within a total tonnage limit is carefully considered, and advocated,* in a subsequent chapter, and here the author will confine himself to a reference to a class of ship which is not regulated by any Naval Treaty, and which Great Britain has been free to construct, without limitation of numbers, and without reference to the fleets of other nations, since the London Naval Treaty was signed.

By Clause 8† of this Treaty we have been, as

* It may not be out of place to point out here, in a sentence, that the total tonnage system of limitation, with perfect freedom within the limit, resolves, once and for all, the technical wrangles that have confronted the world since the Washington Treaty. By such a system, a nation with a taste for "mastodons" can build them, but only at the sacrifice of numbers. America, if she so desires, can build a fleet of aircraft carriers, but with a resulting loss in more vital craft. It is becoming increasingly plain that the Admiralty's love of the *yardstick*, and its distaste for freedom of design, are the outcome of the lack of any clear strategical conception or naval doctrine.

† Clause 21 of the London Naval Treaty, commonly known as the "Escalator Clause," is not considered here, because its execution involves technical and strategical questions which it is the object of this book, as a whole, to investigate. Furthermore, its execution, unlike Clause 8, involves the naval policy of America and Japan, stabilised until the termination, in December 1936, of the London Naval Treaty. It must be

we still are, at liberty to build vessels of 2,000 tons, mounting four 6-inch guns, provided that their speed does not exceed 20 knots and provided, also, that they are not equipped to carry or discharge torpedoes. Such vessels, if constructed in adequate numbers, would provide a safeguard, as convoy escorts, against the high-speed, well-armed small surface craft, as well as against the submarines, which other nations could launch in shoals against our trade and against which at present we have no means of defence.

Particularly is this true in the case of the thirty-two small French cruisers of the *Fantasque* class which, though for three years advertised as destroyers in the Official Return of Fleets, are cruisers in the strict sense of the term, as well as by the definition of cruisers contained in the London Naval Treaty itself.

The urgency of strengthening the Navy with a large number of these robust little convoy cruisers has been stressed by Naval Officers on the active list. It is therefore as surprising as it is disquieting that the political spokesman for the Navy in the House of Commons should have opposed the construction of such vessels in the recent debate on the Naval Estimates, though such reasonable provision for convoy, before instead of after the emergency,

presumed, however, that under this clause the four valuable ships *Hawkins*, *Frobisher*, *Effingham* and *Vindictive* will be saved from the scrap-heap, even though new construction is not immediately laid down under the clause.

had the support of Members of the House of Commons who are not generally associated with a demand for new construction.

In the Naval Estimates debate* Lord Stanley assured the House " that the convoy system would not be introduced at once on the outbreak of war," not, in fact, " until conditions had become so *intolerable* that the trading community were prepared to make the necessary sacrifices." He employed the old fallacious arguments upon which the Admiralty opposition to the introduction of convoy in the late war was founded, and which are considered in this book.

Challenged by a Socialist Member as to whether the Admiralty proposed once again to wait before instituting the convoy system until so many ships had been sunk that the country could stand it no longer, Lord Stanley, after repeating the anti-convoy arguments, indicated that if convoy, in fact, became necessary, the Government would then, and not till then, give orders to build sloops as escorts. And what sort of sloops? Vessels of 1,170 tons mounting four 4·7-inch guns and devoid of all protection from gun fire. Such vessels would be at the mercy of the new French ships of 2,450 tons, and of the latest heavily armed destroyers in other Fleets. They are no better equipped, indeed they are worse, for their function than were those which met disaster in the Scandinavian convoys in the late war.

* Hansard, March 14, 1935.

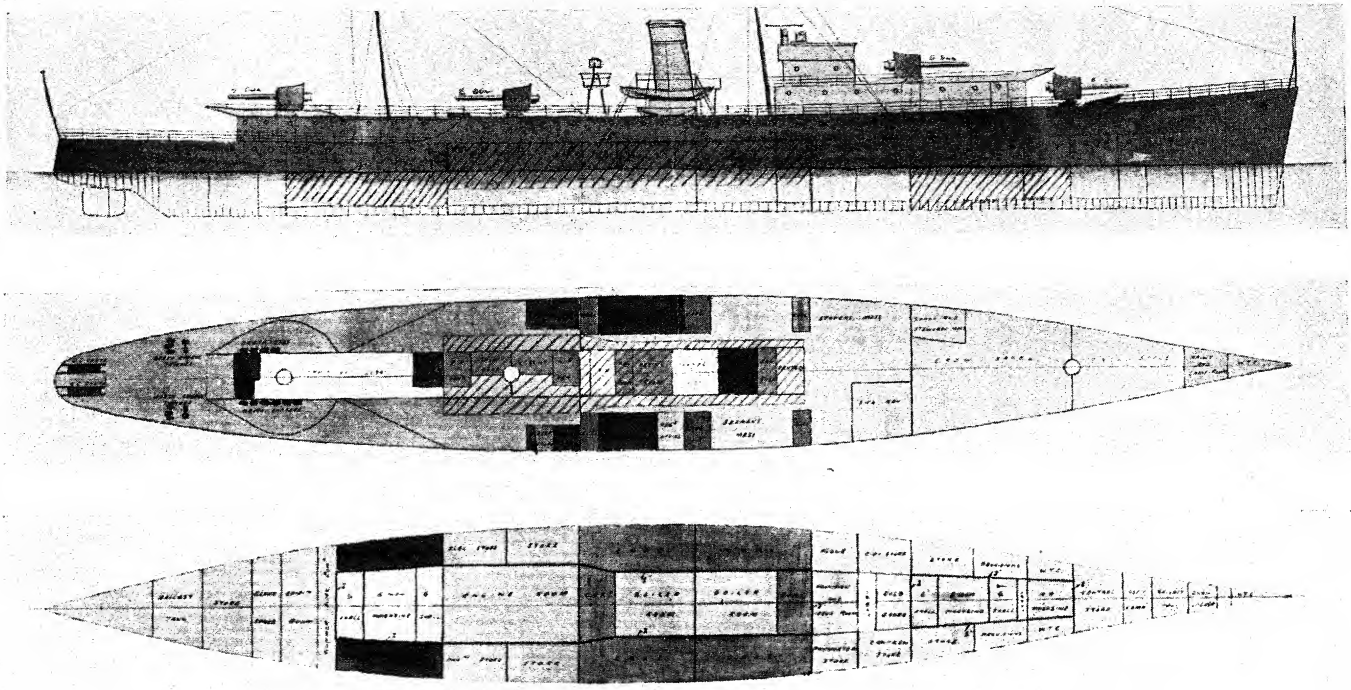
It is surely time that the nation discovered whether political spokesmen for the Navy in the House of Commons are really representing the views of the Navy. Whether, that is to say, the Navy has yet to learn the terrible lessons of trade defence which the late war should have taught it. As this is almost inconceivable, it is difficult to resist the conclusion that the Sea Lords are now treated by politicians, not as Lords of the Admiralty, but as marine civil servants. In other words, that the Patent of Admiralty* is still out of commission.

* The Patent of Admiralty, unchanged except in unimportant particulars since the reign of Queen Anne, was rendered inoperative by the Order in Council of 1904, which made the late Lord Fisher solely responsible. A succession of Orders in Council since the war have tended to model the Admiralty on the War Office, and to bring the Sea Lords, as a whole, more directly under political influence.

As the late Admiral Sir William Henderson pointed out in 1924, by the Order in Council of 1904 the First Sea Lord was made virtually supreme over all his colleagues, but became directly a Departmental Officer of Supply in being head of the Naval Ordnance Department and by sharing with the Fourth Sea Lord the responsibility for supplies, the most important of which is fuel.

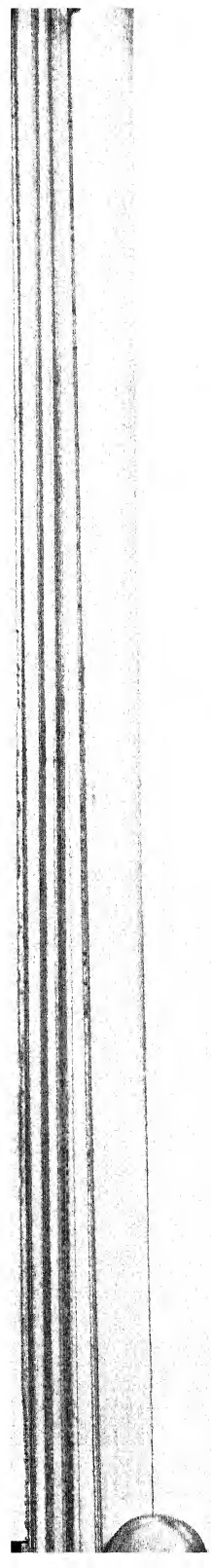
Much of the Controller's responsibility was also transferred to the First Sea Lord. Admiral Henderson, the uncle of the present Controller, wrote: "These changes sounded the deathknell of the Admiralty as a board, and although the fiction of its existence has been maintained in the eyes of the public, the Service has long been aware of its decease."

Admiral Sir Douglas Nicholson has written that this revolutionary Order in Council "completely destroyed the very foundations and framework of the Service; so much is



PLAN OF PROTECTED CONVOY CRUISER SHOWN IN FRONTISPIECE

Top: Section through ship showing armour protection of vitals. Centre: Upper deck showing depth charge equipment and armoured deck over engine and boiler rooms. Below: Plan of hold showing armour surrounding vitals. Armoured deck over magazine and shell room not shown.



On the opposite page drawing office plans of a small 2,000 ton convoy cruiser are reproduced. These plans, like the plans of other classes of ships in this book, were prepared in the drawing office of a famous shipbuilding firm. A picture of this vessel,* as she would appear when afloat, serves as a frontispiece.

Once again this design reveals how great a fighting power, and endurance on coal, can be embodied on a moderate tonnage, when excessive speed, and the fantastic horse-powers necessary to obtain it, are foregone. The details of the ship are given on the next page.

An argument brought against a small protected cruiser of this type, mounting 6-inch guns, has been that in a sea-way the 6-inch guns could not easily be handled owing to the weight of the projectile—100 lbs. It has been argued that in the old destroyer *Swift* a 6-inch gun had to be removed for this reason. But there is a great distinction between this small cruiser and a flotilla leader or destroyer, because the beam of this vessel is 12 feet greater than that of our latest torpedo craft. Furthermore, with a tonnage 600 tons greater, these ships could keep the sea and fight their guns under conditions which

this the case that the very knowledge of the Service, as it existed before 1904, is not only unknown, but is continually being misrepresented, not through vice, but through want of knowledge."

* The author is indebted for the frontispiece, and for the other pictures of his ships as they would appear at sea, to Dr. Oscar Parkes, the late editor of *Jane's Fighting Ships*.

last year compelled the British flotillas to abandon an important trade defence exercise in the North Sea on account of weather which was not exceptionally heavy.

In such a robust vessel, therefore, the objection to the 6-inch gun as mounted on a vessel of destroyer design is met. Such small protected cruisers could

Standard Displacement - -	2,000 tons.
Loaded Displacement - -	2,760 tons.
Length - -	345 feet.
Breadth - -	45 feet.
Draught - -	12 feet 6 inches.
Speed - -	18 knots.
Steaming radius -	10,000 miles (11 knots). 7,000 miles (15 knots).
Coal - -	About 700 tons.
Armament -	Four 6-inch guns. Depth charges. New submarine detector.
Protection -	2-inch armoured deck over vitals. 2-inch vertical armour surrounding vitals.

not only overcome the attack of all foreign surface vessels, other than battleships and heavy cruisers, but they would be ideal anti-submarine vessels if the author's experience in command of the anti-submarine flotilla at Portland is any guide. It may be of interest to add that five such ships, mounting twenty 6-inch guns, could be built for the cost of

one *Arethusa* of 5,200 tons, mounting six 6-inch guns only.

In conclusion, the author would repeat, at the risk of being tedious, that whatever limitations on the future strength of the British Navy may be accepted, vessels such as these for the convoy of the nation's food, fuel, and raw materials should continue to be excluded in the future, as they are now, from any treaty restrictions. In war they would save us, while in peace they could advantageously replace our un-warworthy sloops throughout the world.

* * * * *

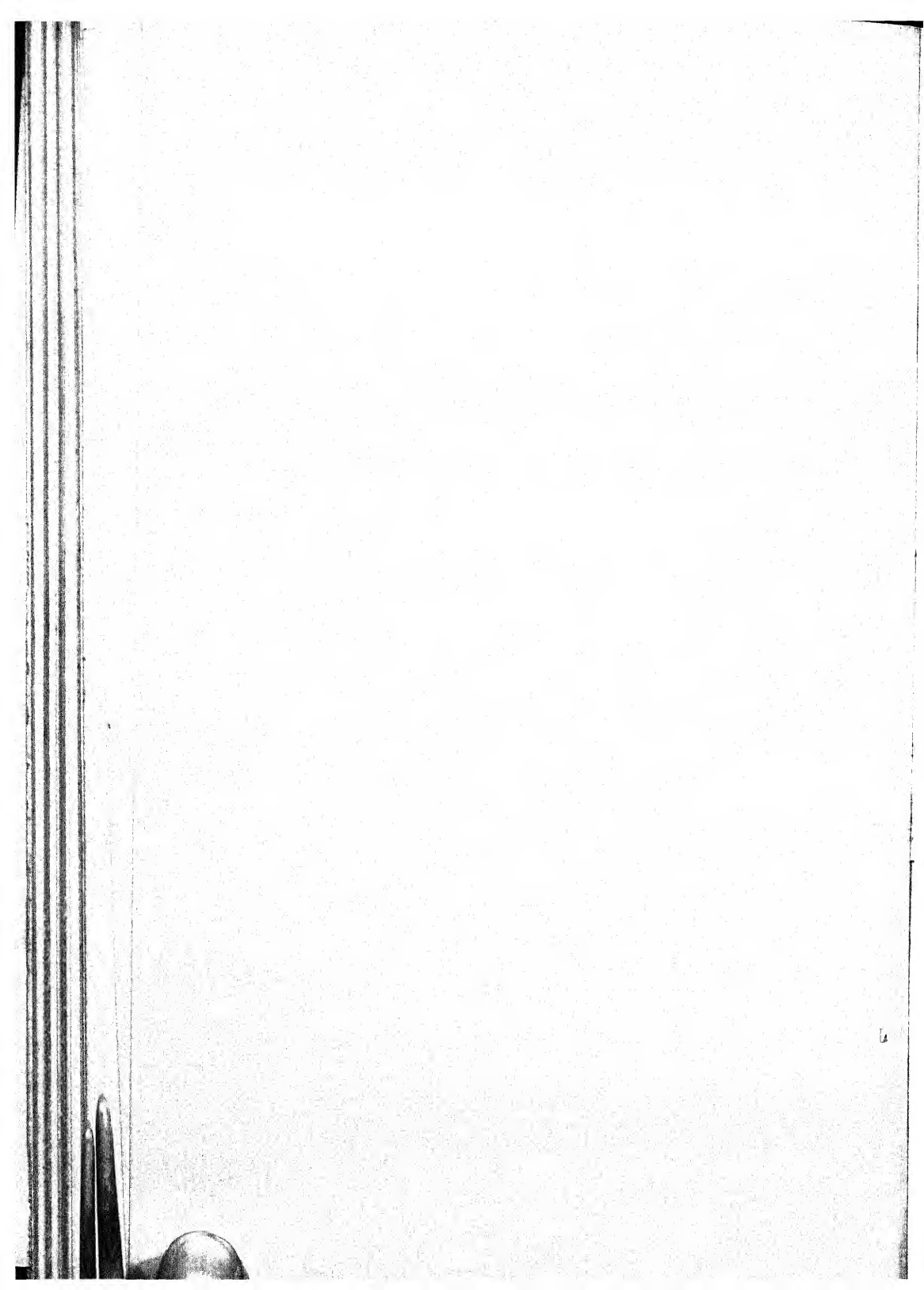
In this and the three foregoing chapters the author has brought up-to-date the Naval questions which are now looming so large in the public mind.

Though the remainder of this book has previously appeared, it will be found that it contains no facts or arguments which are not relevant to those questions of national defence with which we are now faced.

The confusion in the public mind, and seemingly in the minds of our legislators, persists.

PART I

NATIONAL INSECURITY



ERRATA

Page 148, line 3 from bottom. For "handing the use" read "handling and use."

Page 162, footnote, line 3 from bottom. For "butt" read "birth."

CHAPTER I

A CONFUSED PUBLIC

SINCE the bugles sounded the "cease fire" in November 1918 the word "Peace" has been on the lips of Britons more frequently than in any period of British history. If the "war to end war" has not given birth to a peaceful and settled world, it has at least kindled a desire for peace which is deep and sincere in men and women of every political view and station in life. But it is idle to deny that peace, like everything else, has an obverse, without which the word could have no meaning. The obverse, or alternative, of peace is war, and few will dispute that the peace talk of the past fifteen feverish years has in reality been war talk.

The author would be the last to deny that thousands of men and women have striven, and will always continue to strive, for peace as the greatest blessing that a war-stricken world, or, indeed, any world, can enjoy, but the fact remains that the greatest lovers of true peace are seldom to be found as adherents of the pacifist philosophy, for such folk appreciate that peace can only be tolerable when surely based upon those principles of truth, justice, and freedom that to-day receive so little tribute from a world in the throes of revolution and tyranny.

Is it not true to say that the peace-talk in which all Governments have been engaged is based more upon fear of the consequences of war rather than upon the moral aspect of the question? It is hardly surprising, then, that the mass of men and women should dread another war, and that many should proclaim a readiness to stop short of nothing to prevent it, when, for fifteen years, the country has been deluged with warnings from its leaders—political, military, and ecclesiastical—of the horrors that must overtake us should Great Britain once again become involved in hostilities. Mr. Baldwin has gone so far as to assure his countrymen that "one more war in the West, and the civilisation of the ages will fall with as great a shock as that of Rome." If this, and similar pronouncements, are true, mankind has become the victim of a terrible dilemma, for we must be prepared in the future to tolerate oppression and wrong, or to perish miserably in defending the right. To such a wretched pass has fear reduced the leaders of the modern world.

The result is, not unnaturally, a complete state of confusion in the public mind as to what would happen should we once again become involved in war, a confusion of thought for which the public is in no way responsible.

It is told that aircraft will spread wholesale slaughter and chaos, not only over London and other cities, but over harbours and docks, and even ships at sea.

It is told, furthermore, that this terror will descend upon it almost " in the twinkling of an eye," and that a few days of intensive bombing will reduce survivors to panic, and to a demand for surrender. Threats from poison gas and from explosive and incendiary bombs are indiscriminately interwoven in what may generally be described as the Air Terror.

The speed and completeness of the disaster threatened from the air might be thought to be terror enough with which to fill the public mind, but this is not so. The public is led to believe that in the event of another war young Englishmen will once again be mown down in hundreds of thousands on the stricken fields of Europe by machine-guns, tanks, gas, and other mechanical devices of slaughter. The promise of a repetition of wholesale massacre in land warfare, as in the last war, is a further bogy with which young men and women are being induced to uphold the terrible, because non-moral, doctrine of " peace at any price."

But it must be plain to anyone considering these two threats dispassionately that they are mutually incompatible. One or the other must be false. If we are " for it " from the air, the military slaughter in Europe will not eventuate. If, on the other hand, this country is left free to undertake the tremendous preparations necessary for the campaign on land, the threat from the air is, to put it mildly, exaggerated.

The truth seems to be that the nation has made up its mind, as a result of propaganda, that by one means or another wholesale slaughter is an inevitable accompaniment of war in the modern world. This attitude shows sufficient confusion of thought, but the confusion is still worse confounded when we find that the Government insists upon maintaining, at great cost, a Navy as inadequate for defending the nation at sea as it is powerless to protect it from disaster from the skies, or from slaughter on land, or from a combination of both. Here, surely, is a military fog which is proving as bewildering as it is costly.

Afraid of everything we are unprepared to defend ourselves against anything. Instead, we have saddled ourselves with the cost of an Air Force that cannot defend us from the air, an Army that cannot undertake Continental warfare on the scale apparently contemplated, and a Navy that cannot even guarantee the food-supply of this teeming island.

Though it is generally admitted that financial stability is an important factor in national defence, our resources are reduced; while the fear, if not the risk, of war is increasing. Is not the time therefore opportune for examining calmly, without prejudice, self-interest or fear, the dangers to which this country might, in certain eventualities, become subject? Economy of effort is as much a platitude of sound strategy in the military sphere as it is in industrial and social spheres, and is plainly

desirable, but economy of effort is impossible where confusion of thought exists.

No apology is needed, therefore, for endeavouring, in succeeding chapters, to sort the sheep of legitimate apprehension from the goats of groundless terror.

CHAPTER II

THE CONFUSION SORTED

SOME indication has been given of the confusion of thought that has overcome, not only this country, but all the countries of the civilised world. If the confusion is more complete in Great Britain than elsewhere the fact is attributable to our position as an island, which subjects us to dangers from the sea from which other nations are relatively, though not absolutely, immune.

Though the popular conception of the next war is a confused and lurid mixture of the indiscriminate bombing and poisoning of men, women, and children from the skies ; of wholesale slaughter of the nation's manhood on the battlefields ; and of starvation from the sea ; each aspect of the nightmare is distinct, and should be so considered. Let us assume, for the present, that the threatened ruin from the air is authentic, though this view, as will be demonstrated later, is false.

On this assumption it is evident that the first devastating attack we should be called upon to resist is aerial attack, because such an attack, subject to weather conditions, could be launched with all available force within a few hours of the declaration of war. Because such an attack is to

be regarded as devastating in any event, and overwhelming if successful, it follows that the Air Force should now definitely be treated as the first line of defence, for it is manifest that the Navy cannot prevent the bombing of London, nor yet the Army. It certainly seems to follow, then, that no effort or expenditure can be regarded as too large to avoid so great a calamity. Unless our air defence is sure, the Navy and Army will take little, if any, part in the next campaign.

Let us also assume that such air defence is possible and that the necessary provision to ensure it is made. With the Air Force, so to speak, holding the ring, great armies can be raised and landed on the Continent, as in the late war, though in this case it is necessary to remark that such a military operation would be undertaken deliberately in order to honour engagements to which post-war statesmen have committed Great Britain by the terms of the Locarno Treaty. If they have not so committed the country it is their duty to say so publicly.

With regard to the Army, and the wholesale slaughter of our manhood on land battlefields which the country has been led to expect, the dispatch of great armies to the shambles would be thus a voluntary, rather than an inevitable, enterprise—to be regarded, in short, as national *felo-de-se*. If the Air Force is the paramount arm, such an enterprise can have nothing to do with self-defence.

We come lastly to the Navy which, with the Air Force on guard, would do what it could, within its

straitened resources, to exercise its natural function of protecting our food, securing the sea communications of the Army, and of preventing the invasion of our shores, a threat which even air enthusiasts hardly contemplate from the air.

The foregoing very brief analysis might appear to bring some semblance of order out of the chaos that exists as to the position with which we shall be faced in the next war, presuming that the hopes and fears reposed in aircraft are justifiable. There is, however, the complication that the Navy would be unable to protect our ships and transports from the attention of hostile aircraft which, according to present theory, can only be countered by our own aircraft. This aspect of the question will be considered in due course, and will also be demonstrated to be false, but for the purpose of the present analysis the alleged vulnerability of ships to aircraft attack is accepted as authentic. Let us therefore take for granted the urgency of treating the air as our first line of defence, and of acting accordingly.

Assuming that the danger of attack from the air transcends all other threats to which the country is liable, and that the menace threatens civilisation, should it not be a matter of urgent public policy to make full provision to guard the country against an attack which, if successful, will prove to be an overwhelming catastrophe?

It would necessarily follow, in view of our financial stringency, that a very large proportion of the money

now devoted to the Navy and Army should be devoted to the Air Force, and expended on a vast expansion of fighting and bombing aeroplanes and flying personnel, for experience during the past years has shown that, in aerial manœuvres, our squadrons of fighting machines have been totally unable to prevent bombers from bombing London and escaping intact. Moreover, in the late war, pilots were counted in scores of thousands, and casualties to aircraft and pilots in tens of thousands.*

The Government should also be called upon to face the consequences of the inevitable penetration of our aerial defence from time to time, no matter how numerous the defending aircraft, by the provision of gas masks on an enormous scale and the drilling of men, women, and children in their use. Furthermore, the population of London, and of every great city, should from time to time be subjected to air alarms as is now the practice in Tokyo, in order to accustom the populace to take cover when impending air raids are reported. The lights of London should be periodically extinguished; fire-fighting battalions and anti-poison gas brigades should be organised if panic and disaster are to be avoided when the Air Terror breaks.

* Lord Trenchard, speaking at Cambridge University, has said that he anticipated a wastage of aeroplanes in war of 80% or 90% per month (960%—1080% per annum). He added " pilots were not so difficult to supply, though there was difficulty in that direction, and he hoped that an Air Force squadron would be formed in the University."

It will be said that periodical practise by the populace of these very necessary measures of self-defence would be unpopular, as indeed they would. It may be argued that they would produce a state of nerves in the civil population. This may be so, but, if the premise we have adopted is right, such precautions are none the less the duty of a Government whose members repeatedly warn the nation of the aerial horrors in store.

The only alternative to an enormous expansion of the Air Force, and to the drilling of the population in systematically taking cover, and in self-protection against gas, is the policy of "peace at any price" to which the Air Terror, fomented by those who presume to lead the nation, has given rise.

Well, assuming that the Government has at last faced the full implications of the aerial menace against which it warns the country, what of the Army, and of the Navy, now relegated to the position of our second line of defence?

With regard to the Army it will be necessary in the near future for those in authority to decide whether, in the event of war, it is once again to be expanded into a conscript army and landed on the Continent, or whether it is to remain a small professional army disclaiming the liabilities of Continental warfare on the grand scale.

The author is not in a position to say whether Great Britain has been committed by the terms of the Locarno Treaty, or by any secret engagement,

to land conscript or voluntarily enlisted armies in France. From the warnings administered periodically by the Prime Minister, Mr. Baldwin, and others, of the slaughter of the nation's manhood to be expected in the event of another war, it almost seems as though we stand committed to Continental land warfare. If this is so, our military preparations are clearly inadequate. If Continental warfare is not contemplated—that is to say, if it is intended only to use the British Army as a small expeditionary force for maintaining peace within the Empire—its mechanisation can hardly be justified on strategical grounds. Furthermore, Army estimates will need to be reduced if the Air Force is to be greatly expanded.

We come last of all to what, prior to the Air menace, came first and foremost—the Royal Navy.

It has already been assumed that in the absence of a completely reliable Air Force the Navy can hardly come into action.

Supposing, however, that an expanded Air Force can be made as sure a shield as was the Navy before the advent of the aeroplane, the country will need as strong a Navy as the finances of the country can bear when full provision has been made for its air defences.

No one will dispute that our share in world trade is reduced, or that the weight of debt we are called upon to bear is greater than ever before. Many will agree with the author that the financial burden involved in defence cannot be continued indefinitely

at its present level. If therefore the assumptions made in this chapter are right, the nation must be content to take risks with its food supply at sea, allotting to the Navy what small sum can be spared when full provision has been made for the Air Force and, if Continental warfare is still our policy, for an expansion of a mechanised Army.

In short, so long as present military doctrine holds the field security for this island is no longer attainable at a cost which the nation can be expected to shoulder. For the sake of some defence against gas and bombs, therefore, we must be prepared to accept the risk of starvation and invasion against which the Navy has successfully guarded the nation in the centuries gone by.

CHAPTER III

THE AIR TERROR EXAMINED

IT has been shown that it is to the Air Terror, mainly, that the country owes the confusion of thought now surrounding the problem of national defence, a confusion that has involved the country in a total expenditure of £1,717,439,450 since 1920, while leaving each of the three fighting services in a state of unfitness to carry out the duties for which it is maintained. Thus it will not be out of place to devote a chapter early in this book to a consideration of a question which has so remarkably, and adversely, affected the national trust in the Navy's ability to defend this island from the disasters that periodically overtake countries with land frontiers.

Is the Air Terror a grim reality, or is it, in sober fact, a delusion? This question can be approached, and should be approached, from the two distinct standpoints of reason and experience.

Let us first consider the question as reasonable men who, while giving full weight to the limited power of aircraft, refuse to allow their minds to be closed to the great and unchanging limitations which inevitably surround, to-day and for all time, the operation of air-borne machines. Broadly speaking, the strict limitations of aircraft are attributable to the complete instability of the atmosphere

which forms the sea, so to speak, upon and within which they are borne, and to the almost negligible buoyancy of air when compared to water. The relation between land and air as a supporting medium, being almost infinite, need not be discussed.

Considering, first, the relative stability of the sea when compared to the notorious instability of the air, it is well to remember that for all practical purposes the sea can be regarded as a stationary medium upon which, and through which, vessels can make good the speed for which they are designed. It is true that in narrow waters ships may encounter tides bearing a considerable relation to their own proper speed, but such tides are not only exactly predictable but reverse their direction regularly every few hours. It is also true that permanent currents are encountered in the oceans, but these, for the most part, are exactly known and charted, and are sufficiently slow to be disregarded by tramp steamers with a speed as low as nine knots. Only in such waters as the Pentland Firth do ships experience sea currents comparable to the air currents perpetually affecting aircraft, and in such localities the currents are reversed at regular intervals that can be predicted to a nicety.

In short, for practical purposes the seas and oceans of the world may be treated as fixed. This being so, it necessarily follows that distances between any two ports in the world are, subject to the qualifications mentioned, absolute distances. Time tables are thus possible and, within narrow limits, the quantity

of fuel required for a voyage—constituting a small fraction only of the load carried—is predictable. Furthermore, on the sea navigation is an exact science, the idea of a ship losing herself being ridiculous to experienced seamen. Equally unprecedented is the stranding of a ship on the High Seas for the lack of fuel to reach her port: on those very rare occasions when a ship runs short of fuel she is towed into harbour. In such a case the ship merely stops, and does not, for lack of motion, "crash."

Let us now turn to a short consideration of air-going vessels whose ocean is the atmosphere and whose currents are the winds.

The contrast between an ocean of sea water and an atmospheric ocean is in itself striking, but the contrast between the stability and instability of the supporting medium is not the whole story. Ships move and operate in two media, the stable sea and the unstable air, the air's instability constituting those winds which, when their velocity is very great, and only then, can affect, without dominating, the movement of the ship through the sea.

Aircraft, on the other hand, whether airships or aeroplanes, operate within a single moving medium, their aerial ocean, so that the movement of the air, which to a ship constitutes a wind, to aircraft constitutes a current whose speed affects the speed of aircraft over the ground to the full extent of the movement of the air in which the aircraft is immersed, and within which it is borne.

In other words, all aircraft, whether heavier or lighter than air, are parasitical, as are birds and insects, to a single moving medium. It therefore follows that whereas ships at sea, or vehicles on land, are subject to absolute standards which alone make calculation and prediction possible, aircraft operation is without standards : in aircraft operation distance, speed, and direction are relative expressions dependent upon the speed and direction of the atmosphere. Indeed, aerial operation is a very perfect example of terrestrial relativity in action, and " airmindedness " a state of mental relativity which, perforce, must disregard those standards of measurement essential in reasoning.

Let us for a moment consider a few cases to illustrate the simple and unchanging laws of dynamics which " airmindedness " of necessity ignores. If the geographical distance from one port to another is 3,000 miles, the distance a steamer must steam between them is also 3,000 miles. Head winds will exert a slight pressure and, if exceedingly strong, may delay a ship's arrival by a few hours. If, on the other hand, this 3,000-mile voyage is to be made by air, a totally different situation arises. What was a wind to the ship is a current to aircraft, a current whose speed is superimposed to the full extent upon the speed of the air-going vessel. Thus, to give an example, so moderate a wind as 30 miles an hour reduces the speed of an 80 m.p.h. aircraft to 50 over the ground ; but because the aircraft maintains her own proper

speed of 80 m.p.h. through the moving air she has to fly between the two ports a distance, not of 3,000 miles, but of 4,800 miles. Furthermore, a 30-mile an hour wind at the surface of the sea becomes a wind of about 50 m.p.h. at so low a flying height as 2,000 feet, so that the aircraft, to negotiate the absolute distance of 3,000 miles must, at 2,000 feet, fly a distance of 8,000 miles.

But the speed of the wind increases progressively with height. The extent of this increase was demonstrated by a pilot balloon released from Calshot on October 23, 1923. On this day the wind was slight at the earth's surface, but, when picked up four hours after release, at Leipzig, the balloon was found to have attained a maximum speed of 250 m.p.h. It will thus be seen that an 80 or 100 m.p.h. aeroplane or airship is completely under the domination of the moving medium in which it operates when the "wind" reaches a velocity at the surface of the earth which is more than a trifling percentage of its own flight speed. The machine, in fact, is crippled in range in anything but fine weather.

This disability is in itself sufficient to rule out aircraft as reliable vehicles for getting to and from a place in anything but suitable atmospheric conditions, but there are plenty of others. Navigation, or a knowledge of the whereabouts of the vessel, is impracticable if fixed landmarks or seamarks are not visible. Because all aircraft are parasites to the moving air, those on board are not

conscious of the currents to which their vessels are subject. Those on board the aircraft feel only a wind equal to the speed of their own movement through the moving air, and always from right ahead, irrespective of what the direction of the air current may be. Instruments for gauging the speed of the wind, and the distance made good, can only be reliable when a fixed point of reference is available, which will not be the case over the sea or a desert, in thick weather, or at night. It will thus be plain that in circumstances constantly arising by day, and always at night in the absence of fixed and recognisable lights, and in all but calm weather, aircraft are untrustworthy vessels of war or commerce.

It is true that during short flights, as between Croydon and Le Bourget, the exceptional wireless facilities provided are of assistance in the navigation of aeroplanes which carry sufficient reserves of fuel to enable them to reach port from the position indicated. But such exclusive and uninterrupted facilities are exceptional, and would not be available in time of war.

To the navigational disabilities of aircraft another disability is added in the matter of lifting power. The buoyancy of air is approximately $\frac{1}{840}$ of sea water, and it is for this reason that great horsepowers are required to lift a trifling weight off the ground and at the same time to propel it through the air. In what other vehicle does the engine have to lift as well as to propel its load?

It may be said that although all this is true, the

fact remains that several tons can now be driven at a hundred miles per hour through the air. This is so, but how much of the weight propelled is cargo in the form of bombs or merchandise,* and how much is distributed between the machine itself, its engine, its crew and, to come to the vital point, its fuel, with the exhaustion of which the machine is lifeless, if it is not, as it too often is, a mass of twisted metal? Fuel is, and must remain, the Achilles' heel of ambitious aerial plans, whether for commerce or war, and for reasons which the discussion of wind, and consequently of aerial distances and navigational disabilities, must have made tolerably plain. Only during short flights, in which atmospheric conditions are likely to remain stable, do aircraft carry any appreciable load other than petrol. Even on short flights, on anything but a calm day, a carefully calculated balance must be struck between fuel and useful load.

During the past years we know that scores of ambitious flights have been held up for days, not infrequently for weeks, and sometimes for months, because the weather, to the astonishment of the general public (to whom it appeared ideal) was pronounced unfavourable by the Air Ministry with inside information from ships at sea and distant shore stations. A striking example was afforded of the utter dependence of aircraft upon favouring

* The Air Ministry forbids the publication of the vital figures of fuel and bomb load from which effective bombing range in varying states of weather can be calculated.

breezes when, during glorious weather in July last, the Italian "Air Armada," after days of waiting at Londonderry, was wafted with a southerly wind to Iceland, while Mr. and Mrs. Mollison, to whose machine bound West to New York the same wind was less favourable, lay day by day, inexplicably to the waiting world, on Pendine Sands.

So much for the domination of aircraft by the wind. But what of the load carried? The reader must by now be aware that in anything but short flights between refuelling bases the cargo of aircraft remains, as it has always been—*petrol.*

The foregoing brief exposition of the fundamental disabilities of aircraft as commercial or military vehicles may, it is feared, have proved tedious to laymen. It is, however, essential that the simple laws of dynamics should be mastered if the public's dread of air-borne vehicles, and its fear of their increasing potency, are to be laid to rest. Aircraft, whether used for commerce or war, are, and must remain, slaves of the weather except in short flights in which the endurance of the machine considerably exceeds the lengthened double journey which wind *from any direction* * involves.

* As there is much misapprehension on this point, it will be well to illustrate the effect on a 90 m.p.h. bomber of a 35 m.p.h. wind (at flying height) during an expedition to a destination 275 miles distant, assuming that the voyage begins with the wind favourable. The outgoing journey is completed at 90 *plus* 35 m.p.h. = 125 m.p.h., and occupies $2\frac{1}{5}$ hours. The machine thus flies and uses petrol for $2\frac{1}{5}$ times 90 = 198 miles. On the return journey the speed is 90 *minus*

When carrying any considerable load in addition to petrol, the flight-range of aircraft is much less than the public has been led to think, in spite of the great increase in recent years of engine efficiency. On short one-way flights between, for example, the English coast and Paris, or the French coast and London, load must be sacrificed for additional fuel if head winds prevail. It is true that in a flight to Paris, with a Westerly wind, passenger load can be increased at the expense of fuel because of the reduced distance caused by the wind for the *one way* voyage. It is apt to be overlooked, however, that commercial aircraft refuel in Paris and London, a facility that could hardly be anticipated in the event of war if the aircraft were hostile bombers. The nation has been taught to regard these so-called air-liners as potential bombers of devastating potentialities, but on no occasion is the public reminded of the facts to which attention is here drawn. Indeed, the suppression of this fundamental distinction between aircraft used for passengers and the same

35 m.p.h. = 55 m.p.h. The time required for the flight is 5 hours, which represents a distance of 5 times 90 = 450 miles. It will thus be seen that the machine would have to travel altogether 648 *air* miles on the journey to its destination and back, presuming that it kept a dead straight course. If it had fuel for 550 miles only it would crash 98 miles from home. If, on the other hand, the pilot was allowed sufficient petrol, with a reasonable reserve to give him the extra range of 100 miles, a large proportion of the bomb load would have to be discarded. The greater the distance the more devastating is the effect of a moderate wind.

aircraft used as bombers may not unfairly be described as a scandal.

The subsidy of £551,000 to Imperial Airways, whose total fleet does not exceed 42 machines, is frequently defended on the ground that the London-Karachi air route is a vital strategical link. How can this be so when the whole of the intervening territory is foreign, and the " link " includes railway travel across the territory of two leading European powers ?

It is not intended to imply that Paris and London are not liable to bombing attacks. Nevertheless, it is a fact that the bomb-load that can be dropped on London or Paris by aircraft condemned to make the double journey without refuelling is absurdly exaggerated, as Air-Commodore Chamier, Secretary-General of the Air League, has recently had to admit, in order to give some semblance of reason to his defence of the " right to bomb " troublesome natives. If exaggeration exists with regard to the bombing of London or Paris from French or English soil, what are we to think of the terror systematically fostered with regard to the liability of London, and other English cities, to bombs and poison gas from more distant countries ? Those who make it their business to intimidate the country do not even hesitate to hold the Russian Air Force *in terrorem* over London. This madness has now spread to Tokyo, New York, and Moscow, and, for all the author knows, to Timbuctoo.

The truth is that London has nothing to fear from

bombing aircraft operating at any considerable distances from the French or Flanders coast. Though bombing, under suitable weather conditions, is clearly possible from near the French coast, its effect can only be a fraction of what the country has been taught to expect.

Can any man, with his sense of humour unimpaired, have watched unmoved the recent wriggles of bombing champions when their only, and therefore cherished, weapon was threatened with abolition by the very sensible European proposal to abolish it?* The "Terror" melted away, and the public was reproved for exaggerating

* The abolition of bombing aircraft has been advocated by Germany, Italy, Japan, Britain, and other nations, and France has proposed the transfer of heavy bombers to the League of Nations. At the Disarmament Conference, however, Britain made a reservation in favour of the retention of "police bombing." "Mr. Eden said he was not surprised that the reservation permitting air bombing for police purposes in certain outlying regions should have aroused criticism. The British delegation regretted having to insert this reservation as much as any of the critics, but the state of affairs which it revealed was no mystery. This method of enforcement for police purposes had been in operation in territories held under mandates from the League, and, so far as he was aware, it had never aroused a protest of any kind. . . .

"Mr. Eden's able explanation did not, however, appear to win converts to the necessity of police bombing; and after other delegates had spoken in favour of universal suppression, Mr. Henderson, the president, suggested that the first reading discussion of the Air Chapter should be suspended."—(*The Times*, May 29, 1933.)

the potency of bombs and poison gas. Indeed, from being a weapon of terror, the bomb took on the nature of a baton in a policeman's hand, though, when used on a native village a few weeks later, it failed either to enforce the law or to do appreciable damage; in fact, it failed to achieve anything beyond exciting contempt in brave, if unruly, tribesmen who now accuse Englishmen of attacking women.

Ruling out, then, as we may, any real aerial threat from territory other than Belgian and French, what has London, at the worst, to fear? Periodical bombing attacks, *so long as bombing is retained*, must be expected. These attacks, though shocking, cannot be devastating in view of the small bomb loads which, in practice as opposed to enthusiastic theory, can be carried. An important fact not generally appreciated is that approximately one-fifth only of the surface of London contains buildings, so that a fraction only of the bombs dropped will cause structural damage. Not only is it a fact that the effect of unconfined explosions is trifling, but it is also true that an enormous increase in the weight of an explosive charge produces results absurdly incommensurate with the increase and weight of explosive, a phenomenon well known in the Navy, which has carried out exhaustive experiments with varying explosive charges placed at fixed distances from the hulls of ships.

It is commonly believed that in the past few years the destructiveness of explosives has been greatly increased. This is untrue.

But what of the aeroplanes for the conveyance of bombs to London and Paris? It has become the habit to speak as though on the outbreak of the next war aircraft will be available in scores where a few only were available in the late war. In the first ten months of 1918 no fewer than 26,685 aeroplanes were produced in this country at a cost of £106,740,000, allowing £4,000 as the average price of each machine.* The number of British aeroplanes constructed throughout the war was considerably over 100,000. The German and French outputs were also enormous. Pilots were counted in scores of thousands and the casualties were staggering. No one disputes Germany's air resources,† the skill of German airmen, nor yet the German "will to bomb," but what was the achievement? In 103 bombing raids over Great Britain in the course of four years of war the total number of people killed was 1,413, a figure comparing unfavourably with the 25,000 killed and about 700,000 wounded by motor vehicles in the last four years of peace. British and French bombing attacks were correspondingly ineffective.

It may be remarked that a large proportion of

* In the debate on the Air Estimates in 1926, Sir Philip Sassoon stated that "an aeroplane costs between £3,000 and £15,000," and that "some of the single-engine squadrons carry as much as £250,000 worth of technical equipment." Later figures are not available to the author.

† After the war Germany destroyed 15,700 aeroplanes and 27,000 aero engines by order of the Allies.

those killed in London were killed by bombs dropped from airships, a form of aircraft now virtually extinct, but comparing favourably with aeroplanes in the matter of flight-range and bomb load.

Those who may be disposed to think that the potency and destructiveness of bombs has immeasurably increased in recent years will do well to remember that in the recent " police bombing " of the village of Kotkai, on the North West Frontier of India, 34 large bombers, opposed by nothing more alarming than rifle fire from snipers, failed to reduce, let alone to demolish, a village consisting of mud huts.

But what of poison gas, that bogy held over the nation by those whose business and interest it is to perpetuate the Air Terror, and to manufacture the chemicals ? Laymen are led to believe that " scientists " have, since the war, discovered gases of which a few whiffs will spread death and agony over whole cities. This again is false. The gases used, and proposed for use, in that " next war " are no deadlier than those used effectively on the Western Front in the first days of surprise, and subsequently countered, and never used at all in the 103 air raids over England.*

* The following letter from Mr. Arthur Marshall, F.I.C., F.C.S., M.R.I., author of *Explosives*, and formerly Adviser on Gas Warfare to the Government of India, appeared in *The Times* of January 4, 1933 : " According to your report of Lord Halsbury's article in the *British Legion Journal*, he has

Why were they not used? Certainly not on account of any tenderness on the part of our enemies, but because they could not be used effectively from aircraft. To manufacture and carry by aeroplane sufficient containers to enable a deadly concentration of gas to be formed, even in a limited area, implies an effort out of all proportion to the results to be obtained.

There is another disability of aircraft as weapons to which reference should here be made. What of the inability to discharge a bomb with any approach to accuracy, or, in other words, with that accuracy distinguishing a legitimate military weapon from the indiscriminate weapon of hooliganism? The inherent disabilities of accurate, and therefore discriminate, bombing were discussed by Neon in the *Great Delusion.* As it is not possible to

been trying to make our hair stand on end about the next war. I cannot occupy your space to reply to all the points raised, but he has been misinformed about these matters. Diphenylchloroarsine has been tested carefully and found to be less potent than mustard gas. Mustard gas itself would not do so much injury if dropped on a city as the same weight of high explosive. Gas masks are available which protect satisfactorily against the " gases " he mentions (diphenylchloroarsine and diphenylcyanoarsine). Many people think they are promoting the cause of peace by frightening the public as much as possible. I believe that they produce exactly the opposite effect and that fear is the principal cause of wars in the modern world. Therefore unnecessary scares should be avoided."

improve upon that concise statement, the author cannot do better than quote it :

"Before releasing a bomb, the pilot must get his machine into a particular position in the air if it is to drop the bomb on the mark. The trajectory of the bomb is the result of its gravity and the speed of the aeroplane. 'There is only one place up in the air where a plane can be if it is going to hit the mark,' and only during the moment of time when the aeroplane is at that particular spot in the heavens can any bomb dropped fall on its objective (if that objective is of small area, a building or such like). The 'spot' depends upon the altitude of the aeroplane, its exact speed through space, not its indicated engine speed, and on its actual direction and angle of flight. Actual direction of approach introduces again the question of air current—the wind at that particular height and locality—the speed and direction of which can only be guessed. The aeroplane drops its bomb and flies on. The pilot in the plane cannot wait and observe the result, he cannot correct his sights and fire again, he is gone, and does not attempt to drop a second bomb on the same target."

Ideal bombing conditions arise when a high speed target is steaming into a strong wind. Because the speed of a bombing aeroplane over the sea, approaching from astern, is reduced by the full speed of the wind, it thus becomes almost stationary above the target. Under such circumstances considerable bombing accuracy can very naturally be attained, as it is attained against the latest R.A.F. speed boat targets. In war, however, such conditions would

never arise if those on board the target did not deliberately accommodate themselves to the needs of the bomber.

In a test of aircraft made by the Admiralty against the *Agamemnon* 114 bombs were dropped without a single hit. These trials were carried out with a 35 m.p.h. wind at 8,000 feet, with the ship steaming 10–12 knots. Meanwhile, the aircraft were unembarrassed by anti-aircraft fire. It may be remarked that in all such exercises *the targets are brought within easy flying range of the aircraft bases.*

Should a bomb, by chance, drop on a warship, it must be remembered that modern battleships carry deck armour specially designed to stand plunging fire from a 16-inch armour-piercing shell, weighing more than a ton. The bomb-load of the most modern day-bombing aeroplane is 500 lb., consisting usually of two bombs of 250 lb. apiece.

Nevertheless, the terror that has been fostered with regard to the bombing of London has been extended to cover the bombing out of existence of our ships, dockyards, and ports, with a resulting loss of confidence in the defensive power of the sea. Here again experience reinforces reason in dismissing these beliefs as unsubstantial nightmares. In the late war the Germans dropped bombs on London, 120 miles away from their bases, while 60 miles from their bases thousands of British ships, carrying inevitable defeat to Germany, presented

themselves as targets. How many of these ships were bombed? Effectually, not one. Why?

Was the shipping in the London docks inconvenienced, or were ships prevented from unloading munitions at Dunkirk, a port which lay close behind the lines, and was subjected sometimes to twenty bombing raids a week? We know they were not.

These awkward facts, awkward, that is to say, for spreaders of the Air Terror, are met by the statement that the Germans did not "try" to use aircraft to cripple us at sea. It seems inconceivable that reasonable men will treat such an explanation seriously, but if they are disposed to do so, let us turn to Zeebrugge, the great German submarine base, a target for scores of British and French bombing aircraft throughout the war. How did the locks, docks, and submarines in this crowded area fare? Not a single lock, not a submarine, was damaged by a bomb. Again, why?

Though the most shameless exaggeration surrounds the potential ruin threatening from the air; though the reality of the menace is a pale shadow of the threat, the *spirit* inspiring indiscriminate bombing is an assassin spirit utterly alien to the British people and, indeed, to France, the only country, it is well to repeat, from which this evil spirit can actually be embodied in bombs over London. If the slaughter of non-combatants is now to be regarded as a permanent feature of British strategy, why spend hundreds of millions in

maintaining so inefficient a means of sabotage? Has the nation forgotten, to quote Mr. A. H. Pollen, that "the long-range guns of the Navy could flatten out more towns, and kill and maim more women and children in a one day's coastwise cruise, than all the squadrons of aeroplanes we are ever likely to possess could manage in all the flights they could ever make"?

On one point, and on one point alone, is all aerial opinion unanimous: *aircraft cannot defend London*, as has been proved again and again in peace exercises, and as Lord Trenchard and other heads of the Air Force have reminded us.* The Air Ministry tacitly admits this by building more than two bombers for every fighter.

Attack on defenceless people, leading to reprisals and counter-reprisals, is the new means to which Great Britain is invited to look for the defence of an Empire and 80,000 miles of sea communications. Very well then: why does not the British Government save twenty millions a year on the Air Force by making naval bombardment the instrument of terror and reprisals? Can it be that the women and children, the old and the infirm, of the French coast towns are not considered to be satisfactory bomb-fodder? Can the blood of Parisian women and children alone satisfy the blood-lust of bombed

* In the House of Lords debate on April 10, 1930, Lord Trenchard made this statement: "Up to date he was sorry to say that no means of *purely passive* defence had yet been devised for dealing with an attack by air."

Londoners? Or is it that the Government and the nation are uneasily aware that the Royal Navy might refuse to be made the instrument of the shameful and cowardly policy of reprisals which never did, and never will, obtain a decision against a brave and high spirited people.

No useful purpose can be served by multiplying such questions, or, indeed, by pursuing further that aerial dementia which has changed Great Britain from a calm and courageous nation of men into a land of hysteria.

CHAPTER IV

POLICE BOMBING AND PRESTIGE

THOUGH it is claimed by the champions of bombing that this form of terrorism is efficacious in maintaining peace and prestige among tribesmen, and that it is an efficient and inexpensive means of making war upon those whom we presume to call " uncivilised," such a claim will not bear the test of experience.

In the French campaign against Abd-el-Krim in Morocco the French, at the outset, were of the same opinion, but the opinion cost them dear. French army orders record that one squadron alone carried out 2,000 bombing raids and dropped over 200 tons of bombs in three months. It was reported that the part played by aeroplanes in the campaign was becoming larger and larger and that forty bombing flights a day were carried out. Notwithstanding this aerial effort, the position of the French became grave. General Naulin said that what he wanted, to retrieve the position, was an abundance of infantry. " There was," he said, " nothing better in war than capturing and holding a position," a capacity, from the nature of things, denied to aircraft. He said : " Artillery and the Air Force were only accessories." He disclosed that there were already 125,000 men in the Riff and that forty

battalions more were to be sent. Clearly the views of General Naulin, who eventually, by the use of Infantry, triumphed in Morocco, are at variance with those of Lord Trenchard, who has said that the result of a war would be determined by the relative number of aeroplanes on our side. In the Moroccan campaign the French had an enormous Air Force—the Moors had none.

Similarly in Syria the extensive use of aeroplanes proved disastrous to French prestige and to French armies. The Syrian population was inflamed by the bombing of Damascus, and other cities, and early in 1926 as many as 40,000 troops had to be drafted to Syria. In Damascus alone 10,000 French troops had to be concentrated, and it was stated that any considerable weakening of the Damascus garrisons would be the signal for the enraged "rebels" to attempt to capture the city.

Experience in Morocco and Syria thus gives the lie to the reiterated beliefs of Lord Trenchard, Sir Frederick Sykes, and other air-minded strategists that nothing can finish war so quickly as lowering the *morale* of the enemy by an active air offensive.

The experience of France has been our own experience on the North West Frontier, notwithstanding the statements of bombing enthusiasts. In July, 1930, the warlike tribesmen, so far from being cowed by aircraft, advanced to the very gates of Peshawar before being dispersed by the Army.

The public is repeatedly assured that in Iraq the

substitution of bombing aircraft for troops has been as successful as it has been economical, and the belief has been fostered that British prestige in the Middle East has been enhanced by "police bombing." It may, therefore, be of interest to the public to read an authentic account of air operations in recent years in Iraq.

* * * * *

On October 1, 1922, the Royal Air Force assumed military responsibility for Iraq, but it was from the beginning of that year that the British and Indian troops were withdrawn to be replaced by aircraft. Though at this time the Arab tribes were comparatively quiet, a disturbance broke out among the Kurds who inhabit the mountain regions toward the Persian and Turkish frontiers.

Not far from the town of Sulaimani, in the mountains to the north-east of Baghdad, Karim Fatteh Beg, the leader of about eighty Kurdish brigands of the Hamawand tribe, treacherously murdered two British Political Officers. The district is inhabited by nomadic and semi-nomadic Kurdish tribes who, although discontented, were not then disaffected, and also by peaceful and inoffensive Kurdish cultivators in settled villages.

It was imperative that Karim Fatteh Beg should be arrested and brought to justice at the earliest possible moment, and a battalion of Assyrians, the only reliable troops available, was despatched for

that purpose. The murderer and his following made off into the mountains, and the Assyrians had to be withdrawn before they could overtake him owing to the development of a more serious situation elsewhere. It was therefore decided to employ the Royal Air Force to deal with Karim Fatteh Beg.

The aircraft operated of necessity from the aerodrome at Kirkuk, on the plain, which is separated from the country in which Karim Fatteh Beg was moving, by very rough mountains. Although only a short flying distance away, it was impossible for the Intelligence and Political Officers at Kirkuk and Sulaimani to obtain exact information as to the outlaws' whereabouts in less than about eighteen hours. As they were moving incessantly from village to village it was equally impossible to locate them from the air. There was adopted, therefore, the practice of attacking every day, with bombs and machine-guns, each village in which the outlaws had spent the preceding night. It was then reported that aerial action had been taken against the villagers guilty of " sheltering " Karim Fatteh Beg.

The villagers, however, who were peaceful cultivators, and for the most part unarmed, were unable to prevent the outlaws from entering their villages, and could not rightly be held responsible. They did not suffer very heavy casualties from the air raids, or severe damage to their property. Their chief loss was due to the tribute levied by Karim Fatteh

Beg as an alternative to his staying with them for the night, and the consequences to follow. In this way they were ruined, while he acquired a fortune and enhanced prestige. Eventually the outlaws escaped unscathed.

As these events caused a general deterioration in the situation in the whole district, the High Commissioner decided to withdraw the Political Officers from their headquarters in the town of Sulaimani and, in spite of urgent protests, to hand over the government to a local holy man, Shaikh Mahmud, who had recently returned from deportation to India (due to a rebellion he had engineered in 1919). This caused great concern to the notables of the town, who are people of some culture, and law-abiding, and were at that time generally pro-British.

Within three weeks Shaikh Mahmud was in communication with the Turks to the north. He openly defied superior authority and sent a contumacious reply to an order to visit the Political Officer at Kirkuk. A letter was therefore dropped on Sulaimani by aeroplane informing him that the town would be bombed on the following day, failing his immediate submission. Shaikh Mahmud thereupon ordered his retainers to arrest all the leading people in the town and lock them in the jail. The town was twice bombed on the following morning by two squadrons of aircraft. During the raids Shaikh Mahmud retired for a few minutes to a dug-out in his cellar ; but the damage done by the

aircraft was not great. One bomb fell in a tea-house and killed seven inoffensive workmen, and another killed the wife of the most Anglophile of all the notables, who was voluntarily serving the British Government elsewhere at the time.

When Shaikh Mahmud emerged, he saw a considerable number of unexploded bombs lying in the streets and recognised them as delay-action bombs. He accordingly caused the notables to be marched out of prison and forced to carry the bombs to a distance from the town, if possible before they exploded. The bombs happily proved to be "duds," but this was not realised at the time. The notables became less Anglophile than previously.

Some years passed before the despatch of troops to Sulaimani restored some semblance of authority.

In the meantime a small column of Turkish troops had occupied Rawandiz, an important strategic position farther north, who sent out detachments to other centres in Kurdish country from which government officials were compelled to withdraw. As the prestige of the Turks was higher than that of the British, the Kurds offered no resistance. Rawandiz and other towns and villages, occupied by the Turks, were attacked by aircraft continuously for over a year, but only one bomb, dropped on Kani Watman, in the Haruti Valley, inflicted casualties on the Turks (one killed, two wounded), although a good many Kurds were killed and damage was done to their property.

As the Turks were consolidating their position and establishing a regular civil administration, and as aerial action had been ineffective, a column of troops was ultimately sent against the Turkish headquarters at Rawandiz.

The chief intervening pass was captured after brief resistance by irregulars in Turkish service, and shortly afterwards a message was received from the Kurdish inhabitants of Rawandiz stating that the Turks were evidently preparing for a hasty evacuation, and begging the British Commander to occupy the town as soon as possible, to maintain law and order. Owing to the distance, however, it was impossible for the British (i.e. Assyrian) troops to reach the town before the second day after the receipt of the message. In the meantime orders were issued that all available aircraft were to attack the retreating Turks.

On the first day the reports stated that the Turks had been observed retreating *northwards* from Rawandiz, in an open valley, and that they had been attacked with bombs and machine-guns by a squadron of aircraft which had inflicted heavy casualties. On the second day the survivors were reported as having been located some thirty miles farther north and it was said that they had again been successfully bombed.

When the Assyrian troops reached Rawandiz the town was found to be deserted. The Turks had, in fact, retreated *eastwards* and crossed the Persian frontier, while the inhabitants, fearful of being looted

by the Kurdish irregulars before the British occupation, had left in a body under escort for the stronghold of a friendly Kurdish chief, some miles to the north. They had been mistaken for the retreating Turkish column and had been attacked by the aircraft, to their terror and annoyance, but they had not suffered any loss, as advertised. The "survivors" attacked by the aircraft on the second day had been yet another party—a section of the friendly Baradost tribe driving sheep to a neighbouring market town. The brother of their chief, Daud Beg, had one of his hands blown off. The Baradost tribe are now less friendly.

It was also found that although Rawandiz had been "destroyed" by aerial action only one bomb had actually fallen in the town, which is on the shoulder of a mountain, and had done no damage.

The unsatisfactory effects of these aerial operations cannot be attributed to an inefficient Intelligence service. It is quite impossible to obtain information on the ground faster than man can travel, and the reports received through air reconnaissance were usually incorrect.

It was subsequently learnt that the Turkish Commander's secret orders had been to create as much trouble as possible for the British authorities, through the tribes, prior to the final peace settlement with Turkey (effected in 1926), but in no circumstances to come into conflict with our troops. If the Turkish force had been dealt with in the ordinary way, from the outset, there would have

been an enormous saving of money, and of the lives of some inoffensive inhabitants of a country in British occupation.

Owing to the despatch of the mobile troops to Rawandiz, and to the principle that the country was to be controlled by the Royal Air Force, there was at this time no garrison at Amadia, a strategic position of importance equal to that of Rawandiz, but to the north-west. By means of a ruse this place was captured by a Kurdish malcontent, Haji Abdul Latif, acting on behalf of the Turks. Immediately he had effected his coup they sent a detachment to his support. The news of this did not reach the authorities immediately, but it is difficult to see what could have been done by aircraft, as the inhabitants of the town are on the whole a peaceful people, largely Chaldean Christians.

The situation, however, was saved in an unexpected manner. A party of the Jilu clan of Assyrian Christians was encamped a few miles away, having with them their Bishop, Mar Sergius, who acted promptly on his own responsibility. He made a bold dash into the town at the head of his clansmen, disarmed the offenders, and clapped them into jail. The Turks then withdrew.

A few years later a strong column of Turks advanced toward Amadia in close formation across relatively open country for the purpose of outflanking the Assyrian clans in the mountains to the north, and of driving them from their homes. It was believed that they offered a target that would

enable aircraft to take effective action. The Royal Air Force, however, was unable to hold up the advance, and it was only a change in international relations that caused the Turks to withdraw. The League of Nations, *with the concurrence of Great Britain*, then decided that the Assyrians could not return to their homes.

During more recent years the authorities have not been confronted by widespread outbreaks of disorder in Kurdistan calling for constant aerial support of the civil power. But the Kurds bear bitter hatred toward the predominantly Arab Government imposed upon Iraq, and from time to time misrule has goaded individual Kurdish tribes into insurrection, when the Mandatory Power has supported the Iraq Government with aerial action.

The last, and most considerable, of these outbreaks, in 1932, was suppressed by the Royal Air Force, but only by indirect means. Villages near the Turkish frontier were attacked by aircraft, some damage being done to property. Few, if any, casualties were inflicted on the Kurds, but about a hundred of them fled across the frontier and were promptly bowstringed by the Turks for alleged offences of eighteen years previously.

The frontiers of Iraq, to the west and south-west, are arbitrary boundaries across the dead-level plain, on which parties of Arabs can be located from the air with comparative ease. Arab raiders from the desert, or alleged or supposed raiders, have been attacked, and it has been found possible to effect

substantial slaughter. It must be remembered, however, that Ibn Sa'ud, the ruler of Central Arabia, is a man whose authority is respected by his subjects and who has expressed his intention of remaining friendly with Great Britain despite our support of the Sharifian Party, which he dislikes and despises. He, unlike some other Arab potentates, is honourable and far-seeing, and a man of his word, and the relative security of the western frontiers of Iraq must be attributed primarily to his sound statesmanship. Ibn Sa'ud, however, may be compelled to change his policy.

Iraq is now in the limelight on account of the desperate plight of the Assyrians. Since the Royal Air Force assumed military control of Iraq the authority of the Mandatory Power has been supported mainly by the Assyrian regiments owing to the ineffectiveness of aerial action. Great Britain, however, interested only in the oil-bearing lands, has exerted no serious effort to procure the return of these people to their ancient mountain homes. Instead, violating the most solemn promises, she relinquished the Mandate for Iraq without leaving them any safeguards as refugees in the lower Kurdish foothills, and on the plain, for the most part even without Iraqi citizenship, and regardless of the fact that they were bound to become involved in outbreaks of violence. They have now been overtaken by an atrocious massacre.

It appears to be British policy to attribute this disaster primarily to the obstructiveness of the

Assyrian Patriarch, and secondarily to unwarrantable savagery on the part of the Iraqi authorities. The accusation against the Patriarch, based upon an abominable perversion of the truth, cannot be dealt with here. The Iraqis have behaved treacherously, but criticism of their methods is to a very large extent hypocrisy. The essential difference between the action of the Iraq Government against the Assyrians, and that of the British Government against Kurds and Arabs, is that the former succeeded in its purpose because troops were employed instead of aircraft. The blame for what has happened rests upon Great Britain who must now face the task of saving the remnants of the situation.

The chief characteristic of the use of aircraft in Iraq, in support of the Civil Power, has been its ineffectiveness as a military weapon. Nevertheless, the Royal Air Force has without doubt succeeded in killing and maiming a very considerable number of persons, chiefly those who were inoffensive and law-abiding.

The employment of bombing aircraft in European warfare is considered reprehensible where it may cause injury to non-combatants. But when two or more nations are at war with each other complete immunity for civilians is almost impossible under modern conditions. The immorality of employing aircraft for police purposes is incomparably greater than this, as it causes the State to slaughter indiscriminately those whom it exists to protect.

CHAPTER V

FOOD AND FUEL

IT is doubtful if in the course of its history the nation has allowed itself to sink into a state of servitude so complete as that in which Britain finds herself to-day. Notwithstanding the possession of a great and fertile land forty-five million people are dependent for 265 days in the year upon wheat carried from overseas from every corner of the globe. What man, with a spark of imagination, can travel through the country, by train or motor-car, without noting with dismay mile upon mile of derelict land, the crops of thistles and briars and, in the autumn, the bounteous store of the best fruit in the world rotting on the ground for the lack of gathering and preserving by those who, in happier and more prosperous days, would have treated such waste of our natural resources as something akin to blasphemy against the Giver.

It is true that the conscience of the nation is uneasy about its neglect to foster one of the only two sources of natural wealth—that which grows out of the land. But during the past few years the extraordinary food position in this country has been regarded from the economic rather than from the military point of view. Preoccupation with the economic aspect of the question is, indeed,

understandable, but this is a book on war, and it is, therefore, from the military aspect that the danger of the nation's foreign food supply will be stressed. When it is considered that our mighty food stream reaches us over 80,000 miles of sea routes, and when it is further considered that a check to the stream for a few months only would reduce every man, woman and child in the country to a state more terrible than the worst of Indian famines, there is no need to enlarge on the danger of the food position.

But if the actual food position is alarming, the position is made the more dangerous by the crisis in the tramp shipping industry. Every month a greater percentage of our essential needs is carried in foreign vessels. British tramp steamers, progressively deprived of outward coal cargoes by the oil policy of the Navy and the liner companies, have become to a great extent " one way " steamers. As such their owners have been compelled to demand freight charges which can be undercut by Greek, Japanese, and other merchant ships. Relatively slow, and therefore economic, coal-fired tramp steamers have been sold to competing countries at a small fraction of their real worth, while British shipowners have built, often with Trades facility money, high speed, and therefore uneconomic, ships. The old independent shipping industry is now reduced to demanding " subsidies " which, if granted, will put British oil-propelled transport, by land, by sea, and by air, on the dole.

If the food and transport position is alarming, what of the fuel danger?

Is it not a terrible thing that the finest coal and fuel in the world, our second source of natural wealth, and the very base of our former industrial prosperity, should be allowed to lie unwon in the bowels of the earth while we import a more costly foreign substitute at an annual charge of about £45,000,000?

There is no need to discuss the political, industrial, and financial forces which have led this country into a fuel policy economically suicidal. Their workings are there for everyone to see, though few pay heed to them. Because this is a book on war, the author will content himself with summarising the fuel position in which we find ourselves to-day.

Without a sustained supply of foreign oil, under the control of international financial influences, the Air Force cannot leave the ground; the mechanised Army cannot operate; 9,000,000 tons of British merchant ships cannot steam; a large and growing proportion of our land transport cannot turn a wheel; and an ever increasing proportion of our industry closes down. These indisputable facts might be expected to make the Government, and the naval and military authorities, uncomfortable. But what are we to think of the military position of an island country whose Navy, the only bulwark against starvation, and the only means of securing the oil supply, is itself dependent for its every

movement upon that oil which it is now its chief duty to safeguard?

Oil, in the last analysis, is our Achilles' heel. If we can move our ships we can, if they are adequate, transport and protect our food. But if the supply of fuel stops, or is seriously curtailed, Great Britain must become the victim of a catastrophe unequalled in the history of civilised countries.

So much for the food and fuel position. But if in vital respects like these we are weak internally, what of our strategical position in the world outside our shores? What of those lands over which the Union Jack flies precariously, when it is not definitely at half-mast, or "dipped"?

Off our Western shores is an ill-disposed and disunited Ireland with harbours of supreme value to a maritime aggressor. The highway to the East, the Suez Canal, is dominated by an Egypt whose friendliness and respect we have endangered by ill-judged weakness. India, in a few years, may be expected to be controlled mainly by those whose friendliness to Great Britain is not beyond suspicion—and the control of India, it is well to remember, implies the control of Indian harbours.

Persia, for ten years, has mistaken Great Britain for a modern Moab or Edom, and has recently demonstrated her control over an important source of naval supply in no uncertain manner. In the puppet states of Palestine and Iraq unrest is chronic.

On Russia's feelings for Great Britain there is no need to dwell. It may not be superfluous, however,

to remember her position with regard to a " self-determined " and disunited India, with the old buffer states of Persia and Afghanistan unfriendly to Great Britain and not too ill-disposed to their enormous neighbour.

These sources of weakness on England's Eastern lines of communication are sufficiently disquieting, but what of the Far East over which looms the threatening shadow of Japan whose faithful friendship for a generation secured the peace of the East, and in the war stood us in such stead ? The provocation of the severance of the Anglo-Japanese alliance has, in recent years, been reinforced by strongly-worded threats of boycott by League enthusiasts, quickly followed by retreat with ignominy. The remarkable spread of Japanese trade is now apt to be treated by Great Britain as an unfriendly act and, in some quarters, as something akin to a *casus belli.* Where for a generation the close friendship of two great island countries gave peace and confidence to Asia we now find friction and mistrust.

When England and Japan were allies, and when the overcrowding of Japan was less marked than to-day, the " White Australia " policy was a tiny cloud on an otherwise cloudless horizon. But what of Australia now ? It is hardly too much to say that a continent with its untold natural wealth unwon and supporting a mainly urban population less than that of London—a continent in which even white immigration has been discouraged in the

supposed interests of its " workers "—may in the future become a standing menace to the peace of the East, and of the world, if busybodies induce a British Government to take " a strong line " with regard to Japanese expansion on the mainland of Asia, for expand Japan must.

Great Britain's support of the White Australia Policy will become a source of weakness in our defence system difficult to exaggerate if the League of Nations Policy in the Far East is supported. How precarious is our hold on a defenceless continent, and how great, in the last few years, has been the forbearance of Japan, it is hoped to show in due course.

The author has referred only to the more outstanding elements of weakness in what may be called Great Britain's military position, though there are others which close observers will be in a position to discern.

The military position of the British Commonwealth of Nations, for convenience, may be summarised as follows :

1. For 38 weeks in the year we depend on seaborne food carried to us over 80,000 miles of sea.

2. The three defence services, and a large proportion of our merchant fleet, transport, and industry, depend for their power to move upon oil from foreign lands who are either already hostile, or who would almost certainly be hostile should we attempt to blockade a European opponent.

Our unnecessarily great dependence upon foreign food, and our total Naval dependence upon foreign

fuel, have now turned our position as an island from a source of strength into a source of weakness.

3. Instead of internal unity we are torn by faction, a large section of the nation having pledged itself to " peace at any price."

4. More than 2,000,000 are unemployed, their maintenance involving a charge little short of four-fifths of the cost of the defence services.

5. Our communications with the East, via the Suez Canal, are precarious.

6. Our hold on India is being voluntarily relaxed, and thus our control of the harbours and bases in the great sub-Continent.

7. Russia is hostile, and in the likely obstruction, if not active hostility, of Persia and Afghanistan the road to a " self-determined " India is open to Communist conquest.

8. Japan, pin-pricked, deserted, and overcrowded, armed to the teeth and in a warlike mood, dominates the East, in which a vast continent restricts its population to a few millions while making no appreciable contribution to its own defence.

Such is the politico-military position of Great Britain, and of the enormous Commonwealth of Nations in her orbit. So great a strategical weakness, though known to the Government, is not appreciated by the general public which, in any case, takes it for granted, in case of attack, that adequate forces have been maintained to ensure us against a catastrophe which centuries of immunity from defeat have rendered " unthinkable," anything to-day being stigmatised as " unthinkable " which it is not pleasant to think about.

We may now turn from the vulnerability of the position we may be called upon to defend to the means which, by present arrangement, will be at our disposal in 1936 should Great Britain be unable, at any price, to maintain the peace, an eventuality that must be considered by any man or woman who appreciates that it takes more than one to keep the peace.

In subsequent chapters the results likely to attend a war in that year will be considered.

CHAPTER VI

ARMED FORCES AVAILABLE IN 1936

THE five nations whose armed forces in 1936 it is proposed to record are America, France, Japan, Italy and Germany. Their armies we may dismiss with a few general remarks. Excluding America, the armies of the other four nations, on mobilisation, are enormous when compared to our small professional Army. Except in the case of Germany, their equipment is as modern and complete as is the equipment of our own military police force. In the case of Germany, and taking into consideration her present mood, it is reasonable to suppose that in 1936 her equipment, though greatly inferior to that of France and Italy, will be considerable.

Turning to the British and Foreign Navies, now apt to be regarded as secondary to the Royal Air Force and foreign air forces, the completed fleets on December 31, 1936, will be as set forth in the table* overleaf, and its explanatory notes, assuming, that is to say, that no nation infringes the Washington and London Treaties, and that Article 21 of the London Naval Treaty is not invoked.

* *Note.*—Though this table, and later ones, are believed to be accurate, they may contain small errors owing to the limited sources of official information available to the author.

It will not be overlooked that the Navy of Great Britain includes the Navies of Canada and Australia.

Numerical List of Fleets on December 31, 1936

	Ships of the Line	*Cruisers*	*Destroyers*	*Submarines*	*Aircraft Carriers*
Great Britain	15	50	116[1]	41[2]	6
France . .	10[3]	57[4]	52[10]	109[5]	1
Italy . . .	4[6]	35[7]	88[9]	71[8]	—
Japan . .	9	29	77	36	4
U.S.A. . .	15	30	115	50	5
Germany .	8[11]	6[12]	25[13]	—	—

Let us first consider the relative strength in *numbers* of the British Fleet. In ships of the line, in the absence of a combination against us, the position, though far from being satisfactory in view

[1] Fifty-four " over-age."

[2] Two " over-age."

[3] Includes three older battleships of 18,000 tons mounting four 12-inch ; twelve 9·4-inch ; fourteen 3-inch guns.

[4] Includes three armoured cruisers of the *Waldeck Rousseau* type mounting fourteen 7·6-inch ; ten 3-inch guns.

[5] Assumes retention of thirty " over-age " s/m's.

[6] Assumes that no " reply " to *Dunkerque* is built.

[7] Includes three old armoured cruisers mounting four 10-inch ; eight 7·5-inch ; twelve 3-inch guns.

[8] Assumes retention of seventeen " over-age " s/m's.

[9] Includes thirty " over-age " destroyers.

[10] Includes twenty-five " over-age " destroyers.

[11] Three *Deutschlands* and five old ships mounting four 11-inch ; twelve 6·7-inch.

[12] Five modern cruisers and one old ship.

[13] Thirteen of these are old.

of our world-wide commitments, is not desperate. Our battle fleet, though old, embodies great fighting strength. Its chief weakness lies in the excessive size of individual ships for which inadequate docking facilities exist outside our own shores.

In the Mediterranean and the Far East, damage in action, necessitating the use of dry docks for repairs, would be a very grave matter, a fact which could hardly fail to influence adversely the British conduct of a battle fleet action.

In the event of a combination between any two foreign sea-powers the number of our ships of the line would be gravely inadequate.

But when we turn to the position with regard to cruisers, destroyers and submarines, the weakness of the British Fleet is startling.

In these classes of ships there is no need to presume a hostile combination in order to show the desperate straits to which disarmament conferences and treaties have reduced the Navy. Let us take the case of cruisers. Our total is 50 : of these 50, 14 will be " over-age " in 1936, a fact which will increase the number necessarily undergoing repairs. Assuming so low a figure as 10 vessels in harbour refitting, re-fuelling and resting, we are left with 40 for service with the battle fleets and for the defence of our sea communications from attack. Allowing 15 cruisers for their essential functions with the battle fleets, we are left with 25 for the defence of our food, fuel, and raw materials streaming to Great Britain over 80,000 miles of sea.

When it is remembered that we started the late war with over 120 cruisers, and that in the absence of convoy a few small German raiders about the world played havoc with our merchant ships, some idea can be obtained of our present danger. Those who regard our flotillas of 116 torpedo-boat destroyers, and our 41 submarines, as a strong reinforcement of our cruisers for the defence of trade, are invited to consider very shortly the nature of the problem of trade defence.

Great fleets of foreign submarines, if turned against merchant ships, must inevitably reproduce the disasters of the German submarine campaign in the late war so long as merchant ships sail singly. It is now, and at long last, admitted that an attack, or the threat of an attack, on our merchant ships by foreign submarines can be countered, as in the late war, by grouping merchant vessels, for it was due to the *grouping* rather than to the *escorts* that we owed our salvation at the eleventh hour. We should, therefore, regard the enormous fleets of submarines as a potential threat rather than as instruments of doom to our sea-borne trade. Submarines, however, could render wholesale grouping of merchant ships a necessity, and it is these grouped merchant ships which we are not now in a position to protect from capture or destruction by hostile raiding cruisers, of which France, in 1936, will possess 57, Italy 35, and Japan 29. The only sure means of giving protection to large groups of merchant vessels is by stationing well-armed escort

cruisers with every group on the high seas—in short, by convoy.

That the danger threatening our food supply, owing to the lack of robust and well-armed vessels to convoy our merchant ships, has disturbed the Admiralty is shown by the inclusion in the 1933 estimates of a Convoy Sloop, a class of vessel new to the Navy. Freedom to construct such vessels was retained in Clause 8 of the London Naval Treaty, by which clause there is no restriction on the construction of any number of vessels we require provided (1) that their tonnage does not exceed 2,000 ; (2) that their speed does not exceed 20 knots ; (3) that they do not mount guns heavier than 6·1-inch or mount more than four 3-inch guns ; (4) that they are not equipped for the discharge of torpedoes. With such facilities at our disposal it would naturally be supposed that this Convoy Sloop would be the first of a numerous class of robust ships of 2,000 tons mounting 6-inch gun batteries ; ships, in fact, which could face with confidence any of the small surface craft of foreign nations now in existence, not excluding the small French high-speed cruisers of 2,600 tons.

The remarkable decision to design the new Convoy Sloop to mount four 4.7-inch guns must be attributed to one of two causes. Either the Government deprecated the construction of proper ships in view of the impending resumption of the Disarmament Conference, or, which seems hardly conceivable, these sloops are regarded as proper trade

defence vessels, able to defend grouped merchant ships from attack by foreign destroyers and small cruisers. It is now suggested that torpedo-boat destroyers should be used for the purpose, but these ill-armed speed-boats mount only four 4·7-inch guns, like the sloops. Submarines, from their very nature, are of negligible value for the defence of merchant ships from surface raiders or submarines.

We may therefore sum the position up with regard to *numbers* of ships as follows: Our battle fleet is insufficient for its duties should there be any combination between other sea-powers against Great Britain alone.

Our fleet of cruisers, for duty with the battle fleet and for the defence of the nation's food and fuel supply, is inadequate against a single opponent such as France, Japan, or Italy.

As war with America is "unthinkable" we will disregard the great American fleet. A combination against Great Britain between any two of the other four foreign sea-powers must present us with a position at sea, in point of numbers of ships alone, which would prove untenable.

Unhappily our dangerous deficiency in numbers is only part of the story. What of the *quality* of the ships themselves? It must be remembered that with the exception of Great Britain the fleets of foreign nations in 1936 will consist almost exclusively of modern vessels, whereas the shrunken fleet of this country will be in large measure obsolete

owing to the extraordinary, and one-sided, restrictions on replacement accepted by England in the London Naval Treaty. This is bad enough, but there is worse to follow. What of the new British ships when compared to their foreign opposite numbers? To avoid going into great technical detail, and in the interests of simplicity, it will be well to show in tabular form the tonnage, armament, and speed characteristics of representative modern ships of the five great maritime nations in the two classes of cruisers and torpedo-boat destroyers.

In connection with the cruiser table, it is necessary to draw attention to a remarkable misstatement in the official return of fleets for 1933. In this official return the ships of the world are classified, the classification including cruisers, flotilla leaders and destroyers. By the terms of the London Naval Treaty cruisers are defined as follows:

"Surface vessels of war other than capital ships or aircraft carriers, the standard displacement of which exceeds 1,850 tons, or with guns above 5·1-inch calibre."

This definition of a cruiser is as fair as it is lacking in ambiguity. Notwithstanding this pronouncement of the London Naval Treaty, we find 30 French cruisers averaging 2,400 tons, and mounting five 5·5-inch guns, classed under *flotilla leaders*, these formidable little ships being of the same class as *Le Fantasque*. This mistake in an official return

Representative Cruisers

	Class	*Tonnage*	*Speed*	*Armament*		
Great Britain . .	*Dorsetshire*	10,000	32 knots	8 8″ ;	4 4″ ;	8 torpedoes
	York	8,400	32 ,,	6 8″ ;	4 4″ ;	6 torpedoes
	Leander	7,000	32 ,,	8 6″ ;	4 4″ ;	8 torpedoes
France . . .	*Algerie*	10,000	31 ,,	8 8″ ;	12 3·9″ ;	6 torpedoes
	Marseillaise	7,600		8 8″		
	Le Fantasque	2,500	37 ,,	5 5·5″ ;	4 smaller ;	9 torpedoes
Japan	*Ashigara*	10,000	33 ,,	10 8″ ;	6 4·7″ ;	12 torpedoes
	Kako	7,100	33 ,,	6 8″ ;	4 4·3″ ;	12 torpedoes
	Naka	5,200	33 ,,	7 5·5″ ;	2 3″ ;	8 torpedoes
	Yubari	2,900	33 ,,	6 5·5″ ;	1 3″ ;	4 torpedoes
Italy	*Trento*	10,000	35 ,,	8 8″ ;	16 3·9″ ;	8 torpedoes
	Luigi Cadorna	5,000	37 ,,	8 6″ ;	6 3·9″ ;	4 torpedoes
U.S.A. . . .	*Astoria*	10,000	33 ,,	9 8″ ;	8 5″	
	Memphis	7,000	34 ,,	12 6″ ;	4 3″ ;	6 torpedoes
Germany . . .	*Leipsig*	6,000	32 ,,	9 5·9″ ;	4 3·4″ ;	12 torpedoes

is the more remarkable when it is considered that the flotilla leaders of Great Britain and Italy, the only two nations employing such a classification, are destroyers: for example, H.M.S. *Duncan*, of 1,400 tons, and mounting four 4·7-inch guns, is identical with our latest destroyers.

It will thus be seen that the classification of flotilla leader is redundant, vessels passing straight from cruisers to destroyers. It follows that 30 cruisers out of the 57 which France will have in commission in 1936 have been advertised by the Government as destroyers. It is for this reason that *Le Fantasque* appears in the representative destroyer table as well as in the cruiser table.

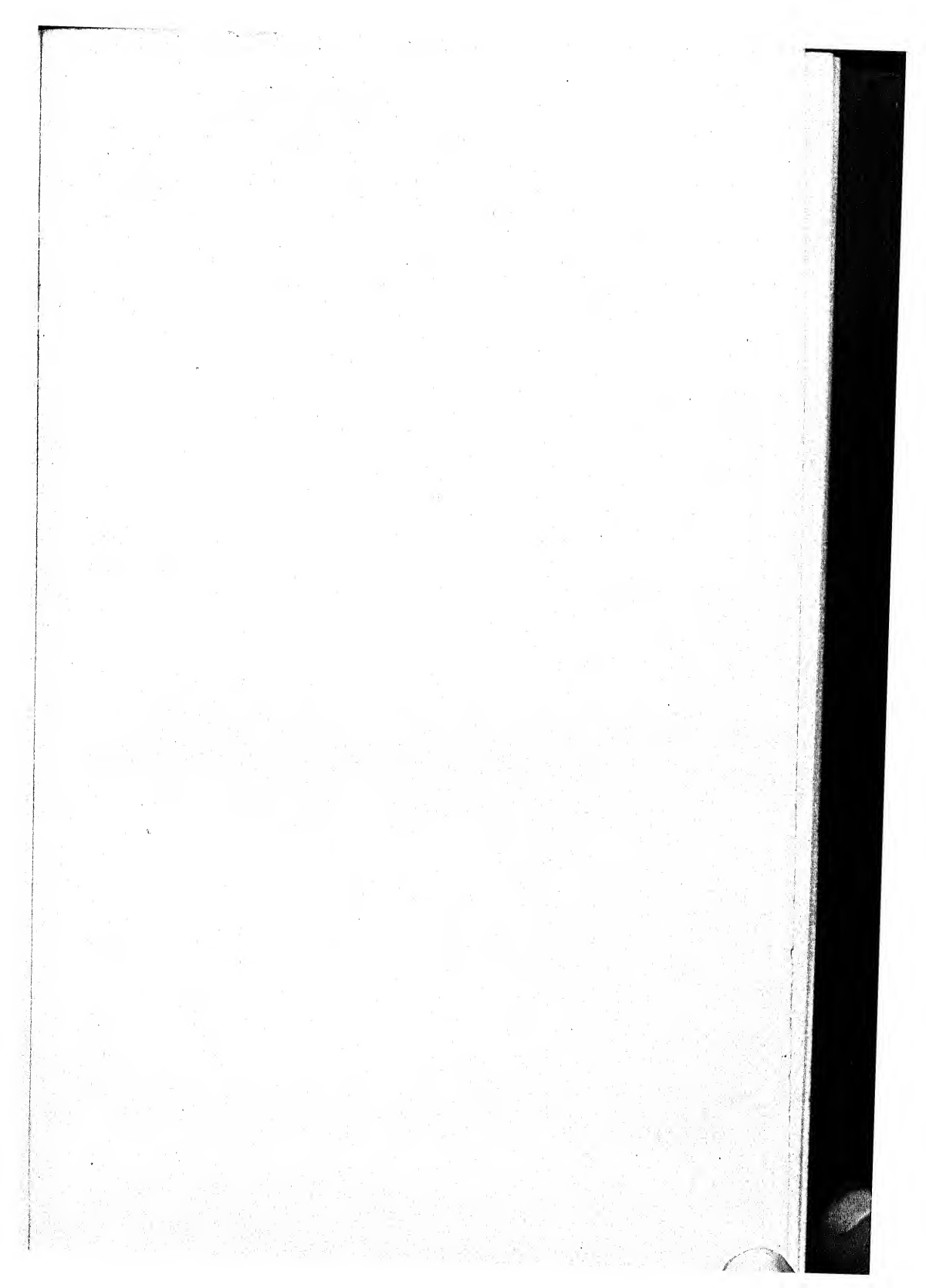
In the destroyer table, vessels shown in ordinary type are obsolete vessels, and appear for purposes of comparison only. In the case of Great Britain it will be noticed that the new destroyers of the *Duncan* class, though of only 80 tons less than their predecessors, have sacrificed a knot in speed and a 4·7-inch gun.

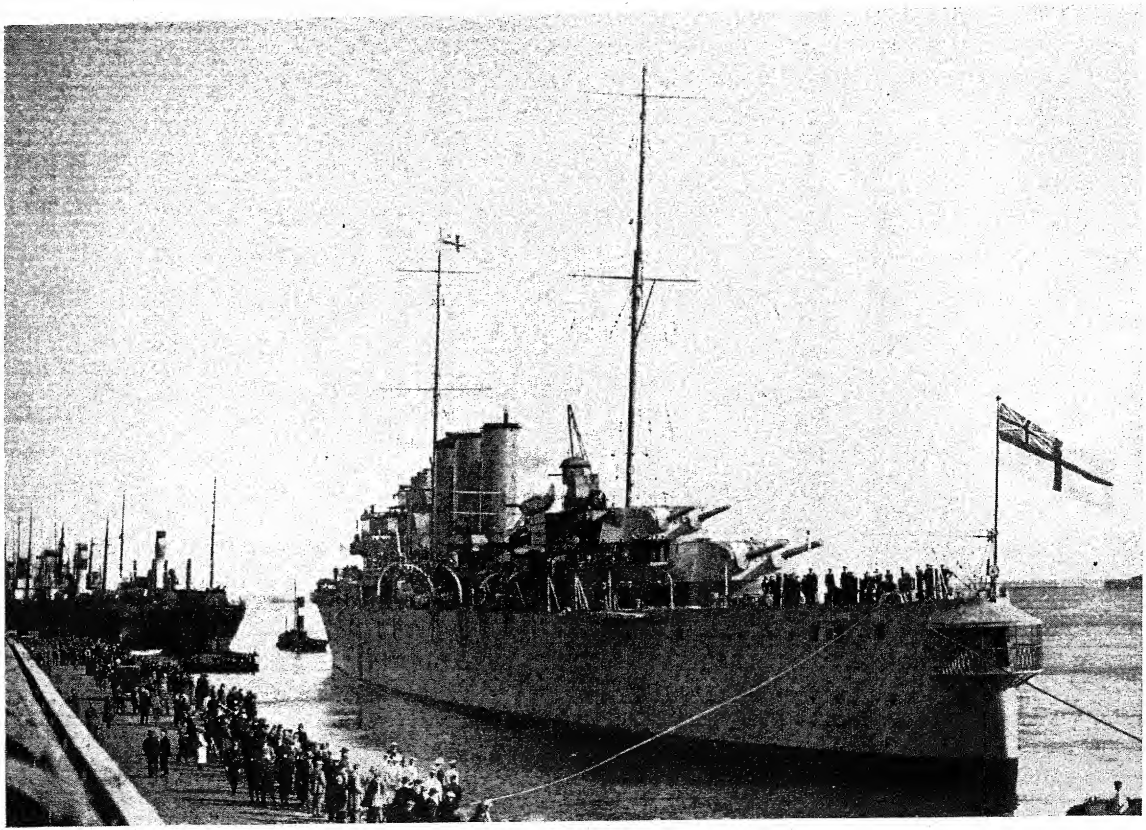
The numbers in parentheses represent the number of such vessels that will be in commission in 1936. This last takes no account of new destroyers which may be built under the recent great votes for new construction in America and Japan.

A careful scrutiny of these comparative tables will reveal to the layman what is common knowledge in the Navy. Post-war British cruisers and destroyers have made singularly poor use of their tonnage when compared to foreign vessels of similar

Representative Destroyers

	Class	*Tonnage*	*Speed*	*Armament*
Great Britain . . .	*Shakespeare*	1,480	36 knots	5 4·7″ ; 6 torpedoes
	Duncan	1,400 (47)	35 ,,	4 4·7″ ; 8 torpedoes
France	*Frondeur*	1,380 (26)	34 ,,	4 5·1″ ; 6 torpedoes
	Le Fantasque	2,600 (30)	37 ,,	5 5·5″ ; 6 torpedoes
Japan	*Udzuki*	1,290 (21)	34 ,,	4 4·7″ ; 6 torpedoes
	Sazani	1,700 (23)	34 ,,	6 5″ ; 9 torpedoes
Italy	*Scirocco*	1,450 (4)	38 ,,	4 4·7″ ; 6 torpedoes
	Turbine	1,100 (16)	36 ,,	4 4·7″ ; 6 torpedoes
	Nicolo Zeno	1,600 (12)	38 ,,	6 4·7″ ; 6 torpedoes
	Tigre	1,500 (3)	34 ,,	8 4·7″, 2 3″ ; 4 torpedoes
U.S.A.	*Wilkes*	920	29 ,,	4 4″, 2 3″ ; 12 torpedoes
	Farragut	1,500 (11)		
Germany	*Leopard*	800 (12)	34 ,,	3 4·1″ ; 6 torpedoes





H.M.S. *DORSETSHIRE*, A 10,000-TON WASHINGTON CRUISER

types. In the cruiser class it is interesting to compare the *Dorsetshire* with the *Ashigari* and the *Trento*, in the Washington class, and the *Leander* with the *Luigi Cadorna* and *Memphis* in the next largest class. Not only are the British ships poorly armed, but their speed falls considerably short of their rivals, notwithstanding, in the smaller classes, the greater British tonnage. In so far as the greater British tonnage is for the accommodation of a greater fuel stowage, it is only necessary to say that excessive endurance is of less importance in British ships than in the ships of any other nation in view of our unrivalled number of defended fuelling bases throughout the world.

When we turn to a consideration of British and foreign destroyers the relative feebleness of our ships is similarly marked. The *Duncan*, the very latest British destroyer, should be contrasted with the latest Japanese destroyers of 1,700 tons, and the Italian destroyers of 1,500 tons, which, though of only 100 tons greater displacement, mount double the armament. Indeed, as these tables disclose, and as is widely admitted in the Navy, the weakness of our enormously costly post-war ships is extremely disquieting. The fifteen 10,000-ton cruisers, weak in design, cost £30,000,000 ; the *Leander* cost little short of one and three-quarter millions. Each destroyer, mounting four pop-guns, and with a speed inferior to its Italian opposite number by 3 knots, has cost £300,000, exactly the cost of a C Class cruiser of 3,750 tons, mounting five 6-inch

guns, an armoured belt of 3-inch, and a speed of 29 knots.

The fact is that fighting power has been sacrificed in British construction on the altar of speed and luxurious accommodation, and it is evident that in spite of the strain after speed—the least valuable characteristic of a British fighting ship—we have failed even in this.

Those who may be disposed to think that British destroyers are suitable for escorting merchantmen subject to attack by hostile surface craft should remember the two disasters to the Scandinavian convoys, when the weakly armed destroyers *Mary Rose* and *Strongbow*, in the first case, and the *Partridge* and *Pelew* in the second, were sunk by small, better-armed German raiders, while fleets of high-speed British cruisers, supported by battleships, "patrolled the trade routes" instead of escorting the merchant ships which were known to be the enemy's quarry. If our destroyers were used, as has been suggested, for convoy, foreign destroyers, notably Japanese and Italian, could be used successfully as *cruisers* for attacking our trade.

It may be thought that sufficient has been said to reveal the weakness in numbers and design of the Navy at the disposal of England in 1936 under the terms of the London Naval Treaty. When, however, it is considered that this fleet of lame dogs cannot move a propeller of a single unit of the fleet without the permission of Russia, Persia, and Iraq in the East, and of America in the West, should any

of these countries for any reason be opposed to the policy of Great Britain, some idea can be obtained of the extraordinary straits to which British maritime power has been reduced. Justly may it be said that England has been deprived of her power of self defence by "Internationalism" as truly as was Samson deprived of his locks, and thus of his strength, by Delilah.

We cannot now guarantee our food and fuel from interference by a single Power in European waters. In the Far East we are defenceless, as will be shown in the next chapter.

CHAPTER VII

WAR IN THE FAR EAST

BEFORE examining the naval and military operations that war in the Far East would involve, it is necessary to propound definite premises if the results of a British campaign in the Far East are to be clearly visualised by the general public.

It will be assumed, in the first place, that the responsibility for the conduct of a war in the Far East would devolve upon Great Britain, with nothing more than moral support from European nations and America. Though at first sight it might appear that such moral support would be of little practical value, reflection will show that it would be absolutely necessary, for without it we could not withdraw our fleet from Western waters, nor could we be sure of maintaining our fuel supply should foreign countries, for any reason, feel indisposed to supply us with oil.

The moral support of the Western world, even if unaccompanied by a single ship or soldier, would undoubtedly be a grave source of embarrassment to Japan, largely dependent as she is for raw materials, and very particularly for fuel, upon the outside world. Any idea, however, that moral support of Great Britain would entirely cut Japan off from

overseas fuel and raw materials is fallacious, if history is any guide, because Japan's urgent needs would immediately become the opportunity of providing fortunes to those who disregarded the official frowns of their respective governments.

It may also be remarked that Japan might be tempted to lay her hands on the oilfields of the Dutch East Indies.

The next subject to be considered is the naval and military force available to Great Britain and Japan, whose fleets in 1936 will be as follows :

	Great Britain	*Japan*
Battleships	12	9
Battle Cruisers	3	—
Cruisers	50	29[1]
Flotilla Leaders and Destroyers	116	77
Submarines	41	36

Though the fleets on paper will be as given above, it is well that the public should remember that no less than 14 cruisers, 54 destroyers and 2 submarines in the British fleet have been condemned by Geneva as over-age. A great number of them are not only over age, but unfit for the passage to, and service in, the Far East. Many ships would be undergoing refits, and the whole fleet, even could it

[1] In addition to the twelve modern big gun cruisers Japan has seven old first-class armoured cruisers mounting heavy armaments of 8-inch and 6-inch guns. These, for purposes of blockade and convoy, would be of value.

be made quickly ready for service from a material point of view, could not be fully manned, together with shore establishments, with active service personnel.

The fleet of Japan, on the other hand, is in no such straits, a much smaller proportion of their ships being over-age ; few, we may rest assured are undergoing extensive refits at the present time, while the personnel is sufficient for manning their fleet on a war basis.

Though on paper the British Fleet is greatly superior to what its strength would be in the event of war, it is proposed to overlook the discrepancy, dangerous as it may be.

Turning to the Army, it seems hardly worth while to compare the regular military resources of Great Britain with those of Japan. When we consider that the British Army can barely meet its minimum needs for garrisoning India and the Crown Colonies, any idea of a great expeditionary army conveyed 10,000 miles to the China Seas has only to be mentioned to be dismissed as impracticable. If, then, war was unhappily declared between Great Britain and Japan in the near future, the campaign, so far as Great Britain is concerned, would be a naval campaign, and the position on the declaration of war would be as follows :

The main body of the British Fleet in Western waters would be 10,000 miles from the scene of action. In the China Sea, based we will assume on Hong-Kong, seven British cruisers, nine destroyers,

twelve submarines and five sloops, would find themselves immediately pitted against the whole sea-power of Japan, with an advanced naval base at Formosa, a short distance only from Hong-Kong.

Nearer than the main British fleet in the West, but still some thousands of miles from Hong-Kong, would be the Australian Navy, consisting of four cruisers, one seaplane carrier, and five destroyers; six of these ships, it may be observed, are now paid off, the exceptions being the *Australia*, the *Canberra*, the *Albatross*, and the destroyer *Tatoo*. In New Zealand are the two old cruisers *Diomede* and *Dunedin* and the two sloops *Veronica* and *Laburnum*, and in the East Indies are three cruisers and three sloops. Assuming, then, as we are not fully entitled to do, that the Australian Fleet could quickly be made ready for sea, we have potential reinforcements of the British China Fleet of nine cruisers, five destroyers, and five sloops, reinforcements which could all reach Singapore within a few weeks if allowed to proceed unopposed.

So much for the ships. But what of a base from which to operate against Japan? Hong-Kong, the natural strategic base for British operations in the China Sea, has been seriously reduced in value by the terms of the Washington Treaty, though no Treaty can deprive it of its magnificent harbour and the wonderful anchorages of Mirs Bay, the Scapa Flow of the Far East. Its defences, however, are weak; supplies of warlike stores for a great fleet are slight; and its dry docks are too small to

accommodate any British battleship, battle cruiser, or aircraft carrier. Here, in an emergency, the Navy would be faced with the terrible consequences of Lord Fisher's *Dreadnought* policy which produced enormous ships without regard for docking facilities outside the British Isles.

At Singapore, approximately 3,000 miles from the principal Japanese harbours, we have a naval base defended by shore batteries and flying boats. At Singapore, furthermore, we now have a floating dry dock capable of docking any unit among our heavy ships. But, in an emergency, Singapore would be found a poor, if not an impossible, strategical base for operations far away in the North China Sea, where Japan would naturally concentrate her naval activities.

Such would be the position of affairs if war were to be declared, and in visualising the subsequent naval campaign the author will consider himself in untrammelled control of Japanese strategy, with the materially powerful, and morally magnificent, Japanese Navy and Army at his disposal. With this almost overwhelming superiority of material and, what is more important, the strategical initiative, what would be Japan's first move in a campaign from which she intended, at all hazards, to emerge as the sole nation dominating the East?

Though the great Continent of Australia, with a population less than that of London, is looking with some anxiety on crowded Japan, it would be foolish for Japan to launch any attack upon that

HONG-KONG HARBOUR

country for it is clear that the fate of Australia would be decided by the outcome of the naval struggle in the China Sea, thousands of miles from Sydney. Thus would Australia quickly learn that the money poured out on fixed local defences, or on aircraft, had been wasted.

Far away in the south the defenders of Singapore would agitate themselves unnecessarily in preparing for the approach of a Japanese Fleet and expeditionary force. Little as they might expect it, they would all be able to sleep quietly in their beds, for their rest would be undisturbed.

It need hardly be said that the months devoted in the Council Chamber at Geneva to the consideration of the Lytton Report have been used in Japan in preparing every unit of her fleet for instant readiness for sea, and in acquiring immense reserves of fuel, food, and other stores necessary for the waging of a campaign. There is no doubt that, in the event of war, plans would have been prepared down to the last detail for the opening move in a naval campaign. Within an hour steam could be raised in that portion of the Japanese Fleet intended for an attack on Hong-Kong, and for giving cover to an expeditionary army to be landed on the mainland close to the once great fortress. On the other hand, the earliest date on which the main British Fleet could reach the China Sea has been assumed to be two months later.

Within four days the garrison of Hong-Kong, consisting of seven cruisers, nine destroyers, twelve

submarines, five sloops, and of three battalions and a few garrison gunners, could expect to sight from the Peak a Japanese Fleet consisting of four battleships, four aircraft carriers, twenty-five cruisers, fifty destroyers, and thirty submarines, with perhaps a dozen troopships conveying an expeditionary force sufficient to capture the fortress from the neutral territory.

Faced with an attack on so great a scale the Commander-in-Chief in Hong-Kong would find himself in a truly terrible predicament. If he retained his fleet in harbour it would be immobilised and unable to carry out a guerrilla warfare on Japan's trade and communications pending the arrival of the main British Fleet in two months' time. While it is true that the presence of the cruisers, with their companies, would strengthen the defence, in the likely event of the capture of the fortress the ships would be captured also, unless they proceeded to sea and went down with their flags flying.

On the other hand, if the British Commander-in-Chief took his cruisers to sea before Hong-Kong was blockaded, he would find himself without bases in the North China Sea from which to maintain operations. Furthermore, the loss of his seven cruisers would be an almost irremediable blow to the main British Fleet when it eventually reached Eastern waters. Having weighed up the forlorn situation, he would be forced within a few hours of the outbreak of war to withdraw his seven cruisers

to Singapore, there to join the nine cruisers and five destroyers from adjacent stations, and to await patiently the appearance of the British battle fleet. No doubt he would shift his own flag from H.M.S. *Kent* to a flotilla leader and endeavour with the twelve submarines, nine destroyers, and five sloops, to prevent the close blockade of the fortress.

Four days later the Japanese squadron convoying the expeditionary army would be sighted by look-outs from Hong-Kong, the enemy's fifty destroyers being stationed as a screen to his fleet and his transports.

There is no need to trace in detail the enemy's subsequent operations. They could be continued for two months without opposition from the British Fleet, apart from the submarines and destroyers at Hong-Kong. From the decks of the Japanese aircraft carriers flights of aeroplanes would be able to subject the harbour of Hong-Kong to continuous observation and bombing. Long range bombardment, though, like aeroplane bombing, incapable in itself of subduing a stoutly defended fortress, would be capable of doing considerable damage to the defence. Meanwhile, the pivot of the resistance would be the twelve submarines which, as will be shown elsewhere, achieve their maximum usefulness under such conditions. In spite of the enemy's great fleet of destroyers the British submarines would no doubt inflict some casualties, for it is right to expect that they would be handled with extraordinary skill and determination. Nevertheless, in

face of such overwhelming odds it cannot be doubted that their most heroic endeavours would prove fruitless, and that the enemy would succeed in landing his army and reducing the fortress within a fortnight of the start of operations.

Thus would close disastrously for Great Britain the first round in the Far Eastern campaign. With the fall of Hong-Kong, Great Britain's trade with China would completely stop if, indeed, its stoppage had not been rendered complete within a few hours of the outbreak of war. Leaving a powerful garrison and sufficient cruisers in Hong-Kong, now a base for adequate enemy cruisers for the blockade of China ports, the Japanese Fleet would be withdrawn to its bases for any repairs that might be necessary, while stores, fuel, guns and other warlike requirements would be poured into Hong-Kong and Mirs Bay which would now become to Japan what in the late war Scapa Flow was to the British Navy.

The first phase of the campaign would end with Japan having suffered a few minor casualties in her fleet and army in the capture of Hong-Kong. Her imports from the Western world would have been greatly diminished, but would not have ceased entirely, traders in innumerable cases having winked at the boycott pronounced, by supposition, by the League of Nations. Moreover, the partial loss of contact with the Western world would have been largely neutralised by the diversion of the enormous China Sea trade from Western to Japanese

ports. Indeed, whereas the *boycott* of Japan would have been partial only, Europe and America would have been totally cut off from any commerce with China and Japan. China, it is true, might be at war with Japan nominally, but those who know the country will be aware that Chinese merchants, and the great silent masses, will at all times turn a blind eye on politics and continue to do business wherever they can.

THE SECOND PHASE

It is difficult to conceive that the capture of Hong-Kong, and the complete shutting off of the China markets from the Western world, would not mark the termination of our struggle with Japan. Nevertheless, for the sake of argument, and to expose the false strategical principles which have guided British naval policy since the advent of Lord Fisher, we will assume that two months after the outbreak of war the whole British Fleet has assembled without casualty at Singapore. In the Western hemisphere the seas would be as empty of British men-of-war as was Mother Hubbard's cupboard of the bone. We will also assume that Great Britain's absolute helplessness had not tempted a European power to exploit its opportunity. The only alternative to these two assumptions would be to split the British Fleet, leaving in the West and moving to the East enough ships to suffer inevitable defeat in either or both scenes of action.

At Singapore would be concentrated British sea-power, 3,000 miles from Japanese ports and 1,800 miles from the Japanese fortress of Hong-Kong. The fleet would consist of ships embodying Lord Fisher's craze for great potential speed : but of what avail would be these mighty horse-powers ? Some of the ships could barely reach Hong-Kong and return at economical speed. Their speed would not enable them to engage the fleet of Japan should it wish, for any reason, to withhold contact with the British Fleet. When he considered the moment propitious to accept battle, and not before, the enemy would do so *on his own terms.*

No enemy admiral possessed of his senses would conveniently approach Singapore for action, thereby relieving the British Fleet of the strategical difficulty, if not impossibility, of facing battle 2,000 miles from its nearest base and docking facilities. On the contrary, the Japanese Fleet supporting the blockade of the China ports would be ready to accept battle north, not south, of Hong-Kong. It will thus be seen that the strategical initiative would lie entirely with the admiral in the Japanese flagship.

If the British Fleet were unable to face a fleet action 2,000 miles from its base, the blockade would continue until Great Britain sued for peace. If, on the other hand, the British Fleet attempted action so far from Singapore, the approach to action would have to be at slow speed to conserve fuel. Even if slow speed were maintained on passage, lack of fuel would prevent many ships from returning to

Singapore if high speed had been employed for any considerable period.

Should the British Fleet decide to steam slowly into action with the perfectly equipped, and fully fuelled, Japanese Fleet, it is difficult to see how the ensuing action could be undertaken with confidence, with docking and repairing facilities 2,000 miles astern at Singapore and Japanese guns forbidding the hospitality of Hong-Kong.

The fact is that Singapore is useless as a naval base if Hong-Kong is not also in our possession. With a properly equipped Hong-Kong in British hands, the defence of Singapore, and its equipment as a great naval arsenal, is redundant.

Should Hong-Kong fall, Japan, by the maintenance of a close blockade of British trade, could eventually obtain not only an absolutely free hand in China, but eventually the cession of Australia and Singapore ; and she could achieve this without the use of any expeditionary army. The Rising Sun of Japan hoisted over Government House would be the symbol, not of the setting of the British sun, but of its final eclipse in the Far East, and in the Antipodes.

It may be objected to this disagreeable picture that America would be disposed to pull the chestnuts out of the fire, the embers of which were lighted by the rupture of the Japanese alliance. Those who may be disposed to quiet their anxieties by encouraging such hopes might do worse than remember that since the war America, whose

disowned child the League of Nations is, shows a growing indisposition to share the responsibilities and doubtful rewards of co-operation with European nations. Apart, however, from this consideration, the trend of affairs in America does little to encourage the hope that America would incur the enormous liabilities involved in war on the grand scale, particularly in view of the fact that Japanese emigration into Australia, whether conceded voluntarily or by compulsion, would provide for America a comfortable solution of Japanese demands on America herself.

But whatever may be the rights or wrongs of such a line of reasoning, one thing is clear: Great Britain's position in the East is no longer tenable should she, unsupported, be challenged at sea.

CHAPTER VIII

WAR IN EUROPE

IN turning from the East to the West, it is proposed to rule America out of calculation in a future war, not because there is any inherent impossibility of such a disaster, but because British people have unanimously decided to regard such a quarrel as " unthinkable." The author has also declined to specify the two European countries which will be assumed to have formed a combination against us.

In considering a European war, therefore, he invites his readers to form their own combination of two hostile European sea-powers with an eye on the tables of relative sea-power previously given, and to ally this country to an unspecified military power. Those whose wishes have the comfortable habit of being the father of their thoughts will no doubt group the Powers with an eye to our own weakness rather than with an eye rigidly fixed on the matter that might be at issue. Those, on the other hand, who have the strength of character to contemplate the worst that might happen, and who prefer, in a quarrel, justice to expediency, will not fall into such an error.

Without more ado, then, let us assume that an issue has arisen in Europe involving Great Britain

in hostilities with two other maritime countries. Anyone who appreciates our commitments under the League of Nations Covenant, the Locarno Treaty, the Kellogg Pact, and all the rest of them, will hardly maintain that Britain could remain aloof in certain eventualities, unless, indeed, we were to treat our engagements as scraps of paper.

In an earlier chapter it was shown that, in the event of a European war, the public has been led to expect an immediate launching of aerial attacks and counter-attacks on the civil population of the belligerents, quickly followed by the recruitment of the manhood of the country and its dispatch to the shambles. The naval aspect has been allowed to slip into the background, and has to a great extent been obscured by the more spectacular operations foreshadowed in the air. Aerial operations must therefore have our first attention.

Bearing in mind the trifling number of the aircraft available for offence and defence on the outbreak of war, there is every reason to suppose that the first step in the British plan of campaign would be an enormous expansion of the industries concerned with the manufacture of aeroplanes and poison gas. These industries, to borrow current jargon, would immediately " go into production," with the aim, presumably, of reaching an output of ninety aeroplanes per day—involving the employment of 400,000 persons in manufacture—as in 1918. But since we have been assured by our aerial strategists that the number and power of aircraft

in the last war were but a shadow of what we may anticipate in the future, it would be reasonable to suppose that the output of ninety machines per day would be quickly exceeded. As with aircraft, so with poison gas and bombs.

It must be remembered, moreover, that on the authority of cabinet ministers, Air Ministry officials, bishops, school teachers, and the League of Nations, the air terror would break out with whatever machines were available within a few hours of the outbreak of war. We must, therefore, start by considering the activities of the R.A.F. as it would be prior to its expansion on a gargantuan scale.

The first few days might pass without hostile bombers appearing over London or over the enemy capital. This delay, however, so far from quieting public apprehension, would inflame it, because, on both sides, the rumour would be set on foot that the enemy was massing his bombers. In this state of tension the memory of past pronouncements might be expected to be recalled by the public :

" Although it is necessary to have some defence in order to maintain the *morale* of our people, it is far more necessary to lower the *morale* of the enemy people, for nothing else can end war." (Quoted in Parliamentary Debates, February 25, 1926.)

The words of Air-Commodore J. G. Hearson might be recalled :

" Every officer and every airman undertook to be at his post at the first threat of air invasion and to set out on bombing expeditions. . . ."

The public might also be reminded of the views of Major-General Sir F. Sykes, which he condensed into the following sentence :

" Theoretically, machines of the Independent Air Force should not have been utilised for attacking purely military objectives in the Army zone, such as aerodromes, and their co-operation with the Army for this purpose shows that *their true role* was either not appreciated or not favoured by the French and other Commands."[1]

Further, the views of a leading British air paper would be remembered with approbation :

" The only effect an International Bombing Code can have is to cramp the style of the R.A.F. at the beginning of the war. . . . If we go bang into the next war all hair and teeth and blood, as the saying goes, free from any fetters of rules and regulations, we may achieve quite useful results at the start."

These past authoritative statements of air policy might be expected to have the desired effect on our airminded statesmen, who would no doubt be urged on by further incitements.

Thus would be started, soon after the declaration

[1] It was the opposition of the Army Commanders to the use of aircraft for bombing the civil population of Germany that led to the formation of the separate Air Force in April, 1918. On this point Field-Marshal Sir William Robertson may with advantage be quoted. This great soldier said : " Raids on non-military places and people may be regarded as barbaric, and they may, by exasperating the inhabitants, have the opposite effect to that intended—breaking down of the country's *morale*." (*Air Power and War Rights*, pp. 15–16.)

of war, a series of raids and counter-raids by air, with the attendant shocking, but futile results. On both sides the usual reports would be circulated of the devastation wrought against *military* objectives in the opposing capital, and of the trumpery results obtained by the enemy in our own.

As in the late war, the tales of the havoc worked would be as fallacious as the statements of the trifling nature of the casualties in the home cities would be correct. Passion, however, would rise to fever heat, with the aircraft, bomb, and poison gas industries working at high pressure. As in the late war, the docks of London, and other great ports, like the ships at sea, would remain immune from damage by aircraft.

There is no need to labour the growth of hatred and blood lust that periodical bombing would excite. It will suffice to say that anger and hatred of the enemy would drive nearly all former pacifists into the ranks of the growing army, for the equipment of which the factories would be working under the direction of a Big Business gentleman at a resuscitated Ministry of Munitions. Meanwhile, disquieting reports would by now be reaching the Admiralty, reports that it would be considered inadvisable to communicate to the public.

In accordance with our traditional sea strategy, and because it is the only effective pressure that the Navy can exert, a blockade of our opponents would have been declared immediately on the outbreak of war, though with heavy hearts at the

Admiralty. Blockade, unless it can be *effective*, is indistinguishable from casual piracy : but effective blockade involves the employment of a large number of blockading cruisers which, as has been shown, will not be available. The number at our disposal for all purposes would be only fifty, including those recalled from the China Station, from the East and West Indies, from South Africa, Australia, and the coast of South America. At least fifteen cruisers would be needed for service with the battle fleet, or fleets, which would leave us thirty-five for the defence of our sea communications and the blockade of our opponents. Of these, ten, as has been said, would always be in harbour.

Considering the number of foreign ports and trade routes which it would be necessary to watch if we were engaged with great nations, it follows that the majority of blockade-runners from all the nations of the world would safely enter the blockaded harbours. On the other hand, a considerable number would be intercepted and brought into British ports. But in view of the general ineffectiveness of our blockade, a storm of protest would very properly arise from neutral countries whose ships were thus arrested under the *pretence* of blockade.

We should, in fact, become pirates against whom America, in particular, would be disposed to take action. Her protests would place this country in a maritime dilemma of the first magnitude because, if we called off our blockade, our power of exercising any influence on the campaign at sea would be

reduced to the vanishing point. If, on the other hand, we resisted America's demands, we could be brought to heel by the cutting off of our American supplies of oil and raw materials without the dispatch of a single American ship to sea.

With our fuel supply from the West in jeopardy, it is reasonable to suppose that Persian oil would soar in price to astronomical figures, if it were not actually cut off by hostile action in the Middle East. Furthermore, Persian supplies alone would be totally inadequate for our naval needs, disregarding the needs of the merchant service and industry.

And what of the Iraq petroleum pipe-line which, over hundreds of miles of desert, would be flowing with oil owned by all the belligerents, and by America? Though 8,000,000 tons of vital fuel would be, as it always must be, at the mercy of a few Arabs, it is reasonable to suppose that this common pipe-line would be an objective of contending armies and air forces, with the British Navy waiting on the issue deciding its fate. Here, surely, is a strategical bedlam, and yet one accepted by the Admiralty and the Government with complete equanimity.

The foregoing aspect of the naval campaign is in itself disquieting, but it represents only one side of the maritime nightmare. It will be remembered that every available cruiser would be needed in wartime for its essential duty with the battle fleet, and for the attempt to maintain the blockade of enemy ports. No reference has been made to the

defence of our food, fuel, and raw materials against which detachments of hostile cruisers, destroyers and submarines would have begun to operate immediately on the outbreak of war. It would not be long before reports reached the Admiralty, if not the public, of food ships and oil-tankers destroyed by submarines. At the same time hostile cruisers would be reported on passage to prey on merchant vessels in distant seas stripped absolutely bare of defending cruisers.

The experience gained in the late war would impel the Admiralty to institute the *grouping* of merchant ships as the only means of defence against submarine attacks. But the grouping of merchant ships involves escort vessels, and where could fit vessels be found? The only ships available would be the small, weakly armed destroyers, to which reference has been made, and of these at least half would have to be retained with the battle fleet. Nevertheless, the situation would demand the escort of great groups of merchant ships by these small torpedo craft, a precaution which would certainly reduce to manageable proportions the sinkings by submarines. Within a few days, however, the Admiralty and the Government would have greater cause for anxiety.

While in distant seas hostile cruisers would be proceeding unopposed against British shipping, worse news still might be expected to come from home waters. It would be nothing less tragic than the capture of great groups of merchant ships by

raiding cruisers, and powerfully armed destroyers, after the weakly armed escort of British torpedo craft had been sunk by a few salvos. The position in which Britain would thus find herself might well be the most serious she has had to face in her history.

In such dismal circumstances, foreshadowing still graver disaster, it is reasonable to suppose that we should be driven to raise our blockade in self-defence, as well as in deference to neutral protests, for we should be compelled to use our cruisers in defence of the ships bringing our food and fuel. We should thus be thrown absolutely on the defensive in the effort to stave off starvation, an effort that would probably fail owing to the insufficiency in numbers of our cruisers released from blockade duties and, in many cases, owing to their relative fighting weakness. It would even be found necessary, at times, to use battleships to reinforce our escort cruisers, in view of the scale of attack that the cruisers would periodically, *though at unknown times and places*, be called upon to face.

A glance at the tables of ships will show that any considerable reduction in strength of the battle fleet might lay it open to defeat, particularly if it were necessary to divide it in order to keep control of our Mediterranean communications.

Nevertheless, with naval disaster impending, the public would no doubt be kept in ignorance of the approaching catastrophe throughout the seven seas. It would be on the aerial campaign that public attention would, for the most part, be riveted, for

bombing would by now have increased in violence because propaganda would have convinced the nation that it was succeeding in breaking down the enemy's *morale*. At this stage, however, part of the air fleet would have to be diverted from its "true role" of bombing civilians in a desperate effort to defend the nation's food supply, *and its own fuel supply*.

In the course of a few weeks aircraft might be expected to be standing around the coasts with a view to the defence of our merchant vessels, and for attack on hostile bombarding squadrons. But the sinkings and captures at sea would continue unchecked, and the hostile squadrons would put in no appearance. Too late it would be discovered that action involving the defence of trade, and the attack of enemy ships, takes place on the high seas and far beyond the range of aeroplanes. Too late it would be learned that aeroplanes can play as great a part in the defence of sea communication as can a Navy protect a pipe-line on foreign soil.

The author will refrain from labouring the terrible position with which this country would be faced with its sea communications unprotected.

Sea actions would show that not only have we now an inadequate number of ships to defend our trade, let alone to attempt a blockade, but that with such ships as we have we should be continually faced with defeat owing to their weakness in guns and protection. In the test of war the truth would be learned that great tonnages and excessive speed are

no substitutes for numbers of ships well protected from gun-fire, and properly armed.

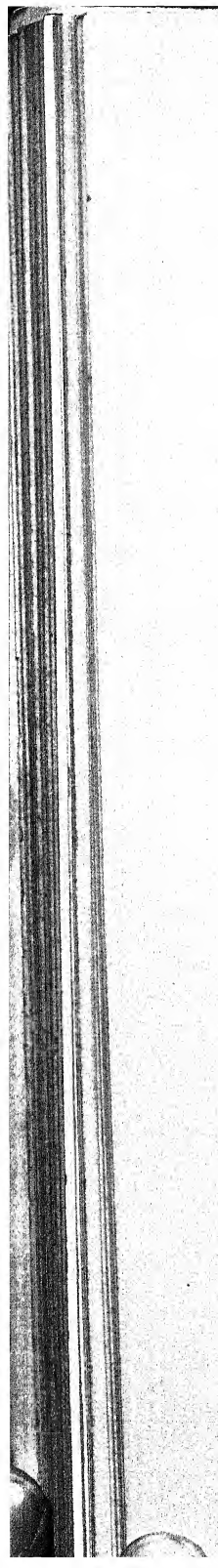
There is also no need to emphasise that in the event of Great Britain's engagement in Europe our ability to resist dictation in the East would be non-existent. Under the shadow of defeat in the West our eclipse in the East would be a foregone conclusion.

Faced with catastrophe overwhelming, no course would be open to the Government except to sue for peace on the best terms our opponents might be willing to grant. Into the nature of those terms there is no need to inquire closely, but we may rest assured that they would include the cession of Dominions and Colonies to opponents who, for the first time in a thousand years, had this island country at their mercy.

Those who view the British Empire only through commercial spectacles may legitimately claim that Great Britain would be as prosperous as an island as she has been, during the present century, as an empire. Indeed, viewed solely from the material point of view, the author is disposed to think we might be more prosperous in such a case. Those, however, who still regard the British Empire as a great field in which to exercise a beneficial influence on the world in general, without a view to gain, can only regard our defeat at sea as a catastrophe transcending in majestic tragedy the collapse of the Roman Empire.

PART II

THE NAVY AND THE LAST WAR



CHAPTER IX

THE LAST WAR AT SEA

IN the two preceding chapters the author has necessarily given a gloomy picture of our fate at sea should our country unhappily become involved in war in the course of the next few years. Some may consider that the picture is unnecessarily sombre, but such folk are invited to demonstrate how the Navy could be expected to fulfil its function of defending our sea communications when the numbers of ships available to the entire British Commonwealth of Nations are what they are; when many of the ships we have are in vital respects unsuited to their function and, with the exception of our enormous battleships and battle cruisers, of relatively poor fighting value.

Those who still believe that British sea power, if *properly directed*, offers the only physical security to this island country are apt to attribute the eclipse of our power to political causes. It is certainly true that post-war politics have too often used the Navy as a bargaining counter for disarmament schemes rather than as a basis, as in former years and centuries, of a firm British foreign policy. This will generally be admitted; but it is also true that the Navy has itself very largely to thank for its present weakness and for the loss of confidence

in our sea power which has been so startling a feature of the past few years.

When full allowance has been made for the great reduction in our Naval strength owing to purely political causes, it is indisputable that successive Boards of Admiralty have made singularly poor use of the tonnage allowed by Treaty. Furthermore, the Navy, rather than the Government, is responsible for unhappily adopting an unsound technical system of limitation based upon rule of thumb methods, and " yard-stick " agreements on individual tonnages, a system which has, almost literally, " landed " this island and the Dominions with a few extravagantly costly vessels, and thus with a total inadequacy in numbers.

It has been said that nine-tenths of what a man does is the outcome of his beliefs. If this is true, it is equally true that the secret of Naval policy must be sought, not in political or other ephemeral circumstance, but in the fundamental ideas held by those who have directed Naval policy year by year.

The late war is still regarded as the criterion of any future war, except in so far as " the next war " is expected to be more devastating than the last. This being so, it follows that the Navy, the public, and the Government consider that in main essentials the strategical principles upon which the late war was conducted were sound, and that present Naval policy, based upon the experience of the late war, is correct.

It may be well, therefore, to re-examine the outstanding features of the late war at sea; the true lessons to be drawn from the campaign, and the manner in which those lessons have been mis-applied.

* * * * *

On August 4, 1914, with the last stroke of Big Ben, England was at war. The weapon evolved by Lord Fisher was to be tested. Though not a man had as yet met a violent death, the moment was heavy with foreboding to the few who could foresee, if only dimly, the sickening carnage that lay ahead. To the *multitude*, but not to Lord Grey, Lord Oxford, and the statesmen of all parties, as is now too frequently asserted, the outbreak of War was an exhilarating, if not a definitely pleasurable, adventure. We have accustomed ourselves to speak of the late war as the greatest war in history. "Greatest" it assuredly was if we gauge greatness by the waste of humanity and material involved: the carnage still induces a feeling of physical nausea in those few whose imaginations can conjure up a picture of 10,000 corpses in close formation. Multiply such a charnel a thousandfold and, mercifully, the most imaginative man is left without a picture on his mind of such a ghastly spectacle.

When, however, we use the term "the greatest war," we need to be clear as to what we mean. The issue involved was as great, though not greater, than that raised by Napoleon, the present tendency to belittle the issue notwithstanding. Indeed, it

was singularly alike, though England's strategical plan in dealing with the situation was different. We resisted Napoleon's pretensions to the tyranny of Europe, and finally broke his power, by the protracted pressure of sea-power, a pressure punctuated only by military expeditions at weak spots in Napoleon's European defences. Against Germany, on the other hand, we invaded the Continent permanently on a vast and unprecedented scale, thus extending immeasurably our own vulnerability and leading directly to the most terrible and bloody massacre the world has seen.

It is now universally assumed that the repudiation of our traditional island strategy in the late war was inevitable. But why? A great body of distinguished sailors and soldiers had for many years protested against the Naval and Military doctrines of the Continental school which, as they saw in advance, would entail the dire results that subsequently ensued. The protesting seamen, however, had to raise their voices from the wilderness of half-pay and retirement to which Lord Fisher had banished them.

To the author's mind it seems evident that the *temporary* occupation of France, Belgium, and other countries by Germany would have been a thousand times preferable to the ruin that actually overtook Europe. Such occupation would have been, it is true, a cruel blow to the national pride of those brave countries, but it would have involved the cessation of slaughter and the ruin of themselves

and of our political, though not personal, enemies. Relief would, in due course, have come to the occupied lands, as of old, by the steady and comparatively bloodless pressure of England's sea-power, and by limited but *strategically* powerful military expeditions, if, that is to say, England's sea-power had undergone no inherent deterioration in its potency, as the war proved, unhappily, that it had. The occupation of the Channel ports would, it is true, have accentuated our maritime anxieties, but such occupation would have laid upon the broad backs of British seamen responsibilities no greater than those cheerfully and triumphantly surmounted by our forefathers in the Golden Age of English sea-power at grips with the great master mariners of France.

However this may be, few soldiers or sailors, or for that matter civilians, will maintain that the late war was the greatest in history in the sense that it formed a setting for a display of military genius. Indeed, with the possible exception of Lord Allenby's campaign against Turkey, the war on land and sea was essentially a riot of material and masses rather than a series of battles between strategical and tactical masters who employed men and machines as pieces in a contest of mind. Men and material were openly regarded, and spoken of, as fuel—just that—in an uncontrollable furnace, rather than as individuals and weapons in a game, if a deadly one, of giants. We look in vain for a Sedan or Waterloo, for a Nile or Trafalgar. Heroism, and

an almost superhuman patience, culminating in fatalism on the part of millions of officers and men, were the characteristics that illuminated a mass-produced butchery which quickly degenerated into a drab, uninspired, and bloody Balaclava, the by-word of heroism implementing unsound tactics. As on land, so at sea. In the Naval campaign the production of material was on a scale at which the imagination boggles, but this material, designed and used on unsound strategical principles, failed to obtain decisive victory against the armed forces of the enemy, or to give protection to non-combatants and merchant vessels on the high seas.

It is no part of the author's intention to review the war as a whole. War books, official and otherwise, are as numerous as are the autobiographies and apologies of its leaders, if in truth any man can claim to have "led" in a war in which material had assumed command, and in which butchery was merely organised. It is desired rather to subject to examination what appear to be the outstanding features of the campaign at sea. We may pass over, without comment, such disastrous events as the unwarrantable escape of the *Goeben* from action with the Mediterranean Fleet—the absence from the Far East of vessels competent to deal with the *Scharnhorst* and *Gneisenau*—the glorious disaster of Coronel—the solitary decisive victory of the Falkland Islands, brought about by a sound disposition of force, long overdue, and a combination of great good luck and overwhelming material superiority

—the failure of the action of the Dogger Bank, in which the British battle-cruisers were superior in *speed* and weight of material—the epic attack on Zeebrugge on St. George's Day, an action planned and executed in a spirit of courageous enterprise though yielding negligible material fruits.

All these events provide grounds for reflecting on the outcome of the new doctrine which had grown up under Lord Fisher's inspiration in the years preceding the war.

But the three events, towering above all others, to which it is desired to draw more detailed attention are :

1. The total disappearance at sea of the German merchant marine.
2. The Battle of Jutland.
3. The German submarine campaign.

The expulsion from the sea of every German merchant vessel for four years provides, perhaps, the most striking demonstration of sea-power that has ever been presented to the world. In the old days of sail the merchant vessels of the weaker power continued, though to a seriously reduced extent, to carry goods for the sustenance of their country. With the introduction of steam, however, the stranglehold of the stronger sea-power was rendered dramatic in its completeness. Had England enforced complete blockade from the first, as did America in the Civil War, and had she insisted from the outset on her traditional enforcement of maritime belligerent rights against all

trade destined for the sustenance of the enemy, it will hardly be denied that the effect on Germany, dependent on the outside world for the means of waging a protracted war of material, would have been overwhelming. Is it not possible that Germany, and America herself, have since regretted that we did not fearlessly enforce a bloodless blockade that would have saved their sons, as well as our own and those of our Allies, from the wholesale massacre that the unceasing supply of material rendered not only possible but inevitable? The final peace treaty would have been shorn of its blood lust; the terms could not have been harsher, and would doubtless have been more statesmanlike than they were.

Co-existent with this stranglehold on German commerce which, pending a decisive sea action, our material superiority at sea ensured, there was the perplexing phenomenon of the growing vulnerability of our own trade. The position was this: The German merchant marine was dead through the agency of surface ships, re-enforcing Germany's naturally weak strategical position in the outside world. Ours was latterly in danger of collapse through the activities of submarines, the outstanding feature of which vessels is their ability to range the seas, *though not necessarily to any valuable purpose*, even though the enemy's surface fleet be greatly superior. It thus seemed that sea-power was likely to end in stalemate, with the sea denied to the commerce of all countries.

It was this extraordinary position of affairs which seems, in these post-war years, to have led patriotic Englishmen to question not only the right of blockade but the value of it. Because England is an island, we read and hear, on all sides, plausible arguments for abandoning blockade in our own interests, while the value of battle fleets is seriously questioned in view of the failure to achieve victory at Jutland, and the disaster we so narrowly escaped at the hands of German submarines. It is this continuing attitude of mind, strengthened by post-war naval policy, which makes it so very urgent to examine, without mincing words, the two principal events leading to that state of affairs which seems to have shaken the traditional confidence of the country in the reliability of the Navy as its one sure and *humane* shield in the day of battle.

The two outstanding events are the Battle of Jutland and the subsequent submarine campaign, the latter being the direct outcome of what naval officers, with few exceptions, regard as the tragedy of Jutland. The facts of Jutland are well known and undisputed, and, however humiliating the confession may be, the following salient points are generally admitted. The great superiority of our fleet in sheer weight and numbers; the failure during daylight to close the enemy to an effective range, coupled with inelasticity in the *new* signal books, which rendered the proper tactical deployment difficult; the confusion with wireless and the general weakness in the signalling organisation;

the dominating position of the British Fleet, between the Germans and their ports, after nightfall ; the unchallenged passage and escape of the German Fleet astern, and in view of, the British Fleet which held its course south unaltered until the German Fleet was beyond reach of engagement ; the total failure of the German submarines, and our own, to get into touch with the opposing fleets ; the complete failure of the German airship reconnaissance ; the dauntless battle-cruiser action, in which ships upon which the thoughts and energies of the Admiralty had been riveted went down like cockle shells before the German gun-fire, from guns, for the most part, of *lighter calibre* than our own ; the superiority of the German battle tactics.

These facts about Jutland cannot be burked, no matter how skilful or persistent the apologetics. In the controversies over Jutland, however, one ugly and stultifying feature has always been in evidence. The controversy has assumed a bitter and *personal* form, the champions ranging themselves into almost savagely opposed camps. The author can say with all sincerity that he is without personal bias of any kind. The flag-officers involved were in all cases brave, skilful, and single-minded in their determination to extract what they conceived to be the utmost advantage from the situation, as were the great German sailors who opposed them. Jutland was the climax to which ten years of Lord Fisher's doctrines inevitably tended. Jutland was the fruit that had ripened on

the philosophical tree whose roots were planted in the doctrine that the maintenance " in being " of a materially superior fleet might be made the equivalent of a decisive sea victory, with all the risks and uncertainties that a decisive action, with untried modern material, might involve. If any readers are disposed to question that such a doctrine had arisen, and indeed still persists, they are very respectfully asked to consider how the defence of the Battle of Jutland has universally been based upon the assumption that we obtained the *fruits* of victory, without victory, by the retirement of the High Sea Fleet to its harbours, where it remained, except for a sortie on August 19, until its surrender as a condition of peace on the breakdown of the German campaign *ashore*. Indeed, Admiral Harper, perhaps the clearest and ablest apologist of the war in general, and of Jutland in particular, has expressly stated that we obtained the fruits of victory as surely as if we had destroyed, or utterly incapacitated, the German Fleet.

While the *indirect* fruit of Jutland was the temporary shaking of public confidence in the invincibility of the Navy, and the emergence of a doubt as to the value of battle fleets, the *direct* result was the intensified German submarine campaign. From the nature of things we were unable to know what the future intentions of the German Fleet might be, and we were thus compelled to maintain and, in fact, to strengthen our battle fleet and its vast subsidiary fleets of cruisers, destroyers and submarines

for that future sea battle which was always, so far as we could judge, pending. The Germans were thus the strategical masters of the situation at sea. Under cover of that threat of battle with which they immobilised, and forced us to keep concentrated, our gargantuan and ever-growing armada, they launched the submarine against our trade. Their knowledge, and our ignorance, of their intentions as to the future employment of their fleet enabled them to release personnel and to turn their great shipbuilding resources to the wholesale construction of submarines.

As the months rolled by the seas round Britian became infested with these craft. No serious risks could be taken with the Grand Fleet and its auxiliaries, for it had to remain concentrated and ready at a moment's notice in face of the ever-present threat of the powerful and, after Jutland, highly respected fleet at Wilhelmshaven. Convoy was rejected by the Naval staff and, instead, the submarine needles were hunted in oceanic haystacks. Here was presented to us the first-fruits of unsound strategical doctrine. The vastly superior British Fleet was certainly "*In Being*," but it had been immobilised by a greatly inferior fleet also "*In Being*."

In passing from this aspect of the disaster of Jutland we come to the anti-submarine campaign which Jutland imposed upon us, and here we are presented with, perhaps, an even more striking example of the relative futility of massed material

and effort when employed to give effect to unsound strategical and tactical plans. In 1917, Lord Fisher, the *Deus ex machina* of the materialists, had been recalled to the Admiralty, from which he had resigned as First Sea Lord in May, 1915, and as the evolver of that material colossus now ignominiously tied to Scapa Flow he was commissioned to organise the " scientists " to combat the threat of defeat by submarines to which his strategical doctrines had exposed the country. Armies of specialists and " scientists " were drafted to the Admiralty, and an inflated anti-submarine staff of naval officers and professors was created to deal with the new and formidable menace.

The schemes set on foot were exactly what might have been expected from men of the extreme material school, men who thought always and persistently, like their exemplar, Lord Fisher himself, in terms of machines, devices, and dodges, rather than in terms of simple, straightforward and therefore inexpensive *strategy*. Scores of freak ships were constructed ; thousands of trawlers were deflected from their proper duties of feeding the nation to carry and tow those fraudulent hydrophones which were responsible for not one single destruction of a submarine. It is with a feeling of shame that a reference is made to that corps of sea-lions organised and *trained* by " scientists," with the assistance of naval officers, and used in conjunction with submarines and destroyers. Loops, barrages across the North Sea, vast mine-fields, nets and

countless "scientific" projects were launched. Indeed, a species of trench warfare and entanglement was established at sea. Submarines were constructed in scores to search the oceans.

While this prodigious effort and outlay was maturing, and when it had attained full blast, *convoy was steadily resisted by the organised naval staff*, their argument being that it would be inviting disaster to concentrate our merchant vessels in groups—to put many eggs in one basket—and the naval staff won the day in opposition to individuals, a few naval but mostly civil, who urged the institution of the grouping of merchant ships at the outset of wholesale sinking.

It is, of course, true that large numbers of German submarines were destroyed, but, in spite of the casualties which so great a material effort could hardly fail to effect, the curve of sinkings steadily rose. Meanwhile, the number of German submarines increased, and in April, 1917, we were faced with imminent disaster. Eight hundred and seventy thousand tons of shipping were sunk in that one month alone, and replacement began to lag behind destruction. It is on record that the American Naval Staff had been informed that, failing some dramatic salvation, our defeat at sea, total and overwhelming, was a matter of weeks, such defeat involving, it need hardly be added, the collapse of the campaign ashore and of the Allied cause.

During the last few minutes of the eleventh hour

the institution of convoy was forced upon a reluctant staff. The expression "forced" is used advisedly, for again the truth of the statement is on record. It is easy to be wise after the event, and the author has no desire to regard himself as wiser than were his senior officers at that terrible time. Surely, however, it is wise to be wise after the event. The Navy had history and tradition to guide it, reinforced by the shining example of the Channel convoys and the French coal trade. Almost complete immunity from casualties had been the lot of this vital traffic. To claim, as is sometimes claimed, that the doubts of merchant shippers and captains as to the feasibility of the group sailing of merchant vessels, both from the seamanship and commercial aspects, were an obstacle to the institution of convoy is to admit that the Admiralty had not a mind of its own, or, if it had, that it was weak where it should have been strong. As a matter of fact the argument is a retrospective one, put forward in self-defence, for, as has been emphasised, the naval staff pronounced against convoy on tactical and strategical grounds. Thus any hesitation on the part of the merchant service to group their sailings merely confirmed the naval staff in their strategical blunder. It in no way originated it.

Those who may be interested in the statistics of the submarine attack on trade will find food for reflection in *Sea-borne Trade*, by Mr. Fayle. The statistics of losses, and the instantaneous effect of

grouping, wherever instituted, will prove illuminating indeed. Suffice it here to say that, out of 98,000 sailings in convoy, or groups without escorts on the high seas, 430 vessels only were sunk or damaged (a very different thing), or rather less than one-half per cent., a loss which, though irritating, was in no way serious in view of our great shipbuilding resources.

It must be emphasised, furthermore, that the rate of destruction of German submarines rose rapidly with the introduction of convoy, and for a simple reason. Unable to locate the concentrated groups of vessels on the high seas, German submarines were forced into the approaches, at which points a relatively trifling force of small surface craft were able to achieve by concentration what the most prodigal outpouring of effort, in personnel and material, had been unable to accomplish before group sailing and, where necessary, convoy were instituted.

It has been urged by post-war apologists, as it was said at the time, that convoy could not, in any case, have been instituted earlier for lack of destroyers and small cruisers to act as escorts. As events proved, it was the *strategical* and *tactical* defence supplied by *grouping*, rather than by the *physical* defence of the escorts, that provided immunity from attack. If naval officers are disposed to controvert this view they are immediately on the horns of a dilemma, and the conclusion is the more disquieting, for it reveals that it was the

German Fleet, still intact and threatening in its harbours, that precluded the detachment of those fleets of destroyers, cruisers, and auxiliaries for the protection of the convoys. How, in the face of these indisputable facts, can Jutland be regarded as anything short of a disaster, and the subsequent handling of its natural child, the submarine campaign, anything short of a tragedy, saved, but only just saved, from a catastrophe?

Few naval officers will deny that the two events that have here been discussed in some detail constitute the outstanding features of the naval campaign. Do they not both reveal in a strong light the pre-eminence of sound strategical doctrine, implemented, of course, with *adequate* and sound material, and demonstrate the relative futility of material, often faulty, though employed on a scale well-nigh beggaring description, when used to implement a strategy inherently unsound? Wherever organised and concerted action, which depends upon *doctrine*, was called into play, there we can see the logical working out of the philosophy that guided the Navy from the day on which Lord Fisher's star cast its blight over the Admiralty: they were Lord Fisher's ships that blew up at Jutland; they were his projects, for the most part, in the submarine campaign. Those who look back on the war with satisfaction, and they alone, can view without anxiety the naval doctrines which he bred in the fleet and which live and flourish to this day. The inherited doctrine of Lord Fisher, rather

than the political activities of the past fifteen years, is responsible for the present collapse of our sea-power.

It is noteworthy that the scores, indeed hundreds, of brilliant episodes that illuminated this drab and materialistic war were in all cases *individual* exploits between single or detached ships ; exploits in which individuals, without thought or introspection, gave expression to that traditional doctrine which set the man far above the machine ; that doctrine, native to all English sailors, which bids them engage the enemy more closely and, after all risks have been reasonably allowed for, at all costs.

CHAPTER X

THE TRUE LESSONS OF THE WAR

IN the last chapter attention was drawn to outstanding features of the war at sea which can hardly be flattering to the pride of the Navy, and of the country to whom the prestige of the Navy is of the first concern. His analysis is founded upon no foolish or impertinent view of his own superior wisdom. He, like a great and growing body of naval officers now serving, is wise, if he and they are indeed wise, after the event. We may all of us, however, obtain consolation from the reflection that the false doctrines, if they were false, which marred the conduct of the war at sea were in no way confined to this country. They were common both to our Allies and, mercifully, to our late enemies who inherited them, as the German naval staff has recently told us, in 1907. Remarkable corroboration of the false doctrine which inspired the German campaign at sea is contained in the recent life of the great Admiral Von Hipper, by Captain Von Waldeyer Hartz. Perhaps the most decisive corroboration, however, is to be found in the fifth volume of the official history which constitutes an almost unrelieved tale of strategical ineptitude and consequent failure. But false principles of fighting were not

in any way peculiar to the war at sea, being all too glaringly displayed in the land campaign which was permeated with the philosophy for which Lord Fisher stood, and still stands.

The British Navy, however, is a singularly perfect mirror of the spirit and mind of the nation at large, concentrating and focusing as it does into a compact and calculable whole those tendencies, and their effects, which, in the wide world of politics and industry, may appear to be casual and disconnected. Any man, therefore, who may be disposed to agree with the author's criticisms of the Navy will assuredly remember that the nation always gets the Navy that it deserves. For the past generation we have all been living in glasshouses in which such exotic plants as materialism, extreme specialism, belief in mass production and mass action, mistrust of individuality, and reliance on committees and bureaucracy have flourished like orchids, and in which the temperate, and therefore native, plants of individuality, moderation, and belief in the absolute control of mind over matter have wilted, but not, fortunately, died. There are many signs and portents that the traditional English virtues are about to reassert themselves.

The late war was in the nature of an adventure into the physically unknown. Men were prone to cower in uncertainty, the parent of timidity, before the material Colossus they had themselves erected. No one, it was believed, could foresee the effect of the new weapons. Thus the element of chance was

believed to enter so potently into a great sea battle that decisive action was postponed for what it was hoped would be a propitious occasion for bringing experience to bear, an occasion that never again presented itself. This view is no mere opinion, for was it not said at the time, and has it not since been reiterated, that the issue was so grave that extreme caution at Jutland was incumbent upon those in whose hands lay the destiny of England, and therefore of the world? "Safety first" had in fact become a naval doctrine both to the Germans and ourselves, as it was recently, and still is, the advertised battle-cry of a great political party. That the safety of the country is the only concern of the Navy and, as many still consider, of the Government, is a truism, but is not safety in time of crisis and danger achieved by bold measures, and are not the very dangers we dread courted by timidity, inaction, or half-measures?

By the mercy of God none of our mistakes worked themselves out to a catastrophic conclusion, except in so far as they protracted the war and led to an incalculable increase of carnage. After fifteen years of a feverish and precarious peace is not the time propitious for taking stock of the lessons which the war has to teach? Is it not also essential, if we are to read these lessons aright, and thus to profit from them, to strip ourselves bare of all prejudice and to detach our minds from minor loyalties to persons, policies and parties in order to kindle a greater, and therefore critical, loyalty to the Navy and the

country as a whole? We may surely do this without casting a single stone at an individual, for we are all of us, even the greatest, but a bundle of imperfections and errors. Thus there is no room for personal animosity, for where no personal criticism is made, or attack levelled, the heart, the source of heat, is excluded from a discussion which should be the province only of the mind.

The lessons of the war at sea resolve themselves into three groups which may shortly be discussed under the headings: Strategical, Tactical, Material.

Strategical Lessons.—If the criticisms contained in the preceding chapter are just, the main strategical lessons of the late war are not difficult to apprehend. It is clear that the primary mission of the British Fleet, the mission for which its component parts should be definitely planned and constructed, is not, as is now almost universally preached, the patrolling of the trade-routes for the protection of trade. Rather is it the decisive and overwhelming destruction, incapacitation or capture of the enemy's main fleet, an action which carries in its train certain automatic consequences of which the principal fruits are strategical initiative in the land campaign and the now comparatively simple business of trade defence, and the more effective blockade of the enemy's ports. If this is so, it is evident that the battleship is still, as always, the citadel of all effective sea-power, a citadel from which all other classes of vessel derive their power to range the seas steadily and consistently.

Because a decisive sea battle should be the chief concern of a navy that aspires to the establishment of unquestioned sea supremacy, a supremacy that is not unquestioned, or *established*, until such an action has been joined and victory obtained, it follows that such an engagement will be sought by both the fleets at the first propitious moment if anything approaching equality of fighting strength exists.

If, however, one of the opposing fleets is materially too weak to face such a decision with any reasonable chance of success, what, it may be asked, can the weaker fleet do? Why have a relatively weak battle fleet and why not, instead, forgo battleships and develop a fleet of cruisers, submarines and aircraft and endeavour to harry the trade of the stronger sea-power under the very noses of the enemy's battle fleet?

The answer to this conundrum, often now posed, is simple. A weaker, but still respectable, battle fleet to a great extent immobilises the stronger fleet just so long as it remains in being, thus constituting an ever-present threat, as did the German battle fleet throughout the war, both before and after Jutland. Furthermore, it may well happen that a strategical error on the part of the materially stronger battle fleet may give an opening to the weaker fleet to divide and defeat the stronger in detail. Not only so, but a perfectly trained and brilliantly commanded fleet may, though materially weaker, prove the fighting master of its opponent, as Englishmen, Frenchmen, Dutchmen and

Spaniards have proved to one another's satisfaction and admiration in the centuries gone by. Were this not so, the maintenance of a relatively weaker fleet would be sheer waste of money.

Thus it should be the over-riding object of the stronger fleet to make the utmost use of any opportunity provided by the enemy, whether by accident, strategem, or from sheer strategical necessity on his part, to provoke a decisive action which will allow the subsequent dispersal of the victorious fleet for the undisputed exercise of its power: this includes the blockade of enemy ports in all parts of the world; the complete suppression of enemy trade; the almost complete security of our own trade from sporadic raiding—the only subsequent risk to be guarded against; and complete strategical freedom in the land campaign. Pending this opportunity of decisive action, the defence of trade is summed up in the strategical platitude of concentration of vessels to be protected by *grouping*, and by escort where necessary, just as the concentration of the main fleet for action is essential while the enemy's main fleet is still in being, and thus a potential threat. Thus *concentration* both for offence and defence, *pending* a decisive action, sums up in a word the strategical necessity, followed by that *dispersion* of effort after a fleet action which victory alone will make possible.

These, surely, are the strategical lessons of the late war which should enable all nations aspiring to sea-power, whether of the first or second class,

to determine the general nature of the fleets that will best serve their purpose. Should not a consideration of these matters convince the seamen of all nations that there is no short-cut to effective sea-power by forgoing battleships and by substituting fleets of very fast cruisers, submarines and aircraft which can all be left in the air, so to speak, by proper strategical dispositions on the part of an adversary who possesses a properly balanced fleet of unspectacular vessels resting upon the orthodox battleship?

Turning from the strategical to the tactical lessons of the war, we again need only consider the two leading events—the fleet action and the defence of trade—though a passing reference will be made to the Battle of the Falkland Islands and the Dogger Bank.

Tactical Lessons.—The most important tactical lessons of Jutland can be summed up shortly as follows:

The need of simplicity and elasticity in the organisation of the fleet.

The necessity of a simple signal organisation, for no other system can be reliable in the heat and damage of battle or fit to deal effectually with any situation with which the enemy may present us.

The proper estimate of the tactical limitation of the torpedo as a weapon.

The re-valuation of the gun as the only vital weapon.

The unimportance of speed.

These tactical considerations will only be touched upon at this stage ; they will be considered in more detail when the author turns to his constructive ideas in the latter part of the book.

The lack of simplicity and the rigidity of the battle-orders which governed the Battle of Jutland are very generally admitted. Admirals in command of squadrons were bound to the fleet flagship to an extent which precluded them from acting on their own initiative when, as was almost inevitable in such a great fleet, the fleet flagship was not in touch with each situation as it arose. Thus one lesson seems to be the necessity of very flexible and greatly simplified battle-orders, the development of a greater expectation of the unexpected, and thus a readiness to act independently of a signal, the absence of which is likely to be due to obscurity in the general situation in the fleet flagship.

* * * * *

The necessity of a simple, *well-known*, and elastic signal book is the natural concomitant of the foregoing, such a signal book, indeed, as existed some years previous to Jutland before a specialised staff got busy on it, and of which the contents were known almost by heart by officers as well as signalmen. Here again the partial failure of the signal organisation at Jutland is well known. An efficient signal organisation seems to imply, not the multiplying of the means of communication, but rather the reduction of such means, and the simplicity of

the few. Wireless, which led to some confusion at Jutland and during the night, and which has progressively weakened the executive authority of flag-officers by intervention from the Admiralty, should be regarded as an *auxiliary* means of communication, with visual signalling, and particularly flag signalling, restored to its old place of pre-eminence.

* * * * *

A true estimate of the limitations of the torpedo as a weapon is perhaps the most urgent need of all. It was exaggerated fear of the torpedo that led, more than anything else, to the failure of Jutland and, it may be added, of the Dogger Bank. The torpedo, whether carried in destroyers, submarines, cruisers or battleships is, and must remain, a weapon of chance. As we now know, the dread of the submarine both at Jutland and the Dogger Bank was groundless. Mass attack by torpedo from surface torpedo craft can often, if not generally, be foreseen by the preliminary movements of the vessels carrying them, and can thus be countered by suitably disposed *gun-vessels*; if the discharge takes place it can be countered by tactical means, which should take the form of a turn *towards* the enemy rather than *away*. The chance of hits on vessels head-on to the line of fire is remote indeed. It was the torpedo bogy that prevented the closing of the enemy to a range at which our great preponderance of gun-fire could have assured us a

decisive victory before nightfall, and it was again the shadowy fear of the torpedo that kept the fleet from closing the German Fleet after nightfall when it passed astern to safety. Perhaps the most vital need of the Navy to-day is to take up the torpedo by the gills, so to speak, and to look this pretentious bugbear squarely in the mouth. It will assuredly be found, on closer inspection, that its teeth are false—that it carries in its mouth, in fact, a "denture."

* * * * *

Next to the exaggeration of the value and threat of the torpedo, the pre-eminence of the gun, when rightly used and controlled, is the most vital lesson of Jutland. It was the gun that sank and disabled our ships, and those of the Germans. It was the gun-fire of our battle fleet at an efficient—a fighting—range that the Germans feared. The tactical lesson of Jutland with regard to the gun is, therefore, the necessity of allowing no material obstacle to intervene in closing the enemy, whenever possible, to such a range that the gun can be brought into decisive action. There is no *via media*. No weapon or device can supplant the gun which, alone among weapons, can carry hundreds of rounds, and which can discharge its projectile at such velocity and under such control, *from any relative bearing*, that escape from its effects is impossible when once within hitting range, and when hitting has been established. In passing it may be well to contrast

these characteristics with those of the bomb carried in aircraft, or of the torpedo in high-speed surface craft.

* * * * *

In these days when speed has become a god before whom all wise men are bidden to bow it is inviting derision to question its efficacy as an aid to victory, and yet the late war in general, and Jutland in particular, teaches us another lesson. Our battle-cruisers were a little faster than the German. Our fifth battle squadron was considerably faster than any German battleships ; the mean speed of the Grand Fleet was slightly greater than the mean speed of the High Seas Fleet. In the action, however, the value of the extra speed was not apparent, though the sacrifices made for it in armour and protection were considerable. Speed did not enable us to overtake our opponents and obtain victory at the Dogger Bank, neither was it effective in intercepting the raids by enemy cruisers on the East Coast. High-speed patrolling cruisers failed to safeguard the Scandinavian convoys. It is true that speed contributed to the victory of the Falkland Islands, but here the speed of our ships was very much in excess of the enemy and, as emphasised elsewhere, the circumstances of this battle were entirely exceptional, the presiding genius being, not Lord Fisher as is popularly believed, but an overwhelming preponderance of gun-fire without which the high speed of the

battle-cruisers would have been valueless, if not a cause of disaster, as at Coronel.

Does not the war in general, and Jutland, the Dogger Bank, the East Coast raids and the Scandinavian convoys in particular, teach us that an extra knot or two over the speed of the enemy is a characteristic that plays a negligible part in the fate of sea actions when once joined? Does it not also show that a slight excess of speed will seldom enable an enemy to be brought to action if avoidance of action is the enemy's intention? If, on the other hand, the enemy is seeking action, the enemy's speed will merely hasten this desirable end at his own cost in speed, instead of at ours. When once the action is joined the very slight tactical advantage of a small excess in speed can be countered by the use of helm and tactical skill on the part of the slightly slower fleet, a fact well borne out by the tactics at Jutland. The sacrifices that must be made for each additional knot are very grave, and the trifling advantage accruing can be obtained with greater certainty, and at immeasurably less cost, by a *strategy* which compels the speedier opponent to face an action or to accept the cumulative consequences of inaction, and by skilful *tactics* when the action is joined. This question of speed, the real crux of naval policy, will be reopened at a later stage, but it seems desirable to refer to it shortly when considering the tactical lessons of the war.

* * * * *

The foregoing strategical and tactical lessons of the war have been confined mainly to the fleet action, and before passing to the *material* lessons it is necessary to consider as briefly as so vast a subject will permit the lessons to be derived from the conduct of the campaign against the submarine. The necessity for this campaign on a great scale was, as has been shown, the direct outcome of the strategical deadlock brought about by the failure of Jutland, but the tragic effects of this failure might have been kept within narrower limits had the main German submarine campaign, well advertised in advance, been subsequently countered on sound principles.

The outstanding lesson of this disastrous episode is, of course, the necessity of concentrating merchant vessels into *groups* for defensive purposes in seas where enemy action, by cruiser, armed raider or submarine, may be anticipated. This simple strategical plan does not involve so vast an organisation as is sometimes asserted, for the simple reason that in the outlying seas and oceans the fuelling bases are, for the most part, in our hands, thus strictly limiting the areas in which any consistent and protracted enemy action is possible. As a natural corollary of this concentration for defence, where defence is necessary, we can ensure a concentration for attack where alone aggression is of any value to the enemy.

Because the speed of merchant vessels in company is low, it seems clear that the speed of British

escorts need not be very high, and most certainly not excessive, moderation in speed making possible a substantial addition to fighting strength on the same tonnage. It also makes possible a great reduction in the cost of future construction, for it is the factor of speed, rather than any other factor, that has led to the staggering cost of our post-war cruisers and destroyers. The only use the enemy could make of his excessive speed would be to rush incontinently into action with ships superior in fighting capacity to his own. It is true that speed, if greatly superior, would enable an opponent to decline action with the convoy escorts ; but if he did so he would have surrendered one of the main functions of his cruisers, and our trade would go quietly and steadily on. In any case, as has been pointed out previously, a slightly higher speed in our own cruisers would not enable them to engage their adversaries because, among other reasons which are in the lap of chance, full speed is not available at a few minutes' notice, a fact which is too often overlooked.

Emphasis has been laid on the defence of trade against *cruiser* attack while ostensibly discussing attack by submarine. The reason for this seeming irrelevance is just this : the strategical principles of the defence of trade are the same whether the threat be from cruisers, armed raiders, or submarines. If, however, the principle of concentration for defence —grouping of merchant ships—is put into practice, the submarine at once becomes the least important

of the three forms of enemy action, and for *tactical* reasons. The enemy cruiser, or cruisers, may overcome the protecting escort, in which case the whole convoy will fall into the hands of the victor, if he can subsequently shepherd it into harbour without further challenge—a big proviso. In the case of the attack of a convoy by a submarine, on the other hand, the worst that can happen, as the war proved, is the destruction of an odd ship in the convoy, the reason being that the torpedo is the weapon of the submarine. She cannot with any hope of success engage the grouped merchant vessels if these are equipped for their own defence, the submarine being, as is well known, the most vulnerable of all vessels on the surface. Neither can she capture single ships, let alone convoys, for she is unable to carry the necessary prize-crews.

Thus it will be seen that the submarine need not be regarded as an inevitable danger to trade, though it will always be a *potential threat* if the necessary and simple strategical and tactical counters are not patiently continued until such time as the absence of success against trade eventually breaks down the persistence of the threat, as happened in the closing months of the late war. Should not the German submarine campaign also teach us how unnecessary for the countering of submarines is a vast effort and outlay on material devices, involving a great personnel? Surely we should have had blazoned on our minds, once and for all, the relative futility of material, no matter how

ingenious or "scientific," if employed to implement strategy and tactics inherently unsound?

* * * * *

Material Lessons.—Leaving strategical and tactical reflections, it is now proposed to examine some of the more obvious lessons with regard to *material*. For the sake of simplicity we may consider material under the following headings:

Guns.
Torpedoes.
Submarines.
Aircraft.
Wireless.
Ship construction.

The Gun.—The gun was the weapon that decided the war in spite of the obstacles that were allowed to intervene between it and its decisive use. Its failure at Jutland was not owing to any inherent defect. A striking lesson of the war was that the gun is not to be judged solely, or mainly, by its weight and calibre. The German guns were, on the average, of lighter calibre than our own. Excessive range, that is to say, a range greater than that at which experience tells us we can expect a reasonable percentage of hits, has nothing to justify it from our experience of the war, nor, indeed, in the light of common sense. Excessive range, moreover, entails great elevation, which introduces grave drawbacks in construction and design. Great calibres, now increased to no less than 16 inches,

involve great weight, and therefore imply fewer ships, short life, great cost of replacement, and few shots in the locker. The advantage of reduced gun-calibre is thus one of the important lessons of the war in the case of battleships.

The need for accurate control is self-evident, but it may well be urged that simplicity of control is a proved necessity of any efficient control system, men and their nice judgment retaining pre-eminence over a multiplicity of mechanical devices which a lucky shot may put out of action, especially when concentrated in one locality. Furthermore, properly designed men-of-war should be constructed with a view to destruction or damage piecemeal, and control therefore should harmonise with this characteristic.

The Torpedo.—Though the influence of the torpedo overshadowed the supreme actions of the war, the torpedo governed the war, not on its merits, but rather on the *pictures* of its potency that had gradually formed themselves in the minds of naval officers. As carried in battleships and cruisers it ignominiously failed to achieve results. Its devastating effects as used from German submarines against detached merchant vessels, and its partial success against men-of-war in early days, are no measure of its real value for, as has been shown, and as is perfectly well known in the Navy to-day, these effects could have been rendered trifling if the necessary strategical and tactical precautions had been taken at the outset. Does not the experience

of the late war demand that this weapon should be frankly examined by those with no torpedo axe to grind with a view to its final abolition from all future surface vessels, and in any case from battleships and cruisers. Especially is this so in view of the great provision of tonnage, depot ships and establishments entailed by its use in scores of costly torpedo boat destroyers, a provision that can only be made at the expense of essential gun vessels, and at a time when economy is urgent?

The Submarine.—It is with very mixed feelings that the author approaches the submarine, in command of which class of vessel he has spent the greater part of his career, and that part the happiest. His knowledge of submarines must be, from the nature of things, very extensive, and their powers and limitations must be intimately known to him. This experience, shared by submarine officers who commanded these vessels before, during, and since the war, induces him to lay the greater emphasis on submarine limitations than on their potentialities. The author would be the last to overlook the passage of the Narrows and the brilliant exploits in the Sea of Marmora—the dogged and dangerous patrols in the Heligoland Bight—the passage into the Baltic and the operations in these inhospitable waters—the ceaseless patrol in winter and summer of the seas and oceans round Britain, in pursuit of German submarines, under conditions of hardship which few who have not had experience of such work can fully grasp—the ceaseless attacks and hunting to

which they were subjected by our own surface patrols as well as by those of the enemy—the terrible casualties suffered by the British submarines, which were proportionately higher than in any branch of the three Services, not excluding aircraft. All these matters are well known in the Navy, and it is a sure sign of the appreciation of the qualities of the more famous of our submarine officers that they are in large numbers passing to the highest ranks of the Service.

All these great exploits do not, however, alter by a hair's breadth the undoubted fact that the real achievement of our submarines bore little relation to the prodigious effort that their very extensive employment entailed. Considering our own submarines only, it is clear that they will never be employed in the piratical manner which Germany herself now deplores. This being so, can we not definitely exclude the submarine from our future construction programmes in so far as interference with enemy trade, or the defence of our own, is concerned?

Against the main fleets, our own submarines, like the German, failed, except in so far as they caused the exaggerated fear that adversely affected Jutland and the Dogger Bank from our point of view. This failure to achieve results against the British Fleet was the main cause of the deflection of the submarines from the function for which they were provided to the attack on trade. It is true that the *Cressy*, *Aboukir*, and *Hogue* were sunk, with appalling

loss of life, by a single submarine, but these three vessels, like other vessels sunk at the Dardanelles by submarines and mines, were being employed in a culpable manner.

Stress is now laid on the great value of submarines for *reconnaissance*, and yet the reports of enemy movements obtained from submarine sources in the late war were singularly few and, so far as can be discovered, in no single instance had a submarine report any influence on the campaign. Submarine reconnaissance was in fact redundant, or, at the most, auxiliary.

It was against German submarines that our greatest submarine effort was directed, and it was here that the greatest positive achievement was attained, eighteen enemy submarines being sunk. But it should not be overlooked that this mighty effort, involving as it did fleets of submarines, thousands of personnel, and great casualties, was necessary only because the German submarine attack on trade was wrongly countered from the outset. The submarine effort was only one, though perhaps the greatest, of a variety of great efforts, all of which could have been reduced, if not totally forgone, had convoy and group-sailing been initiated at an early stage.

The presence, or the suspected presence, of submarines on patrol off an important harbour or strategical base is, on the other hand, a powerful deterrent to any plan on the part of an enemy to carry out a deliberate and sustained bombardment,

a landing or invasion in force, or a close blockade. In such cases it is clear that the enemy comes to the submarine (a species of mobile mine) under conditions that reduce the inherent limitations of submarines to the minimum, giving full play to their latent powers. In peace-time exercises, as submarine officers are aware, submarines are carefully placed in *pre-arranged* positions, within striking distance of which opposing ships are *instructed* to pass. Under such circumstances it is hardly surprising that success is frequently achieved, and emphasised by Naval Correspondents in the newspapers. Such operations, however, are designed to *exercise* the submarines and it is unfortunate that in such operations strategical and tactical conclusions are drawn, not only by the public, but, seemingly, by the Admiralty itself. The same is the case with aerial operations. Thus is make-believe confounded with reality.

With the foregoing considerations in view, the lesson of the war and of post-war exercises seems to be this : small submarines are valuable vessels for defending important strategical bases and harbours against sustained bombardment, a landing of troops, or against close blockade, and, in the case of a neutral, for the vindication of the neutrality of territorial waters against all comers.

England requires few submarines for her own fleet, these few being employed for the defence of important, but isolated, harbours and bases where she may be in a very similar position to a weak

naval power. There is, therefore, no need to wait on International agreement for the abolition of ocean-going submarines by Great Britain. The case against the large submarine, in fact, is absolute, not relative.

It also seems clear that it is illogical, unjust, and very short-sighted to attempt to limit submarine construction in foreign navies, because submarines can, in the future, be effective only when used in a proper and natural manner.

Aircraft.—Little will be said in this book on the question of the future of naval aircraft as this matter was fully discussed in the *Navies of Today and Tomorrow*, but the lessons of the war are clear. Airships, believed to be invaluable for scouting, were a failure. Their failure at Jutland was complete. Admiral Scheer's evidence on this matter is final. They were the chattels and playthings of the weather; their vulnerability was extreme, and casualties were appalling.

Our own small airships, numbering as nearly as can be ascertained 103, met with casualties to 53 and their crews, again so far as can be ascertained. The number of men immobilised in the chain of airship stations round England was great, as can well be believed when it is appreciated that 200 men might be required to house a small airship. The effort, courage, and enthusiasm of the airship officers were beyond all praise, but again the positive achievement is difficult to find.

Aeroplanes, employed in large numbers in the

later stages of the war, were used like the small airships for patrol work and off-shore scouting for submarines. What little was achieved was achieved only by extravagant effort at correspondingly great cost, and it is on record at the Admiralty that aircraft did less in sinking submarines than almost any other weapon.

With the fleet at sea little, if any, experience of aeroplanes is furnished by the war, and no lessons in this respect are therefore available, except the valuable one, to which an allusion has already been made, that bombing of the stream of ships plying in the Channel, and within easy reach of *thousands* of German aircraft, was conspicuous by its absence. The reasons for this remarkable omission may be left to aerial enthusiasts to explain. One ship only in the war was struck by an aerial bomb, and that one without disastrous results.

For the protection of convoys aircraft are totally unsuitable, as indeed a consideration of their trifling endurance, and a comparison of the minimum speeds of aeroplanes and the maximum speeds of convoys, will convince anyone who pauses to reflect on what this fantastic disparity implies. For harassing submarines, and for forcing them occasionally to dive when on the look-out for prey they had a certain limited value, *but such activities can be more efficiently, simply and inexpensively undertaken by small surface auxiliary craft which can keep the sea for days, in all weathers, without relief and with certainty.* Aircraft for trade defence are thus

inefficient and in all cases *redundant*. Notwithstanding these verifiable facts, Admiral Mark Kerr and Air-Commodore Chamier, the Secretary-General of the Air League, have in recent months been carrying out a vigorous propaganda on behalf of a great expansion in bombing aircraft for defending trade against submarine attack, their advocacy of this futility being intensified by the proposal of European nations to abolish bombing aircraft.

Wireless Telegraphy.—The overwhelming importance of wireless telegraphy for naval purposes is taken for granted in these days, and yet the war reveals its limitations, and particularly its dangers, more strikingly than it exhibits its essential value. These limitations and dangers have been increased rather than diminished in the post-war years. During the war the transmission of wireless by ships at sea was strictly forbidden, except in emergency, and the necessity of maintaining " wireless silence " has since been increased by the improvement in direction-finding apparatus. Transmission on power is thus a source of grave danger owing to the divulging of a ship's position to an ever-listening enemy. On the outbreak of war " wireless silence " is immediately enforced. Not only is wireless transmission by ships at sea a source of danger, but its lavish use by the Admiralty tends, as the war proved, *to undermine the executive self-reliance of commanders afloat.*

Wireless, as is well known, is unreliable at certain periods, and in a fleet action it can almost certainly

be jammed by an adversary. Not only can it be jammed, but it can be read and, as we well know, sometimes deciphered, so that a state of uncertainty as to whether a cypher or code is " compromised " is ever present. Thus an uncertainty arises as to the authenticity of perhaps a vital signal, as, for instance, the Admiralty signal of the course and speed of the enemy on the night of the battle of Jutland.

It is true that when action is joined the use of wireless ceases to be a source of danger in so far as the giving away of position is concerned, but gunnery, air-spotting and manœuvring signals can still be jammed, or even *forged* by the enemy, and, most important of all, the accuracy of a vital signal is dependent upon the unchecked accuracy of a single operator, with results in battle that might at any moment be catastrophic.

Wireless *transmission* by submarine was seldom necessary, and only permitted in emergency, and, as has already been pointed out, submarine reconnaissance was of singularly little importance in the late war. Though the war taught us the grave limitations and dangers of wireless communication, it also taught us the value of what was then, but is no longer, a new means of communication between ships out of visual touch, and in cases of distress when help is urgently needed.

The true lesson of the war with regard to wireless seems, therefore, to be this : Wireless is a *secondary* and not a primary means of communication, and

the supply of wireless material, personnel, and organisation should be adjusted accordingly. There is urgent need that visual signalling, particularly flag signalling, should be restored to its old position of priority, with all that this implies in masts, yards, and signalling facilities. All executive officers should once again be completely acquainted with important manœuvring and operating signals as in the days of the older signal books. Furthermore, the Navy should discontinue its elaborate participation in the wireless business of the outside world, stop its endless wireless research and experiment, and merely purchase its small but necessary equipment from civil sources, where, in all conscience, sufficient research and experiment always go on.

Ship Construction.—There is no dissent from the opinion that German construction was, on the whole, superior to the construction of our own heavy ships. The battle-cruiser action alone is sufficient warrant for the view, though it is unfortunately true that no test between the battleships was made available. The great importance of *protection* was amply demonstrated, and the great value of close subdivision by water-tight compartments was well exemplified in the German ships. It should be emphasised, however, that the Germans had this great advantage over ourselves in the construction of their battleships and battle-cruisers. Whereas our ships were built for *habitation* for long periods, thus necessitating large open spaces for living accommodation and mess-decks, the

German ships were manned, to a considerable extent, from barracks in which the crews were accommodated before going to sea. They were thus enabled to make a reduction in living space.

In a subsequent chapter certain proposals will be put forward for obviating defensive weakness in future battleships. The efficiency of the somewhat lighter calibre guns of the Germans shows clearly the desirability of adding to the armour and number of rounds carried, at the expense of weight in the gun and mounting. The total abolition of the torpedo armament from battleships and cruisers is admitted by all but torpedo *specialists* to be long overdue. No single hit from a torpedo fired from a heavy ship was achieved in the war. Furthermore, submerged torpedo flats add to the vulnerability of a big ship to a dangerous degree.

The necessity of contemplating closer ranges in the future affects very intimately the future construction of our ships. Closer range implies the strengthening of the side armour, and of so placing it that its full effects are brought into play at the ideal fighting range, probably about 15,000 yards, or less. Furthermore, the contemplation of closer range would enable us to reduce the weight of gun-mountings and the constructional drawbacks inevitably involved in excessive gun elevations.

A reduction of speed, a return, in fact, to the horizontal instead of the vertical portion of " the effort and performance curve," seems to be of

outstanding importance. It is that extra knot or two which calls for such a disproportionate increase of horse-power, and thus of weight and space, and which the war so clearly taught us to be of singularly little fighting value. This reduction of horse-power would enable us to strengthen very greatly the fighting and resisting power of our future cruisers and ships of the line.

The need for the simplification of the gun control, and the avoidance of its concentration in one locality, seems to be clear, as also the careful avoidance of all machinery and instruments, no matter how ingenious and "scientific", where machinery or electrical control is not essential. This would imply a reconsideration of the wireless and gyroscopic paraphernalia which is becoming such a marked feature of the latest ships.

These seem to be the more obvious lessons that the war has to teach us in the matter of ship construction and equipment.

* * * * *

In conclusion it must be said that a large number of naval officers will stoutly deny that the true lessons of the war are as here set forth. The post-war policy of the Navy, as discussed in succeeding chapters, is in itself sufficient proof of this strong disagreement. Few, if any, professional seamen will endorse all that has been said ; but, in spite of inevitable difference of opinion on details, it is certain that a large and growing body of naval

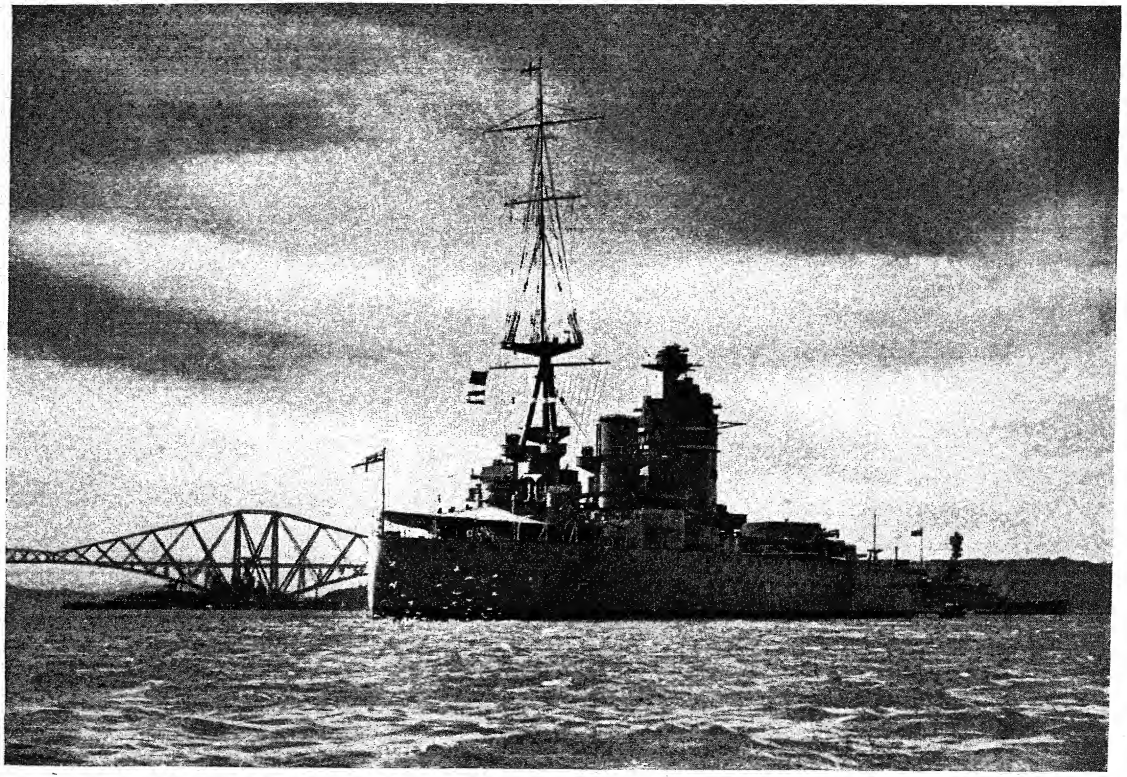
opinion will tacitly assent to the author's criticisms and to the lessons which past errors should teach us.

The widening cleavage in naval opinion is surely an echo, after a generation of unprecedented stress and *experience*, of that struggle between the doctrines of Lord Fisher and the traditional doctrine of the Navy, a struggle in which the victory went to that philosophy of which the conduct of the late war, and the composition of the post-war Navy, are the natural offspring.

CHAPTER XI

LESSONS OF THE WAR MISAPPLIED

IN the last chapter the author set forth what he conceives to be the true lessons of the war, and his views are in no way singular to himself. Indeed, they are identical in broad outline with those expressed publicly by distinguished flag-officers on the Retired List and privately by many of our most brilliant flag-officers serving on the Active List. Outside the ranks of the extreme specialists, more especially the torpedo specialists, the officers sharing these views have grown from a small minority into a definite majority. Even on the Naval Staff, and in the specialist shore establishments, the private views of officers are by no means universally in accord with the official views from which they can hardly be expected to dissociate themselves if they have a care, a legitimate care, for the future of their careers. The true lessons of the war have not, however, been in any way reflected in post-war policy, as will be shown. It is true that the errors and failures of the late war are universally recognised, but the deductions drawn from experience by the disciples of Lord Fisher have been, as is only natural, diametrically opposite to those drawn by the traditional school of seamen.



H.M.S. *NELSON*, OUR LATEST BATTLESHIP

For the sake of clearness and simplicity the post-war naval policy will be considered in sections corresponding to those sections dealing with material in the preceding chapter, such a treatment providing, it is hoped, the clearest means of contrasting policies based upon two diametrically opposed philosophies of war.

Post-War Gunnery Policy.—In the gunnery branch, as in all specialist departments, the evolutionary conception of progress has been strikingly in evidence, with the inevitable result of a growth in calibre, and thus in the range and weight of guns and mountings. Growth in size and weight is the outstanding characteristic of modernist material in all branches of engineering and organisation, ashore as afloat. Thus the calibre of the main armament of the new battleships, mercifully reduced by the Washington Treaty from 50,000 tons to 35,000 tons, has grown to 16 inches, with the enormous weight of gun and mounting that such a calibre demands. Not only has the weight grown, but the range, involving increased elevation and consequent complication in the mountings, has increased to ranges fantastically beyond the range at which a reasonable percentage of hits, or indeed hits at all, can be obtained. As with the new 16-inch guns of *Rodney* and *Nelson*, so with the 8-inch guns of the new 10,000-ton cruisers. It will be seen, therefore, that action, or rather *bombardment*, is contemplated at ranges exceeding those which proved so singularly ineffective at Jutland. Indeed,

the evolution of the weapon has converted naval gunnery into long-range bombing rather than effective gunnery in the proper sense of the term.

Reliance for *spotting* at these extreme ranges is now placed upon aircraft, for clearly the human eye and human judgment are inoperative in the firing ship. The value of aircraft for spotting will be examined elsewhere, but it may be pointed out at once that a belief in the reliability of the aeroplane in a future action is, together with the torpedo scare, a direct cause of, and indeed the only justification for, weapons such as those to which we are at present committed.

It is clear that at these excessive ranges the angle of descent of the projectile is very steep, so steep, indeed, as to make a direct hit an occasion of almost startled surprise. Because our gunnery policy is entirely rational, *given the premises upon which it is founded*, it would certainly follow that the armouring of modern ships would be so arranged as to give the maximum protection at excessive ranges, and this is what, in fact, we find. Heavy overhead armour in *Rodney* and *Nelson* is provided, and the side armour is so placed as to provide its maximum protection at an excessive range. It must be pointed out, however, that gunnery officers originally advocated this particular armour as a defence against aircraft bombs, but this absurd bogy having been mercifully laid, and aircraft bombing being recognised in the Navy for the futility it is, the heavy horizontal armouring of *Nelson* and *Rodney* is now

defended retrospectively on grounds of very long-range action—in fact, bombing by guns. It will thus be seen that our latest battleships embody the new doctrine of long-range indecisive action in opposition to the old traditional doctrine of decisive and victorious action at proper fighting ranges. Alternatively, post-war material dictates the tactics of a future sea battle, for clearly the range selected, if circumstances permit—and this is a big proviso—will be a range at which the ship will enjoy her maximum protection from armour. Thus does material now dominate strategy and tactics.

The life of these evolved guns is short, entailing great cost in replacement or, alternatively, insufficient practice with full charges at the range for which the ship is primarily designed. The inordinate weight and size of the projectiles seriously reduces the number of rounds that can be carried, though an almost limitless number would be required to effect a decision at the ranges contemplated, a fact brought home by the miserable percentage of hits obtained at the lesser ranges at Jutland, and at the Battle of the Falkland Islands where the enemy was opposed to us in hopelessly weaker ships and at ranges rendering the opposing guns useless.

A natural corollary of the extreme ranges contemplated is an intolerable growth in fire-control complications. These have now reached a point at which the latest fire-control table costs a sum of money which, if named, would hardly be believed.

It is significant, however, that the bulk of the "scientific" instruments included in this table depend in the first instance, as they must always depend, upon initial *estimates* by the human eye and brain. Thus, like so much of "modern science," extremely costly and ingenious instruments, and prodigious effort, are employed to deal "scientifically"—or in other words accurately—with initial premises based upon speculation or upon observations which are, in fact, inaccurate. This curious phenomenon is a matter of common conversation and mirthful ribaldry among naval officers who are not involved, as specialists, in the use of these particular instruments.

The ramifications of modern fire-control are so extreme as to necessitate the employment of troops of young ratings to mind, to operate and to interpret the instruments, a state of affairs involving two demonstrable sources of weakness. In the first place, operations and reports of the first importance devolve upon a large number of young lads, any one of whom may make an error that will have disastrous effects on the firing. There are, in fact, innumerable links in a weak chain, not one of which can err with impunity. In the second place, extreme concentration of control of the main armament is inevitable, not only for material reasons, but also on account of the necessity of supervision of the dozens of instrument operators involved. Thus a luckily placed round by the enemy may well put the whole gunnery organisation out of action, and

render these vessels as vulnerable to smaller ships as was Goliath to David.

Not only in the primary armament of battleships, but in their secondary armament, and in the primary armament—the 8-inch guns—of the new cruisers, the complications and ingenious devices are so numerous as to have become a byword in the Service and an intolerable burden on the taxpayers. The cost of the gun mountings alone of the 7,000-ton *Leander* is £420,000, £70,000 more than the total cost of a ship of the *Chatham* class, a vessel of 5,400 tons, also mounting eight 6-inch guns, and with a speed of 25½ knots. The actual gun-layers have sunk into the undignified role of machines, their magnificent skill and judgment having been replaced by instruments controlled and set on the information offered by a variety of junior ratings, often boys.

The term " failure " is admittedly a relative term, and yet the almost universal judgment of those officers at sea whose job it is to use and handle the post-war guns and mountings, as opposed to those at the Admiralty who project and evolve them, is that they are failures—white elephants. Their cost, however, is in inverse proportion to their efficiency, a phenomenon invariably to be met with when we set about evolving " scientific marvels." This fate has overtaken the gun which, in less " progressive " days, was not a marvel at all, but just a highly efficient, simple, long-lived weapon of precision. Thus in our present gunnery policy, strategy and

tactics have been forced to conform to the weapon instead of, as in other days, the ideal weapon being selected with care and discrimination, and finally designed to be the obedient servant of a sound, and therefore unspectacular, strategical and tactical plan.

Post-War Torpedo Policy.—If very modern gunnery, " evolved " from originally sound principles of war, has led us into the production of white elephants, what may we not expect of a torpedo policy reared upon principles that have been fallacious from the day when torpedoes were first invented? It need hardly be said that the torpedo itself has been given an excessive range and has expanded to a great girth, having reached, in fact, 24 inches in diameter and a range that still further reduces the pre-existing unlikelihood of a hit.

It has been shown that the torpedo in the late war was a failure in surface ships, except in so far as it excited a fear, amounting almost to panic, adversely affecting all naval actions. This failure was recognised by torpedo specialists, as it could hardly fail to be, but the action taken to deal with the failure has been exactly what was to be expected *when specialists dictate policy.* The specialist can with difficulty, if at all, be brought to see that the weaknesses of his speciality are *inherent.* The 24-inch torpedo, costing a fortune, is a monstrosity, involving disabilities in handing the use which preclude its employment in small ships, and which can only be met by costly and clumsy mechanical devices for

power-loading and power-handling. Tactically, as will be clear to a layman, the increased range proportionately accentuates the small prospect of a hit. The slightly greater effect of the increased explosive charge, if by great good chance a hit was obtained, has already been discounted by the bulging of the entire battle fleet at a cost which, though great in money, is greater and more serious in its effect of further diminishing the already inadequate docking facilities, even in this country. Battleships without adequate dry docks are anachronisms, for no risks could be taken in an action because trifling underwater damage might prove irremediable. Herein lies the secret, in great part, of the Singapore scheme, and the necessity of constructing and despatching the enormous floating dock to the Far East. Before the policy of bulging old ships was undertaken the graving dock already at Singapore, as well as docks in this country and elsewhere, could have received every battleship in the British Navy, mastodons though they were.

The inherent disabilities of the torpedo, as a weapon of precision, have led to a construction programme, and to a form of tactics, designed to employ these costly and inefficient weapons in shoals, a hundred or more being fired simultaneously in the hope of attaining one or two hits. Indeed, torpedoes, at enormous cost, are mass-produced in thousands, though their life in times of peace is short owing to the incessant evolving of a new "Mark," differing from its predecessor in some

trifling respect. The new "Mark" "goes into production," to use the current jargon ashore and afloat, and so the evolutionary game goes merrily on.

But the torpedoes themselves, and their cost, are relatively a trifle—only a few millions—when compared to the cost of the vessels constructed to employ them. Torpedo boat destroyers (nominally destroyers, but primarily torpedo boats and thus a partial contradiction in terms) are an extravagantly costly form of construction, the cost of these vessels having risen to over a third of the cost of a 12,000-ton battleship in pre-*Dreadnought* days. The T.B.D.s, in spite of their appalling cost, oil firing, and extravagant horse-power, are little, if any, faster than destroyers built over twenty years ago. Not only is the provision and maintenance of fleets of vessels to carry the torpedo a great financial burden, involving, owing to their heavy cost, a more than proportionate decrease in tonnage available for mounting the only really efficacious weapon, the gun, but this burden is increased by the depot ships and establishments for repair, maintenance and supply of torpedoes, and of the small vessels that mount them.

The torpedo itself is, however, one only of the activities of the torpedo branch. The mine, an immobile machine, is an instrument of never-ending experiment, "research," and therefore of change, though its efficiency, and general nature, are not changing for the better. Furthermore, the paravane has, to a great extent, rendered the mine

obsolete, though the existence of the paravane has little effect in abating the zeal of the mine enthusiasts. *Standardisation*, long overdue, is impossible with mines, as with all other naval material, owing to the vast organisation created for the sole purpose of unceasing experiment and change. The torpedo branch has further made itself responsible for gas warfare, on which more will be said later; also from its loins has sprung the new specialism of wireless telegraphy. Every device and branch of freak warfare dear to the heart of Lord Fisher's ideal, the sailor-engineer, gravitates automatically into the fostering care of the torpedo branch.

As though uneasily aware that the torpedo and mine, and latterly gas, are not of sufficient importance to engage the undivided attention of a great and elaborate branch of the Navy, the torpedo branch has usurped the natural province of engineers by undertaking the design, maintenance and repair of the electrical equipment of the Navy, a form of activity which is entirely inappropriate to executive officers, who are, as they should be if at heart they are sailors, amateur and not professional engineers. The extent of this amateurishness is all too plain when we see the fantastic growth and complication of electrical equipment in modern vessels.

Men-of-war are designed and constructed, or should be, with an eye to being destroyed bit by bit, totally destroyed possibly, and damaged certainly, in a real battle. Electrical equipment partially destroyed is a menace not only materially,

but because the Navy has learnt to rely on it and would be lost without it.

So powerful has the torpedo branch become, and so all-pervading its tentacles, that the essentially *sea-going* officers, those officers, in fact, whose misfortune it is to have to *use* all this stuff instead of evolving it, seem powerless to simplify their ships, an operation universally advocated at sea. Torpedoes, gyroscopic paraphernalia, and wireless sets innumerable, are forced into cruisers and battleships in spite of the growing protests of non-torpedo officers. The fear of the torpedo, in spite of the lessons of the late war, has been so sedulously fostered that it may be said truthfully that this chancy weapon now dominates Naval policy. The fear of the torpedo, greatly exaggerated when correct tactical and strategical precautions are taken, has affected the design of all our ships, either by the bulging of our older ships or by changes in the guns, ranges, and armouring of our post-war ships. Gunnery policy is definitely, if unconsciously, the victim of the torpedo fetish.

The author speaks with no animus or prejudice. Indeed, his career has been cast among torpedo and submarine officers in whose ranks he is happy to claim the great majority of his personal friends. The torpedo has been his weapon from the outset of his career, and his experience of it is great. He has also served for four years in the torpedo Division of the Naval Staff, in which capacity he has gained as close an insight into the torpedo specialist's mind

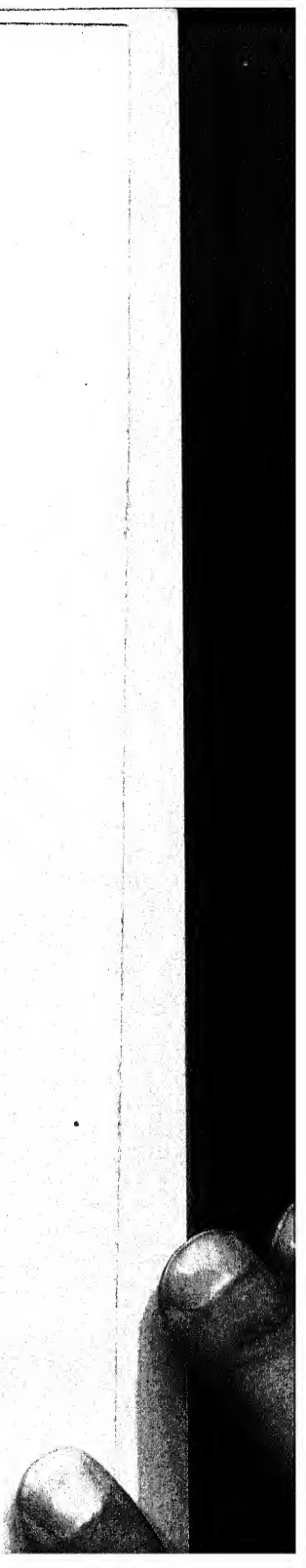
as is humanly possible. The true lessons of the war with regard to torpedo warfare have been referred to in the preceding chapter, and these lessons are hardly controversial. The action that has been taken, with these lessons in mind, has been such as seems logical, indeed inevitable, to men who believe in evolutionary mechanics, and who, as extreme specialists and "sailor-engineers," rather than as liberally minded professional seamen, control policy. It is upon the torpedo branch more especially that the materialistic mantle of Lord Fisher has fallen.

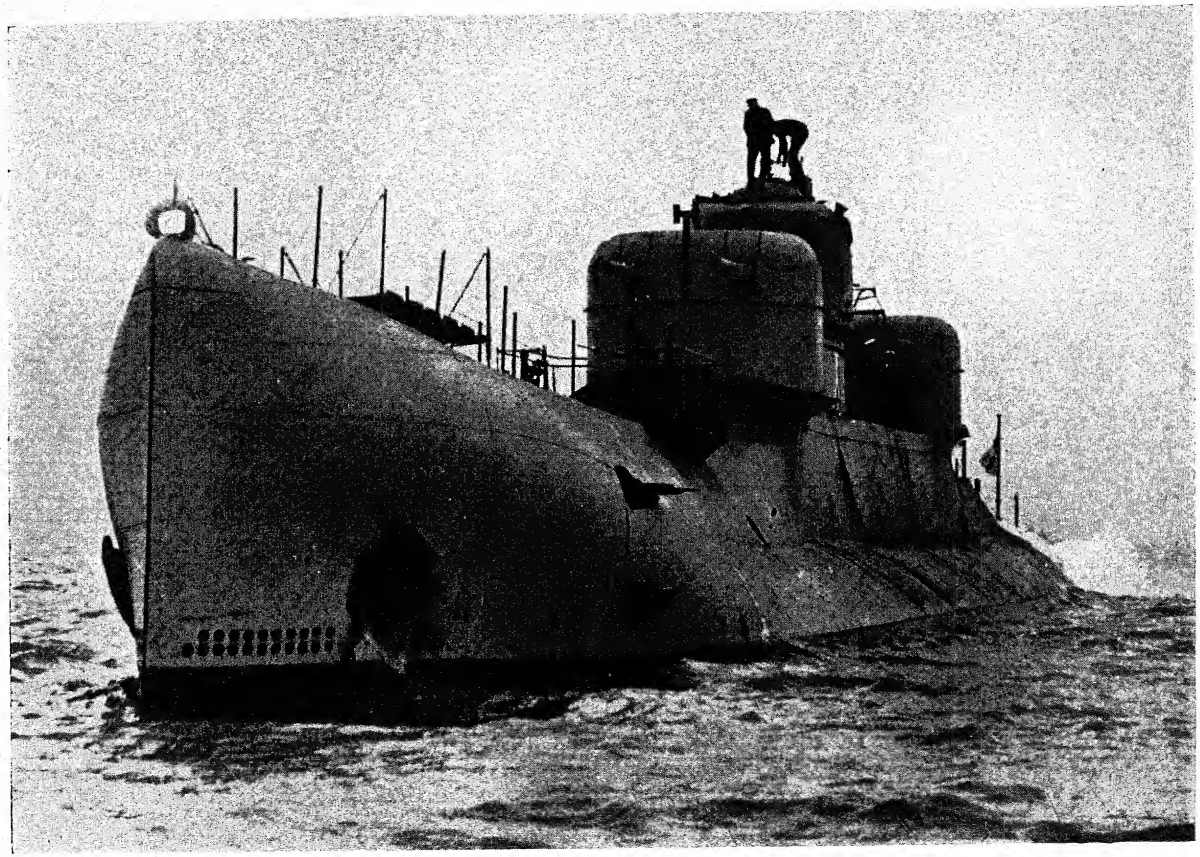
Post-War Submarine Policy.—As in all other forms of naval material, in submarine policy we again see objective evolution at work, and in a manner so clear and acknowledged as to provide a startling commentary on that conception of the inevitability of mechanical progress and betterment in a particular machine, and the impossibility of finality, which the theory of evolution predicates.

At the conclusion of the war many classes of submarines had been constructed, and hundreds of these vessels had been built. The war had revealed to us their possibilities as commerce destroyers in an *unsound strategical plan*, and it had also proved to us their extreme and narrow limitations for all purposes, legitimate as well as piratical, when properly countered. These narrow limitations are *inherent*, as has been shown, and as is frankly admitted by experienced submarine officers: they are limitations that can only be still further accentuated by growth in mere size. We had had nearly twenty years of

experience with these vessels in 1918, including in that period four years of war in which the experience obtained was the equivalent, *as with aircraft*, of perhaps fifty years of peace operations. The steam engine, as fitted in the K. class, had been tried and had failed, a failure leading, after much opposition, to the scrapping of the K. class as a whole, with the exception of a new *experimental* steam submarine, K26.

The Diesel engine had enjoyed a very thorough trial before and during the war. It was, and remains, a type of propulsion of which the slight advantages, and grave weaknesses—for marine as opposed to submarine propulsion—are perfectly well known to competent engineer officers, and in no need of this ceaseless research. The ideal form of hull, the limiting factors of tonnage and length for maximum all-round efficiency, the internal arrangements for operating purposes, had all reached a stage in which discriminating selection from known data, rather than a feverish outburst of experiment and research, was indicated. Simplification and standardisation, with resulting economy, was the obvious need. The earlier L. class of submarines had reached a standard of excellence which could only be bettered by *simplifying* still further their internal mechanism and by doing away with heavy and costly mechanical plant employed to do work that could be more simply and satisfactorily done by hand. Submarines had, in fact, reached the saturation point of material efficiency. But finality





SUBMARINE X 1

in the achievement of a saturation point of efficiency in any *particular* mechanical means of achieving an object seems to be a doctrine now intolerable to all men, whether ashore or afloat, and since the war research and experiment are believed to be capable of providing unceasing improvement in any mortal thing. At any rate, "the evolution of the submarine"—the term regularly employed—has taken place before our eyes. What are the results?

X1, costing now nearly one and a half million sterling, is a proved failure, not only from a material point of view but, what is much more important, from the strategical and tactical aspects. She is a submarine without a mission and lies derelict at Portsmouth. She was frankly experimental, but experimental for what? The Naval Staff were actually asked by a Rear-Admiral of Submarines to define her functions and were quite frankly unable to do so. The three submarines of the M. Class were deprived of their 12-inch guns which, from the day they were conceived by Lord Fisher and his Staff, had been notorious white elephants, though spoken of throughout the country as "triumphs of science." Of these three vessels two have since been lost—one of which had been transformed into a very dangerous submersible aircraft carrier to carry one baby seaplane. The last remaining M. Class is now a freak mine-layer. What the cost of these transformations may have been the author prefers not to contemplate.

Passing to what are humorously called "the

improved L. class "—the L50 class—we get a striking demonstration of "the evolution of species." These costly craft are in all respects inferior to their predecessors, and with the same horse-power and tonnage have achieved a loss of 5 knots in speed, though designed to be faster. This reduction of speed is not, it must be emphasised, of great importance, except in so far as it demonstrates the retrogression of modern progress.

K26, another exceedingly costly experimental craft, was an "improved" "K.," though the principle of steam-driven submarines had, in the meantime, been condemned, and the earlier and less expensive K. class had been broken up. Now K26 has vanished and the Navy List, mercifully, knows her no more.

The new O. and P. classes, larger it need hardly be said than the L. class, but built for the same general purposes and embodying an enormous wireless paraphernalia, have been as costly as they have in some respects proved mechanically unsatisfactory. The first two designed and constructed for service in Australia failed ignominiously to get beyond Malta until they had undergone, a few months after completion, a complete reconstruction. In Australia they were paid off and subsequently returned to the Admiralty control. As in all other classes of modern construction, the O. and P. classes of submarine were evolved, at enormous cost, into a "box of tricks" from a class which, if refitted and simplified where necessary, would have

been ideal for our strictly limited submarine requirements for many years. Instead, the still sound early L. class have been broken up, while the less satisfactory class has been retained. In submarines, as in other classes of ships, it is invariably assumed that the more modern craft must necessarily be the better fighting ship, age rather than performance being now the criterion of "obsoleteness."

The truth is that British submarine construction is without a policy, except in so far as a sort of mechanical evolution is a policy in itself, and the reason for this lack of a coherent policy is clear. It passes the wit of man to devise a reasonable use for British submarines beyond the limited uses referred to in the preceding chapter. Here, once again, the lessons of the war have been misapplied, while the British policy, or lack of policy beyond mere construction, has led to international confusion and recrimination on the whole submarine question. The British proposal at Washington for the abolition of the submarine, and subsequent proposals, have naturally been laughed out of court, particularly when it is known that Great Britain has been busy building new submarines, thereby showing that we still presumably regard the submarine as a potentially powerful vessel. Should not the Admiralty have given a clear lead on this vexed question by the cessation of new submarine programmes, retaining for minor purposes a sufficiency of old submarines which would have served our purpose with perfect efficiency for many years to come? Such a

policy could not have failed to impress foreign countries and lead them to question the wisdom of their own inflated submarine programmes. But to-day it seems to be a cardinal feature of Admiralty policy to build and maintain a class of vessel, not on its merits, *but because the other fellow does*.

In conclusion, it must be pointed out that depot ships, those ineffective vessels which eat up tonnage and funds that should be available for fighting ships, are, like everything else, assuming gargantuan proportions, as a study of the new submarine depot ship, *Medway*, costing over a million sterling, and the old depot ships still in existence, notably the *Cyclops*, well illustrate. The submarine is merely one of the many means of exploiting the torpedo, and, as in all things connected with the torpedo, the size and power of the organisation at the back of torpedo warfare, as with aerial or gas warfare, is out of all proportion to the value of the weapon itself.

Submarines require relief crews, stowage for their spare torpedoes, elaborate workshops for their complicated machinery, and accommodation for the whole personnel. For all these purposes the depot ship exists because submarines are not, and cannot be, self-contained vessels.

The gun, on the other hand, requires no auxiliary organisation whatever, the vessels that mount this weapon being completely self-contained, and therefore free for years in all parts of the world. Such vessels merely raise steam and proceed, a very different proceeding to that necessary for all forms

of torpedo, mine, aerial and gas warfare which involve, and provide, the chief excuse for the existence of inflated staffs at the Admiralty and in the shore establishments.

* * * * *

Post-War Air and Gas Policy.—It must be confessed that considerable difficulty arises in any attempt to understand naval policy with regard to aerial and gas warfare. A valiant if rather pathetic attempt has been made to ride two horses at the same time. No one knows better than naval officers the gross and lamentable exaggeration and propaganda that have surrounded and inspired these two forms of freak warfare, for such they are. Leaving out of account the land aspect of aerial warfare, its proved and acknowledged futility for *defence*, and its identity with indiscriminate assassination and sabotage naked and unashamed, and dealing only with the naval Air Arm from which this modern vileness and futility of indiscriminate—necessarily indiscriminate—bombing is absent, the impracticability of serious bombing under real sea-going conditions is perfectly well-known. Naval officers are aware that bombs cannot be accurately aimed, and that the belief, carefully fostered in the public mind, that huge bombs will rain down on battleships is childish, for the simple reason that, apart from aiming disabilities, such bombs cannot be lifted or conveyed in quantity to the scene of action. Furthermore, they know that the comparatively harmless

effect of dropped bombs, *owing to the non-confinement of the explosion*, is a matter of experience. Hundreds of heavy bombs imply hundreds of bombing aircraft. In artificial displays of bombing London, or a target ship, the same few aircraft are employed again and again. No bombs are dropped, indeed they are seldom carried, petrol, or life-saving apparatus in the form of floats, being the cargo. Nevertheless, the talk about what they *would* have done, coupled with the sight of the aeroplanes overhead, gives to the unreflecting or lay mind the terrifying vision of a ceaseless hail of death. The supply of aeroplanes overhead, from the few hundreds we now possess after an outlay of £255,000,000, is achieved by the simple expedient of using bases or aircraft carriers conveniently near, to and from which a few aircraft may pass back and forth, in fine weather, in rapid, easy and unopposed short flights.

A remarkable example of this aerial make-believe was recently furnished in the Firth of Forth when the Admiralty were induced to place their ships within range of one-fifth of the British air power which had been laboriously assembled at Elie. Though the Admiralty had emphasised that in the forthcoming exercises no bombs would be dropped or, indeed, carried by the defending aircraft, aeronautical correspondents without a word of protest or subsequent correction by the Air Ministry, led the country to believe that the ships had been hailed with bombs, the actual

number dropped, and the number of hits obtained, being specified.

These extraordinary operations followed closely on the heels of the agitation to resist the European proposal to abolish bombing aircraft. They were carried out to convince the public that aircraft are essential for the defence of the country from invasion and bombardment and are thus to be regarded as defensive weapons *par excellence.* If the Admiralty is to be blamed, as it certainly is, for staging such absurd exercises, surely it can hardly be blamed for not anticipating that the Air Ministry would use the opportunity to deceive the public as to what actually occurred.

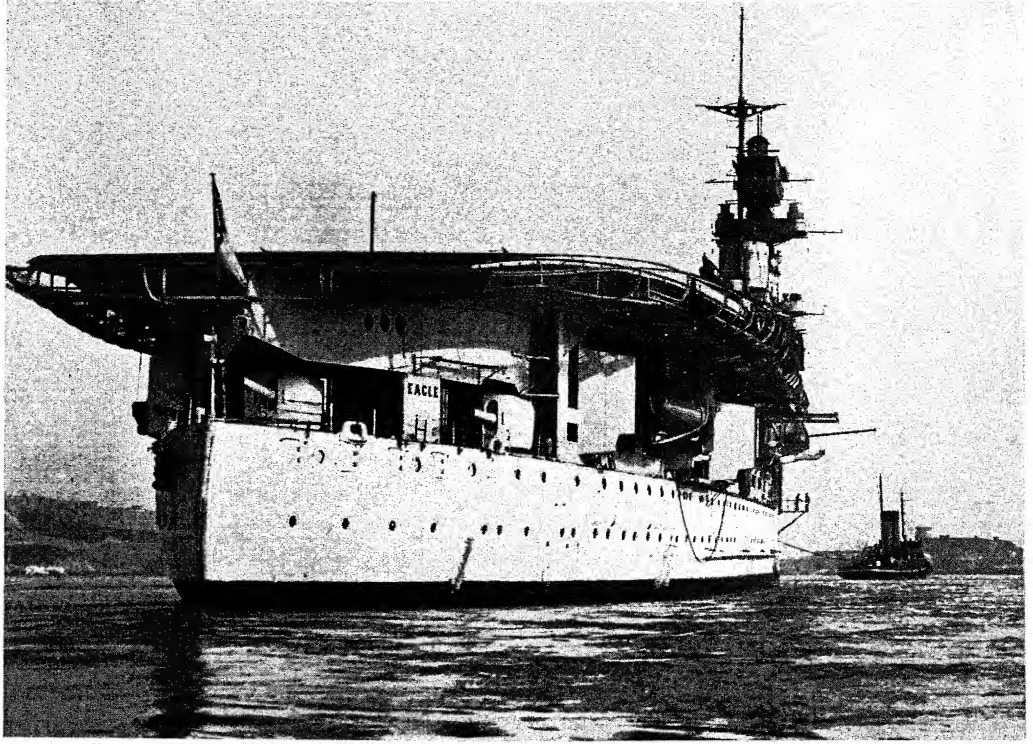
The grave imperfection of aerial navigation out of sight of leading marks or surface vessels, as previously shown, is admitted, as of course it must be, by the Navy, thus rendering long-distance scouting for an enemy, not carefully *arranged* to be in the immediate vicinity, a poor substitute for reconnaissance by surface vessels as well as being a source of extreme danger to the pilot and observer. These considerations on scouting have an intimate bearing on the recent exercise in the Firth of Forth where the reconnaissance machines carried special flotation equipment, in case of accident, in place of any bomb load. Short-range reconnaissance, in the presence of cruisers, is for the most part, if not entirely, redundant. Aerial spotting for fall of shot has been proved again and again, and notably in the famous *Monarch* firing carried out under

perfectly ideal conditions, to be not merely a broken reed but a positive source of confusion and danger, as all those who witnessed this firing are compelled to admit. Again, in the display before the Dominion Premiers, the spotting aeroplanes reported "shorts" for "overs," with disastrous results on the firing.

Spectacular attacks by torpedo planes (the latest vehicle to exploit the torpedo) are carried out under conditions fantastically divorced from reality and, even so, attack of any sort from aircraft carriers is only possible under good conditions of weather.

The case against the air myth, at sea as well as ashore, is widely admitted in the Navy to-day, and yet what has been the post-war policy of the Navy? On aircraft carriers* and their "wisp" of aeroplanes (for the aircraft that can be employed from these extraordinary floating aerodromes are no more than a wisp), and on that vast organisation at the back of the most trifling aerial effort, tens of millions have been expended. Our ships and guns have been designed with a view to aircraft co-operation, and it is freely admitted that without

* During recent months British lack of "airmindedness" has been contrasted unfavourably by aerial propagandists with the "Air Sense" of France and Italy. Airmindedness, however, has saddled the British Navy with six enormous aircraft carriers, which have cost over two score millions if we include their ceaseless reconditionings, whereas the sound air sense of France and Italy has given butt to one only of these monstrosities in their combined fleets, and none is being constructed, or projected.



H.M.S. *EAGLE,* AIRCRAFT-CARRIER

aircraft in view our ships and their weapons would have been of very different design.

With one voice the Navy proclaims (*pianissimo*) the ridiculous exaggeration that surrounds all aerial propaganda, and with the same voice (*fortissimo*) it proclaims the dawn of the Air Age at sea and the outstanding importance of the Naval Air Arm ! Since, however, a pound of practice is worth a ton of precept, it must be assumed that the prodigious expenditure on carriers reveals that naval criticism of extravagant aerial claims is half-hearted, and that the Navy's belief in a vast aerial future is much the same as the belief of those whose livelihood and prestige depend absolutely upon the sustenance of this queer modern myth. The Navy seems to have been persuaded by shouting, against its better and saner judgment, and by the fear of being branded as " Noahs," that the future of the country lies in the air, *but in the air over the sea.* Thus the quarrel over the Naval Air Arm has assumed in the eyes of the public the appearance of mere professional jealousy, while the great outlay of naval funds on aircraft carriers confirms the public in the view that naval criticism of the Air Ministry is the pathetic and expiring cry of a jealous, worn-out, and mediaeval service.

As with the air, so with its concubine—Gas. All sensible *and disinterested* naval officers know perfectly well—and say so—that gas clouds discharged by ships upon the wind are a futility, for tactical as well as material reasons. The use of gas-filled

shells against opposing ships is regarded by gunnery officers as an absurd waste of valuable rounds, and it can hardly be doubted that no such shell would be fired when it came to action. The object of naval gunfire is to sink or cripple the opposing ship. Mustard gas can only be troublesome—it if can be troublesome at all in face of reasonable precautions —*after* the battle has been lost or won. Gas spread from aircraft, the modern bugbear preached largely by the chemical industry, overlooks, among many other things, the exorbitant weight of the cylinder, and the consequently trifling puff of gas that the aircraft could transport and discharge. One glance at the sky above us should serve to check that fear of the aircraft's puff of nasty breath—for such relatively it is—a puff discharged a great distance from its target and absolutely the slave of the wind. The laying of a little mustard gas cannot, as before stated, affect the issue of the action.

All these facts are a matter of common knowledge and talk in the Navy, and yet preparations for the use of gas, and elaborate defence against it, go steadily on, and for the usual and inevitable reason. A large experimental gas station, with its attendant organisations at the Admiralty and elsewhere, has been instituted. Under the capacious cloak of the torpedo branch, now reaching out its tentacles to Salisbury Plain of all places, we find naval officers and " scientists " exalting their own speciality and pushing its interests. Most sinister of all, we find them hawking and employing the wares of the

chemical industry which, it need hardly be said, is adequately represented on the Chemical Warfare Committee,* a fact which naval officers and the public, in their virginal innocence, defend as a most natural and proper arrangement.

Schemes transcending the wildest schemes of Laputa—the softening of marble for the manufacture of pin-cushions ; the extraction of sunbeams from cucumbers ; and so forth—are set in motion by these gaseous professors. Horse-boots were " tried out " on galloping quadrupeds by naval officers on the plains at Porton. Indeed, the question of a change of equestrian bootmakers was a very burning one a few years ago, and " research " into the reasons why the horses trod down their heels was zealously pursued. This is no jest, as it may appear, but a sober, or rather drunken, fact. Gas-masks for carrier pigeons was an important " research question," when the author was last in touch with this branch of naval warfare, though whether " science " has now found a solution for the comfort of the horses and pigeons the author cannot say. Knowing the *patience* of all " research," and the necessity for this patience in a world overstocked with " scientists " but inadequately supplied with jobs, he is inclined to doubt it.

* The title of this body has been changed to the Chemical Defence Committee, which includes five representatives of Imperial Chemicals, Ltd., British Drug Houses, British Dyestuffs Corporation, and the London, Midland and Scottish Railway.

Acres of fuel oil are spread upon the seas in an endeavour to float a little mustard gas into harbours on the flood tide because, fortunately or unfortunately for the purveyors of the oil and the chemicals, mustard gas *sinks* in sea water, which is thus a natural defence.

In the face of such an organisation is it to be wondered at that naval policy becomes progressively stained with aerial and chemical projects, and that the gas offensive finds an early echo in the construction and internal economy of our ships? Gas-proofing of compartments, air-purifying machinery, gas-masks by the thousand, and the abolition of voice-pipes (by far the most efficient and reliable means of inter-communication) follow easily and naturally the recommendations of the gas "experts", and manufacturers. And yet, strange to say, no sober-minded naval officer sets the slightest store by gas warfare at sea. In the presence of the specialist and "man of science" a sort of fatalism settles down upon the Navy, and these costly, troublesome and fantastic innovations are accepted as inevitable and in harmony with "Progress" and "the New Age," as indeed they are.

Post-War Wireless Policy.—Here, as in all other branches, the Navy has fallen into the hands of the extreme specialist in control of policy. The limitations, not to mention dangers, of wireless communication are common knowledge and have been referred to in a previous chapter. In exact

harmony with present philosophy our wireless experts endeavour to surmount, or irradicate, these *inherent* defects by never-ending experiment and research, with the inevitable consequence of ceaseless production of new sets or new instruments. It is " the wireless age," and that settles the matter. Notwithstanding the widely acknowledged superiority of flag and other forms of visual signalling for all purposes other than communication with ships out of visual touch, or on foreign stations (a form of communication which duplicates the sure, secret, and already existing system of cable, and which is seldom really required) the *means* of visual signalling, and the signalman's art, are rapidly disappearing from the Navy to give place to a jamboree of wireless sets and an organisation that is as vast as it would be redundant in the absence of the superfluity of wireless material. Ships have contracted the habit of literally chattering to one another over the ether, and it is doubtful if one signal out of twenty now sent is of any importance whatever, as a most cursory study of any wireless log will reveal.

The Signal School, a child of that fertile, indeed fecund, mother *Vernon*, has grown into a great experimental establishment in which no less than twenty-three " scientists " and thirty " technicians," assisted by a large staff of naval officers and ratings, repeat and duplicate the work of thousands engaged in that wireless " research " taking place ashore. It is indeed difficult to say just where naval wireless

ceases and the Post Office and Marconi's activities begin. It is doubtful if any invention in the history of the world, with the exception of the aeroplane, that subsidised spoilt-darling of the oil industry, has benefited from, and battened on, public funds to an equal extent. Had wireless telegraphy and " commercial " flying been compelled to establish their exact places in the scheme of things on their own merits, and by the operation of the law of supply and demand unfed with subsidy, they would never have achieved the extraordinary and anomalous position which they now enjoy, and we should have been spared those ever-recurring and unsavoury scandals which are as native to these enterprises as is water to a fish or air to a bird. They would long since, *after nearly thirty years of development*, have filled an important, though small, gap in the system of modern communications, the precise gap being settled satisfactorily for all of us, whose tastes and opinions inevitably differ, by that infallible judge, jury and executioner, " economics," which knows nothing of " rationalisation," protection, subsidy or State enterprise.

In no department of the Navy is it more essential to return to the old-fashioned practice of relying upon civil sources for the supply of material. The claim sedulously, and indeed quite naturally, fostered by wireless specialists (" scientists " as well as naval officers) that naval wireless requirements are of such an exceptional and peculiar nature that " research " on naval lines, and by the Navy itself,

is essential, has nothing whatever to support it. Wireless in extreme moderation should exist for the Navy and not, as now to an absurd extent, the Navy for wireless.

It is a source of unfailing and amused remark among non-wireless specialists—for specialists are quite rational about the other fellow's specialism—that the necessary wireless gear could be obtained cheaply and satisfactorily from civil sources without any assistance from the experimental branch of the Signal School. The urgent need of simplification and reduction of the vast wireless organisation and its material is generally admitted, but here, as in all other departments, the organisation is too strong, and from the nature of its composition it is incapable of reforming itself and unwilling, quite naturally, to reduce or efface itself.

Post-War Construction Policy.—Construction can be divided into two branches—the reconstruction of Jutland ships and new construction. In considering, first, the reconstruction of our older battleships we get a singularly clear view of the manner in which the lessons of Jutland have been misapplied. The fear of the torpedo, in spite of its notorious failure, is clearly revealed in the bulging programme subsequently undertaken. In spite of immunity of all our first line ships (except *Marlborough* which was torpedoed and in the battle sacrificed two knots of speed only) ; though Jutland was fought in a narrow sea under ideal conditions for torpedo craft and with hordes of torpedo craft opposed to us, the

decree went forth that all our battleships must be bulged, with results that are strategically devastating. Surely it is better to have a powerful unbulged fleet that can proceed anywhere and fight anywhere than a bulged fleet which is useless, or thereabouts, if proper docking facilities are not available? The deliberateness with which this policy has been forced through is striking. It is as though a woman carefully measured her front door and then proceeded to alter, or purchase, her perambulator so that it could not by any possibility be squeezed through the portals.

The cost has been very great, and the more costly and questionable features of the Singapore scheme are a direct result of the bulges, for the old graving dock, as has already been said, could formerly take all British battleships. The Singapore scheme has already been mentioned elsewhere, but it may be pointed out here that its most controversial features have arisen from the necessity of providing for bulged ships, and the new 35,000-ton battleships, rather than from any previously existing or inherent strategical disability in the Far East.

Having at such a cost bulged the battle fleet and having thus, according to official pronouncements, rendered these ships largely impervious to underwater attack, it might be supposed that the torpedo bogy had been to some extent laid and that we might at least count that as an asset against the debit account of the strategical disabilities with which the bulges have saddled us, but such is not

the case. Nothing to-day, in the Navy or ashore, is clear-cut, definite, and final. Confidence and finality are lacking in every new policy as soon as the policy has been implemented with material or action. The fear of the torpedo kept us out of decisive range of the German Fleet at Jutland, but, bulges notwithstanding, still longer ranges are now provided, for the guns and armour are designed for action far outside torpedo range.

But reconstruction is by no means confined to the bulges. The original masts, funnels, and bridges of the fine and comely-looking *Queen Elizabeth* class (five in number) have vanished to give place to erections and accretions which are as hideous as they are retrograde. Wireless gear and elaborate and innumerable gyroscopic and other instruments are the principal causes of the dismantling of these once fine ships, and yet, by very general consent, their fighting qualities have not been improved, whatever may be the opinion of those enthusiastic specialists at whose behest this extraordinary reconstruction has been carried out.

In the older ships, however, the enthusiasms of the specialists have been kept within some bounds by sheer necessity. The ships could not be redesigned and rebuilt from truck to keelson. In new construction no limits existed to circumscribe the zeal and activity of the naval staff, so that in the ships built since the war the full blast of the new evolutionary mechanics has been experienced. And to what has it led?

The *Rodney* and *Nelson*, costing approximately £8,000,000 apiece, are a species of craft which, by common consent, will never again be allowed to disfigure the sea. Their dimensions are such as to preclude their employment in parts of the world where new floating docks and specially constructed dry docks are not available for their reception, and in this respect they are in harmony with the older bulged ships.

Their mountings are a source of continual anxiety and constant refit. Their armour, as already emphasised, is so placed as to provide its maximum protection at excessive ranges. So concentrated is the fire-control machinery that a single luckily placed shell might well put all nine 16-inch guns out of action. Their triple turrets are unsatisfactory, and the life of these monstrous guns is deplorably short. The number of the heavy rounds carried is certainly short of those required to undertake an action at the ranges for which the ships and their guns have been primarily designed with any likelihood of a decision.

Submerged torpedo flats in the fore-part of the ships are installed, for what precise purpose it is difficult to see, though as a source of danger they are obvious, especially as the whole 16-inch armament is forward. Internally the ships resemble a science museum more closely than a man-of-war, the complication being well-nigh infinite.

The secondary armament, twin 6-inch, mounted in turrets and crowded into the " Oiler "-like stern

of the ship, is a welter of mechanical contrivances, and a definite retrogression on the secondary armaments of fifteen years ago, the twin 6-inch mounting having proved itself, many years ago, a thoroughly undesirable form of mounting, though now re-introduced into the *Leander* as the primary armament. Furthermore, a lucky shot will put them all, bag and baggage, out of action.

The ship's company, in spite of the ships being exclusively oil-burning, is no less than 125 officers and 1,300 men, a great personnel being required to mind the countless instruments and to work the modern " labour-saving " devices.

But for the Washington Treaty we should have had battleships of over 50,000 tons mounting 18-inch guns, and a fleet of *Hoods* costing over £6,000,000 apiece, the annual upkeep of one of which is no less than £427,000.

The new 10,000-ton cruisers, costing about £2,000,000 apiece, are notoriously not fighting ships at all, unless the extreme, indeed fantastic, ranges for which their high-angle 8-inch guns are designed enable them to escape any punishment from the enemy. These queer ships, known as *Coffin ships*, resemble liners rather than cruisers, and it is not surprising that this confusion actually arose in Shanghai. They might be described as boiler cases, 80,000 h.p. being boxed in between thin steel plates, so that a well-placed 4-inch shell from a destroyer might prove exceedingly unpleasant to these strangely evolved cruisers.

The cruiser-minelayer, *Adventure*, is an adventure indeed into the unknown, for her role still remains an open and hotly debated question at sea. The author, though not, he hopes, of an unduly timid disposition, confesses frankly that his heart would be in his mouth if he went into action in this vessel employed as a cruiser with a great cargo of mines on board.

The small cruisers of the *Leander* class, costing one and three-quarter millions apiece, are miserably armed and equipped when compared to foreign vessels of a similar tonnage, as is shown in the table given in a previous chapter, and as has recently been deplored by the First Lord of the Admiralty. The same is true of our latest destroyers.

Alarmed at our lack of ships to act as escorts for the defence of trade, a deficiency due to faulty naval policy rather than to a lack of available tonnage or money, the Admiralty has introduced a new class known as a *convoy sloop*. She is apparently to mount an armament of four 4·7-inch guns, thus inviting a repetition of the disasters which occurred to similarly weakly armed destroyers on the Scandinavian convoys.

The Navy is apt to complain of the "lead" in disarmament which the British Navy has been compelled to give from political motives, but the most hardened, or softened, Pacifist would hardly praise the Admiralty for giving a lead to other Nations in making the worst possible use of the tonnage allowed to us by Treaty.

The new repair ship *Resource*, costing approximately £1,000,000, is an anachronism. Her large ship's company is totally inadequate for the operating of the repair machinery. Her blast furnace uptakes were a source of grave anxiety. Her function cannot be defined, and what she is to repair nobody knows.

The new destroyers, each costing in the neighbourhood of £300,000, have given trouble and anxiety owing to the excessive boiler pressures and superheat employed. And yet these costly craft are little faster than the old coal-burning destroyers of thirty years ago, and no faster than the *Lurcher* launched twenty years ago.

The post-war submarines have already been alluded to in some detail. Mechanically they are retrogressive and strategically they are without a mission.

Of the aircraft carriers, some of new construction and some reconstructed from Lord Fisher's costly and famous freaks, *Courageous*, *Glorious*, *Furious*, the less said the better. What they have all cost from first to last it would be difficult to compute considering that the *Eagle* alone has cost, with her alterations, over £5,000,000. These ships, like all the new ships, are in an everlasting state of refit, redesign, and generally of flux. " Propping up the dockyard wall " is the naval expression for a large portion of their activities. When it is considered that the fighting armament of these vulnerable monsters consists of a few aeroplanes, it is time,

surely, that we paused to take stock of our position and to inquire into the destination, or horizon, of this ungovernable, and therefore ungoverned, "Progress." May we not, in this class of vessel at least, learn a lesson from America who, after an expenditure of £18,000,000 on *Lexington* and *Saratoga*, has come to the conclusion that they are obsolete?

Turning aside from specific classes of ships constructed or reconstructed in the post-war years, it seems desirable to refer to certain aspects of modern engineering which are common to them all. We find excess, the hallmark of our generation ashore as well as afloat, in every department of naval construction. Excessive weight, range and calibre of guns; excessive torpedo equipment; excessive electrical equipment; excessive fire-control machinery; excessive mechanical complications generally. Perhaps the most notable excess of all, however, is to be found in *horse-power*. No serious attention seems now to be given to that point at which increased power becomes progressively and rapidly inoperative. Modern cruisers and destroyers are stuffed as full of boilers as is a Christmas pudding with plums. Not content with over-boilering these ultra-modern ships, the boilers themselves are designed for excessive pressure and superheated steam.

Though the sacrifice in fighting qualities that must be made for this excessive horse-power is obvious, it might be thought that we should at least see our ships leaping through the water at

speeds which make older and more conservative British ships, and their foreign opposite numbers, look tortoise-like, but it is not so. Cruisers and destroyers built years ago compare very favourably with our present ships, and on a relatively small horse-power. Should there not be an inquiry as to why, although in the foolish speed competition with other nations we have dangerously weakened our ships, our engineers and constructors have been beaten at their own speed game?

The reason for this lack of achievement is not far to seek. A certain length and tonnage of hull can absorb, so to speak, and utilise economically a certain horse-power and no more. When this point is reached an increase of tens of thousands of horse-power will have only a trifling effect, even *on paper*, while in practice, with a ship's bottom slightly foul, or a trifling head sea, the extra speed vanishes altogether.

The truth, of course, is that post-war naval engineering and construction, like post-war effort in other departments of life, is carried out on the vertical portion of what has been called elsewhere the "Effort and Performance Curve." This practice, due to the extraordinary penetration of the great engineering profession by men who, for some unexplained reason, call themselves and are called by laymen, scientists, is demonstrably responsible for all the post-war "scientific marvels," both in the Navy and ashore, the chief characteristic and accompaniment of which is a startling decline in

fighting power, and in the prosperity of the old-established basic industries in which true progress, as opposed to mere change, is not possible, except, of course, in perfection and economy of *administration*.

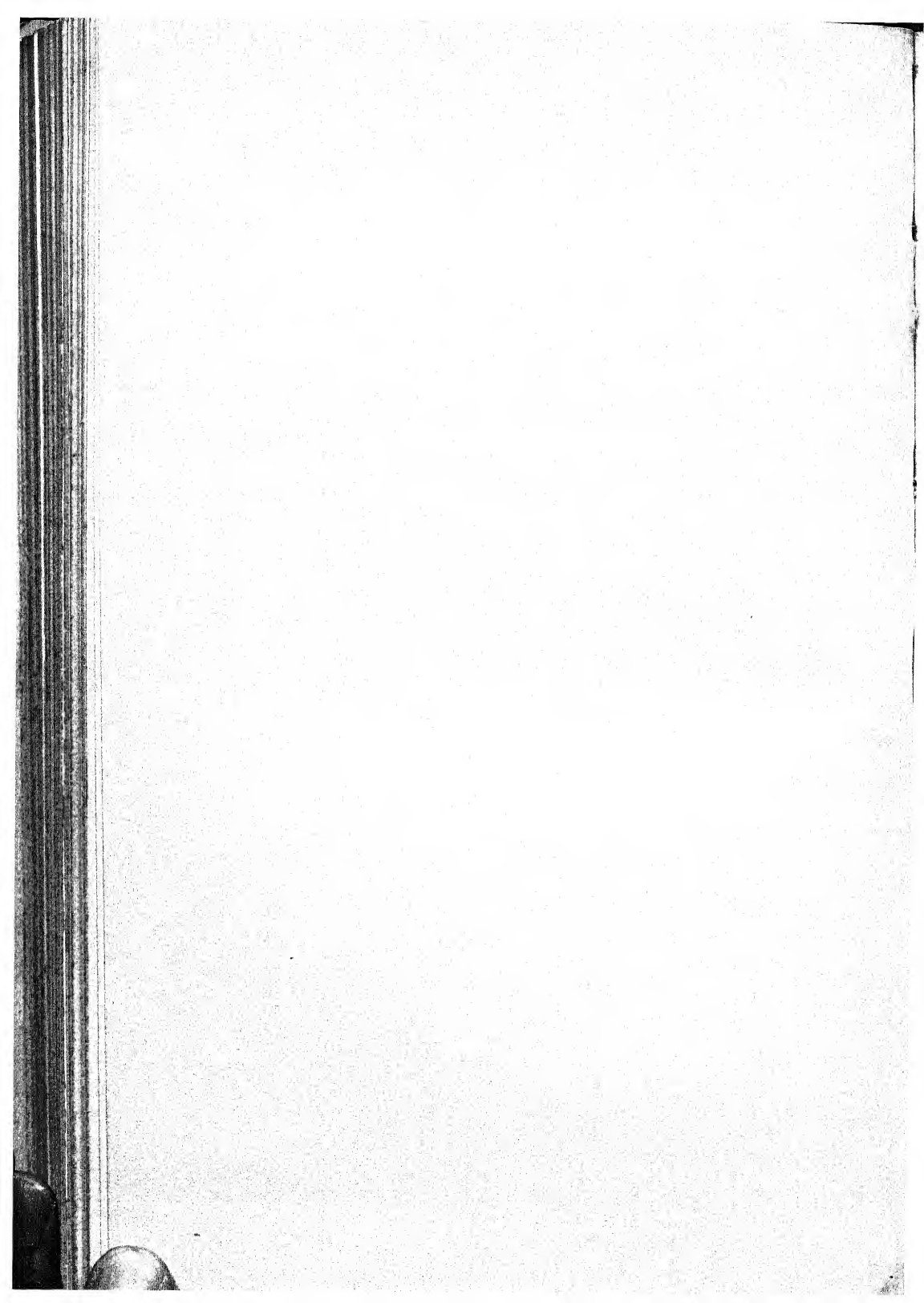
Those civil critics of the present Navy who denounce its ideas and its costliness, but who, by their words and acts, make it plain that they share with naval officers the new creed of evolutionary mechanical progress, are entirely illogical.

Naval policy during the past generation should, by such critics, be defended and championed and in no single particular condemned. Naval officers have merely exhibited to the world a single-minded devotion to that ideal of "Progress" which is shared by their fellow-men ashore. The ideal is admirable, but its application is, in many respects, indistinguishable from retrogression in the post-war world.

Any man, on the other hand, who may feel a certain disquietude, or who may be disposed to think that the author has unnecessarily exposed the weaknesses of our naval material and policy as they exist to-day, may rid his mind of any apprehension in this respect. The features of our ships that have been discussed and criticised are perfectly well known, and exist, fortunately, in foreign navies, and more particularly in the American and Japanese Navies, of which Lord Fisher was the father as he was of our own.

PART III

A NEW NAVY



CHAPTER XII

FUTURE NATIONAL DEFENCE POLICY

IN the past few chapters the author has subjected the Naval policy set in motion in 1904 to destructive criticism. Such criticism is always, and rightly, unpopular, and is also not infrequently considered to be easy. If, however, the destructive criticism of ideas almost universally accepted is sound, it is surely only a less pleasant form of constructive criticism, provided the foundations of the edifice criticised are true. We all, and certainly not least the author, believe the foundations of the Navy to be the same as in the centuries gone by, and therefore flawless, broad-based as they are upon the character and fighting qualities of British seamen. If Lord Fisher's strategical and material edifice is cracked, and full of flaws, it is essential to remove it before we can rebuild, on the old foundations of character and sound doctrine, a new Navy of steam, armour and modern guns to continue through coming generations the mission which the old Navy of sail so effectively, chivalrously, humanely, and inexpensively performed.

Before considering the Navy that Great Britain needs to give this island and its Empire the security they now lack, but so urgently desire, it may be well to reconsider those elements of

national weakness to which an early chapter was devoted.

It is clear that we can obtain security for every part of the British Commonwealth of Nations with a smaller Navy if the *responsibilities* of the Navy are, as they certainly can be, reduced.

Our greatest sources of weakness, as has been shown, include our almost complete dependence on sea-borne food ; our dependence on sea-borne oil which, in the case of all three fighting services, is now absolute ; the unemployment of between two and three million men, involving an annual expenditure of approximately eighty-five million pounds, or three-quarters of the annual cost of National Defence ; the weakness of our Middle East communications, and hence the threat to our oil supplies in Persia and Iraq ; the threat to the security of our Indian harbours which our present Indian policy involves ; and last, but by no means least, the White Australia policy super-imposed upon the growing hostility of the League of Nations to the expansion of Japan *anywhere*.

If none of these gaping joints in our armour is closed by political action, it is doubtful if any Navy the country can afford can secure the British Empire against defeat and disintegration in due course. Such weakness must eventually invite attack in a world seething with frustrated ambition and containing nations whose growing populations are confined within narrow limits.

It will be assumed, therefore, that the National

Government, or the next Government, will speedily eliminate some of these sources of weakness, thereby making the Navy's responsibilities such that a reasonably large Navy can shoulder them.

Though we may assume that in coming years the food position will be improved, such improvement must be too gradual to be taken into our immediate reckoning. In the case of fuel, on the other hand, the position can quickly be rectified by the restoration of coal to men-of-war and merchant ships, and the substitution of British coal (and its derivatives) for foreign oil, in commercial transport and, where possible, in Army mechanical transport, as is now being done by the French Government. In the case of the mercantile marine, any subsidy granted in the attempt to alleviate the shipping crisis is useless, for the real source of the trouble is the abandonment of our national, and natural, fuel. Here, at one stroke, the responsibilities of the Navy would be immensely reduced, as also the size of the Navy the nation needs to maintain. Furthermore, the wholesale restoration of the national fuel at the expense of foreign fuel would prove the greatest contributory factor in alleviating the terrible unemployment situation. The consequent reduction in dole would go a long way toward paying for the whole cost of a sound national defence system.

There is another advantage to be gained by a complete reversal of our fuel policy. It would remove the ever recurring sources of friction and

disturbance in the Near and Middle East, all of which owe their origin to our entanglements in the Persian and Iraq oilfields. Neither should we be called upon, as in the past, to expend countless millions on military measures for the protection of Middle East oil supplies.

The author must also assume a return to common sense in dealing with the Indian and Egyptian problems, and that future policy will be such as to ensure the maintenance of British control over Indian and Far Eastern naval bases and the Suez Canal. This includes the recovery of the right to treat Hong-Kong as the strategical key of British influence in the Far East, and the relegation of Singapore to its true position of minor importance.

There remains that standing threat to the peace of the world—a White Australia.

The author believes, with many others, that the White Australia policy is unjustifiable in view of the immensity of the territories involved; the unsuitability of the climate of great tracts of the continent for white settlement; and the restriction of population in the temperate zones. But, in spite of these facts, he must assume that the policy will be maintained, with all the repercussions it must have upon the necessary strength of the Navy towards which Australia contributes so little; if, that is to say, the Nation is determined to hold its possessions on something surer than sufferance.

Nevertheless, by reversing the National fuel policy, and by eradicating the strategical weakness

for which our Middle East and Indian policies are responsible, there would be eliminated two grave sources of danger for which post-war policy is mainly responsible. The word " mainly " is used advisedly, because in the years immediately preceding the war our strategical position had been worsened by the Anglo-Persian adventure and the partial introduction of oil into the Navy.

Relatively slight as was our dependence upon Anglo-Persian oil in 1914, it led to the necessity of defending this oil supply, thus involving Great Britain in the greatest campaign ever undertaken East of Suez, in which hundreds of thousands of men were engaged. If, then, the nation got rid of its financial interest in the Middle East oilfields, the requirements of a national defence policy would be restored, in the Naval sphere, to those existing prior to the advent of Lord Fisher and his confidential adviser Mr. Marcus Samuel, and in the Indian sphere to the days preceding the influence of Mr. Montagu and Lord Reading. It will thus be a British Empire free, as in the nineteenth century, of unwise entanglements, whose naval and military defence it is proposed to consider.

Preparations or provision for a war of conquest may be ruled out, for there must be few men or women in this country who contemplate aggression against another nation, or who harbour a desire to obtain more of the world's territory. The British world-wide estate seems already to be greater than we can satisfactorily manage while it contains great

tracts of the world which, for lack of population, remain undeveloped. On the other hand, it is assumed that notwithstanding our passing inability to govern what we have got, the nation is determined to retain the Indian Empire and Crown Colonies and to defend the self-governing Dominions from foreign conquest.

The first constructive act in our future defence policy should be the abolition of the Air Ministry, and of a *separate* Air Force. As the author has shown in this book, and elsewhere, aeroplanes can defend nothing. Unable to take a position or to hold a position they cannot obtain a *decision*, and it is for a decision that nations go to war. The terrible view seems now to be current throughout the world that the object of war is to *kill*. This is the view, not of a man, but of a *feminist* who regards great issues of Love and War, and too many other issues, from a woman's point of view—the jungle view. The object of war is to maintain the standpoint of the nation and to bend the will of an adversary. Students of war are aware that great naval and military decisions have seldom involved great slaughter, but have depended upon the severance of the enemy's communications, an operation mainly accomplished by strategical disposition reinforced with adequate fighting power at the decisive point.

Air power, from its nature, is incapable of achieving victory unless modern men have sunk so low as to surrender to indiscriminate terrorism,

especially when the bark of the terrorism is incomparably worse than its bite.

The younger generation of men and women must, of necessity, regard a separate Air Force as a natural part of the Defence Services because they have grown up with it. It is apt to be overlooked, however, that a separate Air Force did not exist until the last few months of the war. The institution of the Royal Air Force, and the Air Ministry as an independent Government Department, took place early in 1918 when Lord Rothermere was Secretary of State for Air. Lord Weir, a Member of the Air Board, succeeded Lord Rothermere in April, 1918.

The formation of a third service we owe to Lord Weir and others who clamoured for the bombing of the civil population of German cities as reprisals for the bombing of London. The policy of bombing civilians was strongly opposed by the Army, but the Air Minister, who controlled all the aeroplanes, took part of them and placed them in the north-eastern part of France, from which they actually did bomb a great many German cities, though with little effect.

Brigadier-General Parker, in giving evidence in America, said that the aeroplane " at no time, to my personal knowledge, accomplished anything of serious import when it was not serving in combination with the other combat branches."

Is it not a strange thing that Mr. Baldwin, Lord Londonderry, and other ministers who never tire of terrifying the country with bombing aircraft

scares, should inflexibly oppose the proposal of European nations, and especially Germany, to abolish bombing aircraft? It is frequently said that it is impossible to abolish bombing by mutual consent. But why is it impossible? * The nation does not fear the poisoning of its water supply, or the easy demolition of Westminster Abbey or the Bank of England by paid foreign agents in the event of war. What is it that puts the bombing aircraft in a category by itself? The answer is simple. The bombing of civil populations is a great financial interest, while the abolition of the bombing of civilians would involve the abolition of the Air Ministry.

The author has been attacked for branding the bomb as an assassin's weapon. Used *discriminately* in Madrid recently for the destruction of churches, convents, banks, and so forth, the bomb was universally condemned as a weapon of Bolshevism. Does its *indiscriminate* use against great centres of population improve its sinister reputation?

Let us, therefore, abolish the Air Ministry and

* Speaking in the House of Lords on April 10, 1930, the Earl of Cavan said: "Was it not in the interests of the future of humanity that there should be some thought given to the subject of bombing? We were bound by conventions as to the use of poison gas, and we were seeking restrictions in the size of battleships, cruisers, and submarines. Yet the Air Force could still use the threat of indiscriminate bombing against people innocent and guilty alike. The casualties might be inflicted on the wrong people. Bombing must be indiscriminate: women and children must take their chance."

draft the small *flying* personnel, and the remaining reconnaissance and spotting aeroplanes, into the Navy and Army which developed and flew them before Big Business decided that wars can only be won by killing and terrifying women and children. This reform would save the nation £15,000,000 annually.

* * * * *

To turn to the Army. The future strength and composition of the British Army must depend upon whether Great Britain is to revert to her traditional island strategy, or is to maintain the continental strategy of the late war. If the former strategical policy is upheld, it seems that the wholesale mechanisation of the army needs reconsideration; that the number of infantry needs to be increased and the number of machines to be reduced.

As the author's conception of national defence is the maritime policy which carried us triumphantly, and with relatively negligible casualties, through the great Napoleonic wars, he will assume that the Army is restored to a basis agreeable to an essentially maritime policy. The concluding chapters will therefore be devoted to considering the Navy we need to give the country security at a cost which its straitened finances can reasonably bear.

CHAPTER XIII

FOUNDATIONS OF STRATEGY

FOR what purposes does the Royal Navy exist? The answer may be given in a sentence. The mission of the British Navy is to secure the maritime communications of this Island, of the Empire, and of our Allies, while severing those of our opponents. These two functions, the first primarily defensive, and the second essentially militant, can only be achieved by *convoy* on the one hand and by *blockade* on the other. All maritime history, including the experience of the late war, has proved finally and conclusively that there is no means of securing the sea-borne trade of this island, and military expeditions despatched overseas, except by convoy in those seas and oceans where merchant ships are liable to sustained attack by enemy vessels. In the absence of the necessary power to institute and to sustain blockade the Navy ceases to be an instrument for bringing economic pressure upon an opponent. Indeed, apart from blockade, the Navy has no means of prosecuting or ending a quarrel.

Invasion, once a source of dread, is now hardly a cause for apprehension, and for this reason. Invasion could not be undertaken until the invaders' sea communications were secured, a security only

to be obtained by the defeat, or by the absence, of our battle fleet. In such an eventuality our opponents could blockade us and starve us into abject surrender in a few weeks without the great losses and uncertainties involved in a military expedition against a brave and desperate people.

In considering our future strategy, and the Navy that will most economically give expression to it, we can thus confine ourselves to the protection of our trade, and to the denial of the sea to our opponents.

If, then, blockade and trade defence are the purposes for which the Navy exists, what are the outstanding features of that sound strategy, in the event of war, which will enable these functions to be most perfectly, humanely, and economically exploited? What, it may further be asked, is the exact meaning to be attached to the rather loosely used term strategy? How is it to be defined? How is it to be clearly differentiated from tactics?

Taking the definitions first, we surely mean by sound strategy just this:

Sound strategy is the imposition upon an opponent of a certain course of action which compels him to act, and to limit his activities, within certain definite bounds, prescribed partly by natural forces and partly by the will of the opposing strategist who thus wields what is known as the strategical initiative.

Sound tactics, on the other hand, is the efficient handling of situations—the battles—that arise out

of the necessities of the over-ruling strategical situation.

Strategy is thus purely a matter of the mind, necessitating in the strategist, if there be one, no personal qualities of physical fearlessness, quick judgment, leadership, or popularity. Cold and calculating reason alone is required. Indeed, sound strategical thought may be quite impersonal, as before the advent of Lord Fisher it was, being in truth a traditional habit of thought, built up by centuries of experience and handed on from generation to generation.

The tactician, on the other hand, requires all those virtues with which the strategist can dispense, the strategical mind being in no way essential to him, and indeed seldom to be found in company with the other warm and human virtues and sympathies marking the great tactician. The tactician works unconsciously within a doctrine—a philosophy of war—which is native to him, and which has no need of his powers of analysis. In Lord St. Vincent, the great strategist, and Nelson, the heroic and unrivalled sea-commander, we have the supreme climax of a brilliant tactician consummating the plans of a sound strategist.

Thus it is that England never has lacked, and never will lack, great sea commanders, though in the past generation she has been without that supreme necessity, *a sound sea doctrine*, in the absence of which tactics and material are shorn of the greater part of their effectiveness. As already

stressed in the definition of strategy, there are certain natural limitations circumscribing in many directions the free use of the opponent's apparent fighting resources, and it is of the first importance to gauge accurately these natural strategical limitations ; to insure that they are brought fully into play ; to have the self-reliance to rely upon their efficacy in circumscribing enemy action ; and to cultivate self-confidence in avoiding any undue output of effort or material to reinforce them. Thus alone can economy of effort be achieved, and full striking or defensive power be developed at the decisive points.

Geographical features—the lack of safe anchorages or fuelling bases—the geographical position and attitude of neutrals—dominant weather conditions affecting small craft in certain parts of the world—these and other considerations will delimitate the oceanic areas within which certain nations will be compelled to restrict their naval activities, and they will give a clear guide in deciding the size and composition of the fleet that will best and most economically fulfil the needs of any particular nation.

In the case of Great Britain alone is naval action possible, and potentially necessary, in all the Seven Seas of the world, a lack of restriction pointing as clearly to the nature of the fleet that England requires as natural strategical limitations indicate the nature of the fleets indispensable to other nations. Such considerations alone are sufficient

to throttle at birth any plan for standardising by international " yardsticks " the tonnage and other particular features of individual ships, or of rationing tonnage on a *category* basis. Standardised " yardsticks " are in the nature of frivolity !

One natural strategical limitation transcending all others in importance has, however, been left out of account in order that it may be discussed separately. What sea-communications, if any, are absolutely vital to a possible opponent ? Which are of great if not of decisive importance ? And which are merely useful and subsidiary ? Here we reach the point at which active strategical initiative should impinge upon an opponent's natural strategical limitations, the point, in fact, at which the whole force of our active intervention should be launched, with all that concentrated might which has been husbanded and brought to its maximum by economy or absence of effort in unimportant directions, and by reliance upon natural forces to circumscribe the activity of an opponent within a narrow field.

It is a truism that the isolation of an opponent from outside sources of aid is the corner-stone of all sound strategy, whether military or naval, and it is only by keeping our minds concentrated on this axiom, and by constructing and training our Navy with this object in view, that we can maintain our sea-power as a sure shield, *and at a tolerable cost.* This axiom of strategy supplies us with a simple answer to the question, often now posed and

variously answered, "What should be the composition and mission of the New Navy?" Surely the answer, in a few words, is this:

The Navy should be planned, constructed, and trained as a balanced whole to render it an instrument which can obtain decisive and overwhelming victory over the enemy's main fleet when the fleets engage, the decisive point being in the future, as in the past, opposite the guns of the enemy's battle fleet.

Naval strategy should consist of a single-minded determination ultimately to force action on the opponent, whether he wishes it or not, and to make such action, when joined, *decisive*.

Before proceeding to show how these two ideals can be compassed, it seems desirable to meet in advance the criticism of those naval officers who may be disposed to maintain that the author is guilty of platitudes, and that he is preaching a doctrine already enshrined in post-war policy. It may be admitted at once that the author's enunciation of doctrine should be a platitude, and that in past generations it would so have been regarded. But times have indeed changed, though principles have not.

It has been shown elsewhere that Lord Fisher and his intellectual heirs were responsible for the introduction of a new doctrine alien to the great tradition of English sea-power; a doctrine which was, in effect, that the maintenance of a greatly superior fleet in being might be made the equivalent of

a decisive and victorious sea battle. It is such a doctrine that manifestly holds the field to-day, for on no other grounds is the nature of our post-war policy and fleet comprehensible or rational. It is a doctrine actively maintained by all apologists of Jutland, who remain convinced that in that unhappy engagement we obtained the fruits of victory without victory.

Turning to the strategical platitude that the composition of our fleet should be planned with a single eye to the main engagement, it need only be said that it has passed into common currency that England requires a specified number of special cruisers of such and such a nature "for the defence of the trade routes," or so many submarines and aircraft "for local defence." The value of battleships is openly questioned. Indeed, it is common knowledge that ships are now advocated, and specially designed, for *particular* purposes, as, for example, 10,000-ton "ocean greyhounds" for "patrolling the trade routes."

Thus we are confronted with two totally opposed doctrines of sea-warfare. Whereas Lord Fisher's disciples rely mainly on *material*, and regard the defence of trade, the defence of outlying Dominions, and the maintenance "in being" of a materially superior fleet *as objects in themselves*, the traditional school of seamen regard the fleet action as the overmastering business of the Navy, and the defence of trade, of the Empire, and the maintenance of a fleet in being as the natural fruit of a decisive sea

battle which alone can guarantee, and finally secure, this natural harvest of victorious sea-power.

The author must apologise for labouring these matters, but the distinction between the two doctrines is dramatic when we contrast the two navies that will inevitably embody the two embattled doctrines.

How this decisive fleet action can be forced upon an opponent who, for various reasons, may be anxious to postpone it, if not to avoid it altogether, will be shown in subsequent chapters. The avoidance of that battle desired by the stronger Navy is a very sound, and indeed traditional, strategy for a weaker opponent, who will endeavour, by maintaining his own weaker fleet in being, and thus ever threatening, to *immobilise* the stronger fleet, and to prevent its dispersion for that complete mastery of every sea, ocean, and trade route which a great sea victory alone renders possible. Furthermore, he may be able, by strategem, by force of circumstances, or by an error of judgment on his adversary's part, to catch his opponent's battle fleet divided and defeat each part in detail.

In the great majority of cases England's sea-power will be required in the future, as in the past, to secure her own vital communications, while *at the same time* bringing a cumulative pressure to bear on the supplies of war material, and on the accustomed luxuries and economic health of her opponent. On the more strictly military side her sea power will be needed to deny to her opponents, and to ensure for ourselves, the power of moving

troops and supplies to a strategic danger-point, as in the historic wars of liberty in past centuries. Thus, soon or late in the campaign, the time depending largely upon the relative fighting strength and spirit of the main fleets, a situation will develop in which action must be hazarded by the weaker or less high-spirited Sea-Power if it is to avoid cumulative paralysis at sea, culminating in the collapse of the campaign ashore.

In passing, it may not be out of place to point out that war with our real and very good friends in America, no matter how revolting or unthinkable, is in no way *strategically* impossible, unless indeed we surrender, or perhaps sell, our West Indian bases to Uncle Sam, and remain in strategical bondage to oil. The oft-repeated claim that Canada is undefended is not quite correct. Temporary occupation, it is true, is always possible, as it is in the case of any overwhelmingly numerous people, but by her sea-power England can finally, if she stands by her guns, compel the richest and most powerful land-dog to drop its bone. Blockade, the bloodless economic policy, is a weapon to which there is no counter in the absence of a decisive sea victory by the blockaded Power. This extreme, and indeed absurd, case of America is mentioned for one reason only. It well shows the elemental nature of soundly directed sea-power of which the great American seaman of the present, as of the past, are so well aware.

In conclusion, the author would apologise if he

has been guilty of over-emphasis of what will be regarded as strategical platitudes by many naval officers, though by no means by all. It is really essential, however, to fix firmly in our minds the dominating and unchanging principles of effective sea strategy in all their simplicity, for only thus can we visualise with confidence and clearness, in clear-cut instead of blurred outline, the nature of those new navies which will most efficiently and inexpensively meet the naval requirements of all nations with responsibilities to their countrymen and countrywomen on the mighty highway of the sea.

With the foregoing strategical conceptions in view, and treating a decisive fleet action as the one true purpose for which the new English fleet must undeviatingly be trained and planned, no matter what variations of circumstances any particular campaign may be expected to introduce, we must now pass to a general consideration of the general types of vessels that will best fulfil the supreme function for which the Royal Navy exists.

We shall also consider very shortly the nature of the fleets that seem necessary to those other great naval Powers which may still look for a great sea victory against an initially stronger Navy, notwithstanding that their fleets may be materially less in total tonnage and numbers. Some reference will also be made to the small seafaring countries for whom a sea victory is impracticable and unnecessary, and which, from the nature of things, do not contemplate, or fear, great sea actions.

CHAPTER XIV

FUTURE CLASSES OF SHIPS EXAMINED

IN the preceding chapter it was shown that a decisive fleet action is the event for which the New Navy must primarily be planned. To say this is not to overlook that, pending such action, and when the opposing main fleets are in being and alert, there will be need of ceaseless activity in the defence of our own trade against cruiser or submarine action by the enemy; action on our part against enemy commerce, largely by blockade, and perhaps the support of military expeditions of our own while preventing the movement of enemy troops to a beleaguered point by sea. By one of these two latter activities, or, in an extreme case, by the successful prosecution of our own commerce, we shall eventually force the enemy to face our main fleet which has been designed and trained for this decisive event. These subsidiary activities will be discussed later, however, and in the first place it is proposed to consider carefully the general nature and composition of that main fleet with which we shall eventually oppose our opponents when strategical necessities compel them to put their sea power to the supreme test of battle.

What classes of ship must this fleet contain in order to render it a perfectly balanced instrument

for obtaining decisive victory over the enemy whatever the composition of the enemy's fleet may be? The basis of such a fleet is, of course, still the battleship, notwithstanding the batteries of criticism which have been levelled against it by those who regard the failure of Jutland as inherent in a modern Navy, and who regard the late war, whether ashore or afloat, as a criterion of any future war.

Having said that the battleship is still the basis of sea-power, it is necessary to emphasise at once that by battleships are not meant those floating colossi which have already been criticised. Neither is meant that vague conception conjured up by the loose term "capital ship," a term that means nothing and should be allowed to die. By a battleship is meant a ship which, with her guns, can meet with confidence any heavy gunned ship opposed to her. The exact nature of the ship in view will be reserved for future description, but it may be said at once, in order to relieve any possible apprehension, that although the new battleship will be a vessel of the highest fighting power that our present great knowledge will enable us to construct—capable, that is to say, of tackling any vessel that the enemy can bring against it—the tonnage and cost of such a vessel need be but a fraction of the tonnage and cost of our latest mastodons *Nelson* and *Rodney*, or, indeed, of any other of our existing battleships.

The battleship remains the core of modern

sea-power, from which all other classes of ships derive their power to operate consistently and indefinitely, and therefore successfully, on the high seas. But, as in past centuries, the battleship requires the active support of lighter and swifter vessels. In the days of sail these vessels were frigates ; to-day they are cruisers. Now what is the precise function of cruisers ? It is a matter of the first importance to keep our minds as clear as crystal on first principles. If we have any doubt as to function we shall assuredly construct vessels which will fail us at every turn, no matter how costly, swift, or " scientific " these particular vessels may be.

The *primary* function of cruisers is to assist the battle fleet to obtain decisive victory, their *secondary* function being the defence of trade and transports prior to the fleet action, which latter function, as will be shown, is in no single particular at variance with the primary function, being indeed complementary to it.

A naval engagement between battlefleets will of necessity be preceded by a cruiser engagement, the initial tactical advantage being in the hands of the admiral best served by his cruisers, the duty of which is to give early information of the position, course, speed, tactical disposition and numbers of the enemy battle fleet while preventing the enemy cruisers from obtaining similar information for their own admiral. Thus the admiral informed of his opponent's position may be enabled to place his fleet between the enemy and his line of retreat, and,

with his slower fleet, force action on an opponent anxious to avoid a decision.

Initial touch between the far-flung cruiser lines having been achieved, a cruiser action will develop, the object of which is to disable or sink the opposing cruisers, thus leaving the victors at liberty to shadow the enemy battle fleet and report its every movement and action.

An admiral deprived of adequate scouting, and approaching an enemy fully informed of his fleet's movements, composition, and position is deprived of all initiative in the forthcoming engagement, and is on the high road to defeat before a shot has been exchanged. An admiral with a victorious cruiser screen has eyes. The admiral deprived of cruiser support is blind and reduced to guessing.

The overwhelming importance of efficient scouting, in all weathers, for the battle fleet requires no emphasis. Indeed, to-day there is a tendency to treat the fleet as existing for reconnaissance rather than reconnaissance for the fleet. Thus we see means of scouting piled upon one another by the provision of a fleet of six Brobdingnagian aircraft carriers for a few aeroplanes which, under extremely favourable conditions, are merely an addition to orthodox cruiser work, and in no single particular a substitute for it. In moderate weather, and disregarding bad weather, aeroplane reconnaissance is likely to be conspicuous by its absence.

Treating, therefore, the urgency of cruiser work with the battle fleet as an axiom, what is the general

nature of the cruiser that will best serve our purpose? Without going into exact particulars at this stage we can say at once that our advanced line of cruisers must consist of homogeneous vessels of high speed *relative to the speed of our own battle fleet*, and of good fighting capacity—capable, that is to say, of giving and receiving hard knocks. They must, in fact, be armoured cruisers, capable of dealing effectually with the enemy's cruisers and of achieving a decisive victory over them if they attempt to pierce our own cruiser screen. The question of speed will be discussed separately, but an indication of the author's argument in this respect has already been given when he says that the speed of our cruisers must be high *relative to our own battle fleet*, thus revealing one vital aspect of a properly balanced fleet.

We have now reached the conclusion that battleships and armoured cruisers must find a place in our New Navy, but what of small craft which, in the past generation, have been synonymous with torpedo craft? At this point the author would draw attention to the lessons of the late war previously discussed and to his criticisms of the torpedo as a weapon in surface ships. There is no need to reopen the attack on the torpedo as a weapon. The author intends in these latter chapters to be constructive, and to that intention he will cling.

Though it can be, and has been, shown how absurdly limited the torpedo is in its capacity to get home, and thus to achieve concrete results, and

how great is the effort and expense involved in the employment of this bogey, it is clear, none the less, that its employment by an adversary will affect adversely the tactics and conduct of our own battle fleet if the opposing torpedo craft are improperly *countered*, even though the torpedo in the future is treated only with moderate respect instead of with what in the late war amounted to panic.

The torpedo entails great effort and drastic manœuvre to get it into action at all against the enemy. Though a nuisance, its impending attack can often be foreseen, and therefore countered tactically, and, what is of vital importance to remember, *the torpedo is not a counter to the torpedo.* The destruction of the craft that carry it is the active counter, and this must be achieved in the future, as at present, by gunfire. Hence the unsatisfactory compromise involved in what are called torpedo boat destroyers, but which are now pre-eminently torpedo boats, and destroyers secondarily and therefore inefficiently.

It has already been emphasised that the essence of sound policy, circumscribed as all policy must be by financial and economic considerations, is to concentrate on essentials and to let go entirely of non-essentials. It is upon the gunfire of the composite torpedo boats that we now rely, in the main, for the breaking up and dispersal of torpedo craft formations, as it is upon the gunfire of the heavy guns of the battle fleet that we depend for decisive

victory over an opponent. Is it not wise, therefore, to forgo the use of the torpedo in surface ships of all classes and to simplify and perfect our means of defeating the enemy craft that carry this weapon of chance?

The author advocates, for the foregoing reasons, that our present composite T.B.D.s shall give place in our New Navy to vessels armed only with the gun, and well adapted therefore for the overpowering of enemy torpedo carriers. Thus, with the torpedo eliminated from all vessels employed with the battle fleet, the admiral will be free to employ the decisive weapon, the gun, with complete freedom from tactical preoccupation in the launching of torpedo attacks, and with single-minded attention to the real business in hand—the gun action. Such considerations bring us to the third class of ship which should find a place in the battle fleet of the New Navy.

We need, in fact, small high-speed second-class cruisers armed with a powerful quick-firing 6-inch gun armament. The precise characteristics of these second-class cruisers, whose functions in a fleet action are mainly those of our present T.B.D.s when used as destroyers, will, like the other vessels, be described in detail in the next chapter, but here it may be said that their speed must be high *relative to our own battleships and armoured cruisers*; they must be robust and seaworthy to insure that they can remain in company in all weathers; they must be sufficiently numerous to permit of disposition on the engaged

quarter as well as on the engaged bow ; and they must possess an endurance approximating to the endurance of the battleships and armoured cruisers. In short, they must be *balanced* with the battle fleet as a whole, and carry the secondary armament now mounted in the battleships.

Thus the battle fleet of the future will consist of battleships, armoured cruisers, second-class 6-inch gun cruisers, and very small third-class cruisers which will be considered later.

But what, it may be asked, of great battle-cruisers, aircraft carriers, and ocean-going submarines ? Is there no place for these most modern of fighting craft ?

With regard to battle-cruisers the answer seems to be this : The very high speeds and heavy guns which characterise these vessels necessitate great tonnage, inadequate docking facilities away from home ports, fantastic horse-powers and therefore extravagant cost. Few of such vessels can therefore be constructed, and these, even so, cannot successfully face, as they may subsequently be forced to face, battleships. It is true that a great fleet of battle-cruisers like *Hood* and *Renown* could put a fleet of armoured cruisers of moderate tonnage, mounting guns of medium calibre, out of action ; but no nation's resources are limitless. Against a great superiority in numbers of such armoured cruisers as will be described in the next chapter, a few battle-cruisers could be outfought. Two battle-cruisers, at long last, sank the *Scharnhorst* and

Gneisenau, it is true. Had, however, one battle-cruiser opposed the two the story would have been a very different one. We therefore discard the battle-cruiser on the ground of cost, and therefore lack of numbers, and also for lack of docking facilities throughout the world.

The case against the aircraft carrier was exhaustively examined in the *Navies of Today and Tomorrow*, and nothing further will here be said of these white elephants except that the New Navy will know them no more.

The reasons for excluding the large, fast, ocean-going submarine from the fleet of the future are many, and are as follows :

Such a submarine, like all other submarines, cannot combine satisfactorily the qualities of a surface vessel and a submersible one. Fifteen years of prodigious effort and outlay have proved this. Steam, still the pre-eminent source of power for speed in ships, has already been abandoned, and the " K " class of submarines have been scrapped. Internal combustion propulsion for large submarines of high speed has proved unsatisfactory on many grounds, the need of greatly increased weight of plant for a moderate increase of power being an important one, and it can truthfully be said that experience with X 1 has been disappointing in the extreme. The saturation point has, in fact, been reached.

There is no need to go in detail into the technical difficulties of constructing submarines capable of

holding, and maintaining for long periods, their allotted station with orthodox surface vessels. It is enough to say that the technical difficulties remain unsolved. The failure of a solution of the technical difficulties involved, obstinate as it has so far proved, is, however, incomparably the least of the indictments against this class of vessel.

Let us assume for a moment that technical difficulties of construction and engineering have been triumphantly surmounted. What is their *function*? On the surface they are, by common consent, valueless. They cannot fight, or escape, without submerging, and when submerged they are reduced to a speed which renders them little better than mobile mines. Like all submarines they rely for action upon their target coming obligingly, and unconsciously, into their very limited danger area, an area increased to a relatively small extent only by their own power of motion submerged. They must dive before being sighted on the surface, for if sighted, even for a moment, their prospect of successful attack is completely shattered. This means that they must dive eight to ten miles from the most advanced vessel of the enemy's fleet, perhaps fifty or sixty miles from the battle fleet.

However stationed relatively to their own fleet submarines are dependent upon mere chance for an opportunity to reach a firing position, such a chance under full speed action conditions being remote indeed, as exercises under circumstances carefully arranged for the submarines' benefit have repeatedly

proved. Ocean-going submarines, being of necessity large, are correspondingly of large turning circle and consequent unhandiness against fast-moving ships ; so much so, in fact, that should chance provide an opportunity to attack, the attack is more than likely to fail. Should, however, the submarines, by extreme good fortune, achieve a suitable torpedo firing *position*, the torpedoes themselves may fail to hit, as even the most enthusiastic torpedo specialist will readily allow. Finally, should a torpedo, by an extraordinary combination of chances, make contact with a ship, the result is not likely to be unduly devastating against a properly constructed modern battleship, as H.M.S. *Marlborough* proved at Jutland.

Over and above all these grave limitations to the usefulness of the large submarine itself, and of its weapon the torpedo, there is the serious tactical preoccupation of the admiral who will be tempted to lure the enemy towards his submarines, diving far astern of his battle fleet or cruiser line. Thus the ideal tactical dispositions and courses for the gun action, by which alone decision can be achieved, may be upset by the endeavour to bring the submarines into contact with the enemy, or, to put it more accurately, to lure the enemy—a free agent—into touch with the submarines. Thus it is the old story of twisting and deflecting sound tactics to enable a particular piece of material to be brought into action, a distortion never necessitated by the one true weapon—the gun—because guns are the

ready servant of ideal tactics and can be effectively employed under almost any circumstances.

On the foregoing grounds alone large submarines should quietly disappear from our future fleet, *regardless of what other nations build.* The case against these vessels is very greatly strengthened when the prodigious cost of submarines per ton is considered and compared to the cost of simple orthodox surface tonnage. Not only are the submarines themselves extravagantly costly, but they still require those bugbears of a strictly limited Navy, *depot ships*, which can only be provided at the cost of surface fighting ships. Submarines will, to the end of the chapter, require depot ships and relief crews, which constitute a heavy non-effective millstone round the necks of submarines of all sorts and sizes.

The value of ocean-going or fleet submarines for fighting purposes is now widely questioned in the Navy, but many naval officers still defend their future construction for purposes of *shadowing* an enemy fleet, thus usurping, or reinforcing, the functions proper to cruisers. Such shadowing is surely, of all functions, the one least capable of efficient execution by a submarine of any class. The power to shadow necessitates the power to *fight for position.* This a submarine cannot do. She must dive at extreme visibility from any surface vessel if her presence is to be concealed. A small detached surface vessel on the distant flank of the fleet can insure that a submarine will be forced to

dive and thus be rendered blind and almost stationary while the fleet she desired to shadow, and report upon, fades over the horizon and away. Neither can she report movements as seen through her periscope, for while submerged her wireless is inoperative. Thus submarines cannot undertake, in any respect whatever, the duties of cruisers, while the attempt to do so is an admirable example of redundancy, and thus of wasted effort.

Eliminating, therefore, large submarines from our future fleet for the reasons given, and the aircraft carrier for reasons stated elsewhere, we are left with a fighting fleet of battleships, armoured cruisers, and small 6-inch gun cruisers, all of which vessels are armed appropriately and exclusively with the gun, and all of which have been designed with a single eye to a fleet action, and that action a decisive one. Before passing from the main fleet, as designed and organised for battle, to a brief consideration of activities and duties separate from a fleet action, there remains for investigation one vital matter which concerns the main fleet as a balanced whole, and that matter is *speed*.

In criticising, as he has done in previous chapters, the world-wide craze for extreme speed, the author is well aware that he is at variance with what is now almost a religion in the post-war world. He feels himself to be guilty of something akin to blasphemy. Competitive speed is, however, one of the least of the requirements of that New Navy which we are endeavouring, in imagination, to

construct. It has been emphasised, perhaps to the point of tedium, that the whole preoccupation of the Navy in time of war should be to bring the enemy to decisive action, *an object that cannot be achieved by speed*, as has been shown elsewhere, and as the late war so abundantly proved.

The means of compelling action are, as they have always been, *strategical* and not *mechanical*. The enemy must persistently be presented with a situation which renders the defeat of the British fleet the only alternative to growing impotence at sea, and this persistent pressure is not dependent upon, or seriously influenced by, speed. In a fleet action, or a cruiser action, it is true that a slight excess of speed in an opponent may give him some slight *tactical* advantage, but an advantage immeasurably outweighed by the greater fighting strength of the slower ships which, if properly handled, will operate on interior lines. It is, of course, true that the enemy's greater speed may enable him to avoid action altogether. But the author's whole case is that the enemy *must* seek action or continue progressively to suffer the stranglehold that will overthrow him. This being so, his extra speed can only be used to bring him to us at a cost in fighting strength which will prove a deadly handicap to him in the day of battle.

To those who argue that his extra speed will enable him to choose the range, as Lord Fisher argued, it is only necessary to say that our slower

and more numerous ships will be better equipped to fight at any range than are the faster ships of the enemy, for we have utilised the space and weight of redundant boilers to meet precisely this situation, both in armour and guns.

Finally, it has been argued by a well known Flag Officer, who is in general agreement with the author's views of sea-power, that a speed at least equal to the enemy's is required to ensure that the battle is decisive, that the enemy, in other words, may not get away before his defeat is complete. There are two simple answers to this argument. The first, as already shown, is that failure by the enemy to defeat the British Fleet, and the sustenance of heavy damage, can only accentuate the growing pressure on his country that the action was expressly undertaken to relieve. The second answer is that in practice, and especially in very high-speed modern ships improperly protected, the damage to the enemy's fleet is likely to be so severe that its mean speed will be reduced below the originally slower speed of its adversary, so that few ships will escape, and surrender will be the only, but very proper, alternative to destruction.

Further reference will be made to this question of speed when discussing naval activities prior to the fleet action—defence of trade, blockade, and so forth. For the moment, however, we will confine ourselves to the speed of the main fleet in action. If, then, extreme speed can only be purchased at the expense of the fighting qualities of the ship—

assuming, as we necessarily must, some limit to the total tonnage of any navy—and if high speed is inoperative in forcing action on an enemy anxious, for excellent reasons, to postpone it or to avoid it altogether, should we not boldly abandon extreme speeds in our future ships of all classes? There is no half-way house, for manifestly a 32-knot ship, such as the *Leander*, is no more capable of hunting down or chasing the 34-knot American cruiser *Memphis* than is a 27 or 23-knot ship such as will be advocated in due course. Even if the *Leander* was able to "catch" the *Memphis* she would "catch" it in another sense when the action was joined for reasons which have already been shown.

The practice has grown of matching speed against speed. Competition in speed is rampant, with all its repercussions on cost and fighting weakness, a competition, moreover, in which British ships have been beaten. It is generally argued that the speed of British ships *must* be related to the speed of foreign ships. Indeed, to match speed with speed is now treated as a matter of necessity as well as common sense. The author is convinced, none the less, that there is a fallacy in the generality of arguments on this vital matter.

The ideal mean speed of a properly designed fleet should be, surely, an *absolute* and not a *relative* matter, a matter, in fact, to be decided by our own fighting characteristics and strategy and not by the speed of our opponent's fleet. Similarly the

maximum speed of our cruisers, of both classes, should be related to the speed of our own battleships, and not to the excessive speeds that foreign navies may see fit to install in their latest cruisers and destroyers. This difference of conception is fundamental, going as it does to the very root of sea-power and to the design of new British ships in the coming years. How this ideal speed is arrived at will be discussed, with other details of design, in the next chapter, and the author will here content himself with saying that great sea-keeping capacity at slow speeds will be a characteristic that will overshadow, and largely govern, all other characteristics in the ships he has in view.

We can therefore conclude this general consideration of the nature of our future fleet by describing it as a relatively slow fleet (as speeds are now reckoned) of great sea-keeping capacity, and carefully balanced in its component parts with the battleship, which is the keystone of the whole structure. This fleet will consist of battleships mounting the heavy gun only, armoured cruisers armed with homogeneous guns of medium calibre, and light second-class cruisers equipped with the powerful 6-inch quick-firing armament withdrawn from the battleships.

Turning from the battle fleet, and the fleet action for which the fleet as a whole has been exclusively designed, it is now necessary to examine shortly those other activities that will be required of the Navy pending that fleet action which, if victorious,

will enable us to disperse our fleet, including our battleships, for any duties that may be necessary.

These activities are, for the most part, concerned with the protection of our own trade from cruiser action by the enemy ; with the closing down of all sea-borne goods destined for the support of our opponents, whether carried in his own or neutral bottoms, and with the denial of sea transport to military expeditions while securing freedom for our own.

Taking the protection of our own trade first : as already emphasised, sustained attack, as opposed to raids, can only be carried on within the strategical limitations imposed upon the enemy by lack of fuelling bases and friendly harbours, so that the areas in which powerful protection will be needed are limited and known, and it is upon the defence of trade within these limits that we must of course concentrate. Though we must be prepared to counter a determined attack on our vital trade routes by hostile submarines as well as by cruisers, attack by submarine is a form of attack which, in the future, will require no great provision of material in times of peace. The late war proved conclusively that if ships are grouped in the open seas and oceans, few of such groups of vessels sailing in company will be located by submarines. *A large concentration of ships is little more liable to detection than is a single ship.* If, on a rare occasion, a large group of merchantmen is located, an enemy submarine will be forced to attack submerged, and

though an odd ship in such a group may be torpedoed, the crew will be saved by other vessels in the vicinity. To guard against the employment of the gun by submarines it is only necessary to ensure that a percentage of the merchant vessels themselves carry guns.

To those who object that we should make provision against the loss of even an occasional ship out of a group, it need only be said that it cannot be done. No escort can prevent the discharge of a torpedo from a submerged submarine, or certainly detect the presence of a submarine that has not previously betrayed her presence in the neighbourhood. Escorts on the high seas should not therefore be provided, in so far as *submarine* attack is concerned. The defence under these circumstances is, in the first instance, strategical—that is to say, the policy of *grouping* and "*routeing*": tactical defence is provided by *zigzagging*, if considered necessary, and material defence against the employment by the submarine of the gun is adequately met by the arming of a proportion of merchantmen.

In the *Approaches*, where groups of merchantmen will converge, and where groups may be split up for passage to different ports, escorts will be necessary, as it is here, and here only, that the submarine can expect a fair supply of targets and therefore valuable results, and it is here that they will be compelled to operate. In such localities small auxiliary vessels, properly armed and provided with the new detecting device will, by their mere presence,

compel the submarines to remain continually submerged and thus greatly handicapped. Here also, if any submarine compromises herself by exposing her presence by a hostile act, or by being sighted, it will be subjected to concentrated attack by depth-charges.

Though without our present means of detecting and hunting submarines, the foregoing tactical and strategical plan proved, in the later stages of the war, entirely satisfactory in mastering the submarine attack on commerce. The unchanging limitations of the submarine ensure that similar methods in any future war will prove similarly effective; indeed, more so, because we have the experience of the past to guide us, reinforced with improved means of detecting, hunting, and destroying submarines.

Thus against submarines no specialised men-of-war are required. The popular belief that a fleet of foreign submarines necessitates a counter-balancing fleet of torpedo-boat destroyers has nothing to support it. It is quite true that such vessels *can* be used for hunting and attacking submarines, but when so employed their specialised and extravagantly costly characteristics become inoperative. Submarines must be hunted and attacked deliberately, and at *slow* speed. The torpedo armament of torpedo-boat destroyers is useless, as also is the gun, because submarines will dive when sighting a destroyer. Depth-charges as carried in a T.B.D. are no more effective than when carried in a drifter or trawler. It is

sometimes argued that their very high speed (not available, incidentally, at the unexpected moment of sighting a submarine on the surface) enables them to close the submarine rapidly. The answer, of course, is that if the submarine dives on being sighted, as she always will, at a distance, the extremely high speed of the destroyer, in the unlikely event of high speed being ready, will only bring her a few hundred yards nearer to the submarine before it disappears on an unknown course. To build fleets of destroyers, costing £300,000 apiece, seems not unlike filling a house with steam-hammers to crack the walnuts. In short, for countering submarines, small auxiliary vessels, such as trawlers or drifters or yachts, are sufficient, and can always be obtained at short notice. The armament and detecting devices for such vessels alone need provision in time of peace.

A determined attack by *cruisers* on our vital seaborne trade is, on the other hand, a very great danger and one that must be met by ample cruiser provision in times of peace. Here no hastily collected material will avail us on the outbreak of war.

That we may expect such an attack on our food supplies, *and on oil supplies not cut off at the source*, is certain. Indeed, successful interference with our oil trade alone would speedily put the Navy out of action, the Army, with its vast mechanisation, to a dangerous degree, *and the Air Force absolutely*. Our reserves of oil, if unreplenished with a steady stream

from foreign countries, and in all cases from overseas, would not enable us to continue the struggle for many months. The present complete dependence of England upon sea-borne foreign oil has immeasurably increased the Navy's responsibilities, at a time when our cruisers, instead of being increased to meet these added responsibilities, have been reduced to fifty.

How, then, is an attack on two streams of vital traffic—Food and Oil—to be met? The answer, it need hardly be said, is by concentrating the food-ships and tankers in convoy, and by the provision of an adequate number of escorting cruisers. Defence must be true defence, and no mistake about it. Successful defence of an unbroken supply of these two necessities will be for us the equivalent of a great *tentative* victory—tentative, that is to say, until we have engaged the opposing battle fleet, victory in which engagement will render our tentative victory *absolute*. Failure to protect our food and oil would enable our opponent to avoid a fleet action, and would constitute a final and decisive defeat to Great Britain, necessitating surrender.

Here once again we find ourselves in collision with current doctrine and policy. We are at present busy on the construction of "ocean greyhounds," as innocent of all protection from gunfire as they are devoid of fighting worth, and yet slower than their opposite numbers. Their mission is to "scour the seas" in search and pursuit of enemy cruisers faster than our own in speed and of greater fighting

capacity. Why such ships? And why such a mission of hide and seek? The speed of our cruisers will not enable us to *catch* those of the enemy, though if the enemy *elects* to engage at the fantastic ranges now contemplated, chance will mainly settle the issue of the engagement, because the length of the range is the only means of defence on either side. The author cannot follow the argument, if indeed there is a coherent one, for the policy underlying the design of our post-war cruisers designed specifically, *mirabile dictu*, for the protection of the trade-routes. Cudgel his brains as he will, he cannot see daylight in our present cruiser policy.

It seems abundantly plain that for trade defence we require a proportion of well-armed and well-armoured cruisers in which high speed is the very least of all requirements. Our cruisers, for their trade defence function, require only sufficient speed to make them highly mobile relative to the 8 to 10 knot convoys which it will be their vital business to defend and to shepherd into harbour—in fact, a speed which will enable them to be manœuvred quickly into the correct tactical position for their action against the oncoming enemy "ocean greyhound." If the high-speed enemy cruiser attacks our slower armoured cruiser it will assuredly be sunk. If, on the other hand, our opponent sheers off, as he will be well advised to do, it is true that our own cruiser will be unable to bring him to action, but the enemy has failed in that very object for which his high-speed cruisers were primarily

designed, and our vital trade goes steadily and quietly on. Even supposing that our cruisers had a speed equal to the enemy, or even a knot in hand, such speed would certainly not enable them to engage an unwilling opponent because, among other reasons, they would not have steam for full speed at the time that it was required.

If it be argued that with cruisers of slower speed than that of the enemy we are relying on passive defence, and that true defence is offence, to use the tiresome catchphrase from the staff colleges, it need only be said that in this cruiser warfare, pending the fleet action, the means of bringing the enemy's "greyhound" to action is, once again, a strategical and not a material problem. The enemy's faster cruisers must eventually return to their ports, and it is in the approaches to their port that they can eventually, though not certainly at the first endeavour, be brought to action by slower vessels reinforced if necessary by our battleships, a predicament for the enemy that may force them into a great sea-battle which it should be our unceasing effort to provoke. Thus for the defence of convoys, great speed is not required; neither, in view of the great sacrifice that must be made to attain it, is it desirable.

As for the defence of trade, or of troopships, so for purposes of *blockade*; fighting strength and not speed is the vital requirement. *Moderate* speed only is required for all functions proper to cruisers. Thus it will be seen that we require no specially

constructed trade defence cruisers whatever. The armoured cruisers, designed exclusively for service with the battle fleet, are ideal also for trade defence and blockade, their secondary functions. Where the anticipated scale of attack is light, our second-class and third-class cruisers, also designed for their work with the battle fleet, will serve our purpose admirably.

We are thus left with our original three classes of ships, the cruisers of which are perfectly and equally adapted for the fleet action, for the defence of trade and transports, and for the blockade of the enemy. Our cruiser fleet is purely a question of *numbers*, for it is clear that we require a fleet of cruisers considerably in excess of those required solely for our balanced battle fleet, and numbers very much in excess of those required by any other nation not dependent, as England is, for the bulk of her food, and all her oil fuel, upon oversea transport.

Notwithstanding our utter dependence upon sea-borne trade, over-insurance is only a little less dangerous than under-insurance because it breeds suspicion and mistrust, and hence competition, in other countries, and political and economic troubles at home. We should also bear in mind, as already pointed out, that great cruiser activity on the part of the enemy can only be carried on by stripping his battle fleet of those cruisers which are as necessary to the enemy for a successful fleet action as they are to ourselves. Thus we shall be able to detach cruisers from our battlefleet while the

enemy is doing the same thing, thereby revealing plainly that no fleet action is immediately pending.

Is there, then, no specialised class of vessel required in our New Navy beyond the three classes already postulated for our battle fleet? Yes, we require a considerable fleet of small robust 6-inch gun vessels for trade defence in seas where attack by powerfully armed cruisers need not be anticipated.

By Clause 8 of the London Naval Treaty we are free to build any number of ships of 2,000 tons, mounting 6-inch guns, provided the speed of such vessels does not exceed 20 knots and that they are not equipped for the discharge of torpedoes. A large number of such small robust inexpensive vessels are urgently needed. Such vessels, employed as escorts for convoys, would remove the threat to our food at present menaced by high-speed, better-armed foreign destroyers, and the 30 small French cruisers of 2,400 tons. Furthermore, such vessels could act as genuine *destroyers* in place of our present torpedo boat destroyers which are in reality weakly armed torpedo boats. In peace, such vessels can be employed throughout the world in place of our present sloops which, in time of war, are practically valueless as fighting ships. These 2,000 ton vessels will hereafter be described as third-class cruisers. We also require a certain number of small submarines to act as a deterrent against protracted bombardments of important bases and dockyards, and as a threat to any serious attempt at

a military landing in force. Bombardment, though strategically of little, if any, value, causes a bad impression in the country bombarded. Against such action submarines are valuable because the target comes to the submarine, thus eliminating the greatest weakness of these vessels. In such submarines surface speed, again, is of no importance, the need being underwater handiness and a large simultaneous discharge of torpedoes. Indeed, in submarines alone should the torpedo survive as a weapon. In this particular case it is valuable.

We shall also require a limited number of specialised mine-sweepers to ensure the regular and assured clearance of important channels through which the fleet or convoys must pass, such flotillas forming the nucleus, as at present, of that larger fleet of sweepers drawn from the trawler fleets in time of war. The provision of mine-sweepers can, however, be greatly diminished by reliance on the paravane in open waters.

And lastly, we shall always require the necessary number of river-gunboats for those duties which they to-day perform so admirably.

Thus in our New Navy we shall have battleships, armoured cruisers, second- and third-class cruisers, small submarines, mine-sweepers, and river-gunboats. Such vessels, in adequate numbers, will fulfil all our requirements in war, as in peace. With such a fleet we can pass quietly from peace to war, if that grim necessity arises, without a tremor of anxiety or panic, and without that feverish and

ruinous mass production of new war material that was such a marked feature of the late campaign.

So much for the British fleet, but what of foreign navies? It need hardly be said that if the reasoning on the true nature of sea-power is sound, the navies of other first-class Sea Powers will conform in their general nature to our own, for it is the whole basis of the argument that without a properly balanced battle fleet, irrespective of its size and numbers, no effective sea-power can exist. Other nations may build fleets of high-speed cruisers, submarines, torpedo craft, and aircraft carriers, and for a time carry on a species of guerilla warfare with varying success. The time however will inevitably come, and under modern conditions quickly, when the British battle fleet, upon which all our naval activities lean, and from which we derive our power of sustained action, must be engaged and defeated if our opponent's guerilla warfare is not to be left, so to speak, in the air, hanging like the round world upon nothing.

It seems to follow, therefore, that foreign navies will gradually retrace their steps to fall into line with British principles of strategy, resting all their ships upon a battle fleet which, so long as it remains "in being" and therefore threatening, renders Britain's dominion on the sea *conditional* and *tentative*, liable at any moment to challenge by a numerically smaller fleet. The British main fleet will thus be forced to remain concentrated and alert against her opponent's materially weaker fleet. France, through

the centuries, has taught us to respect the power and potentialities of a materially weaker fleet when employed on sound strategical principles, and handled and fought with that tactical skill and bravery which England, by experience, has learnt to expect in her European friends—" the enemy."

At the same time it is clear that materially weaker navies will require a different balance in their fleets from that of stronger navies. The strategical requirements of all nations differ. The fleet action is generally, in the case of the weaker fleet, an event to be *postponed*. It may well happen in the future, as it has so often happened in the past, that a skilful opponent may seize, or make, an opportunity presented by an error or over-confidence in his adversary to divide, attack, and overcome a portion of the opposing fleet, thus by one victorious action reversing the strategies proper to the opposing navies, a fact which reveals at once the value of a strong but, at the outset, weaker battle fleet.

This vital consideration should act as a corrective to the extreme materialist who is too prone to judge the outcome of a sea war by counting ships and minutely weighing up material. *A sound sea doctrine, widely understood and accepted in all countries, is perhaps the surest bulwark against feverish competition in naval armaments.* It is under the false materialistic doctrine of the past generation that suicidal competition in material, largely of no fighting value, has thriven rankly. Naval warfare is an art, and not a dull and dreary mixture of pseudo-science,

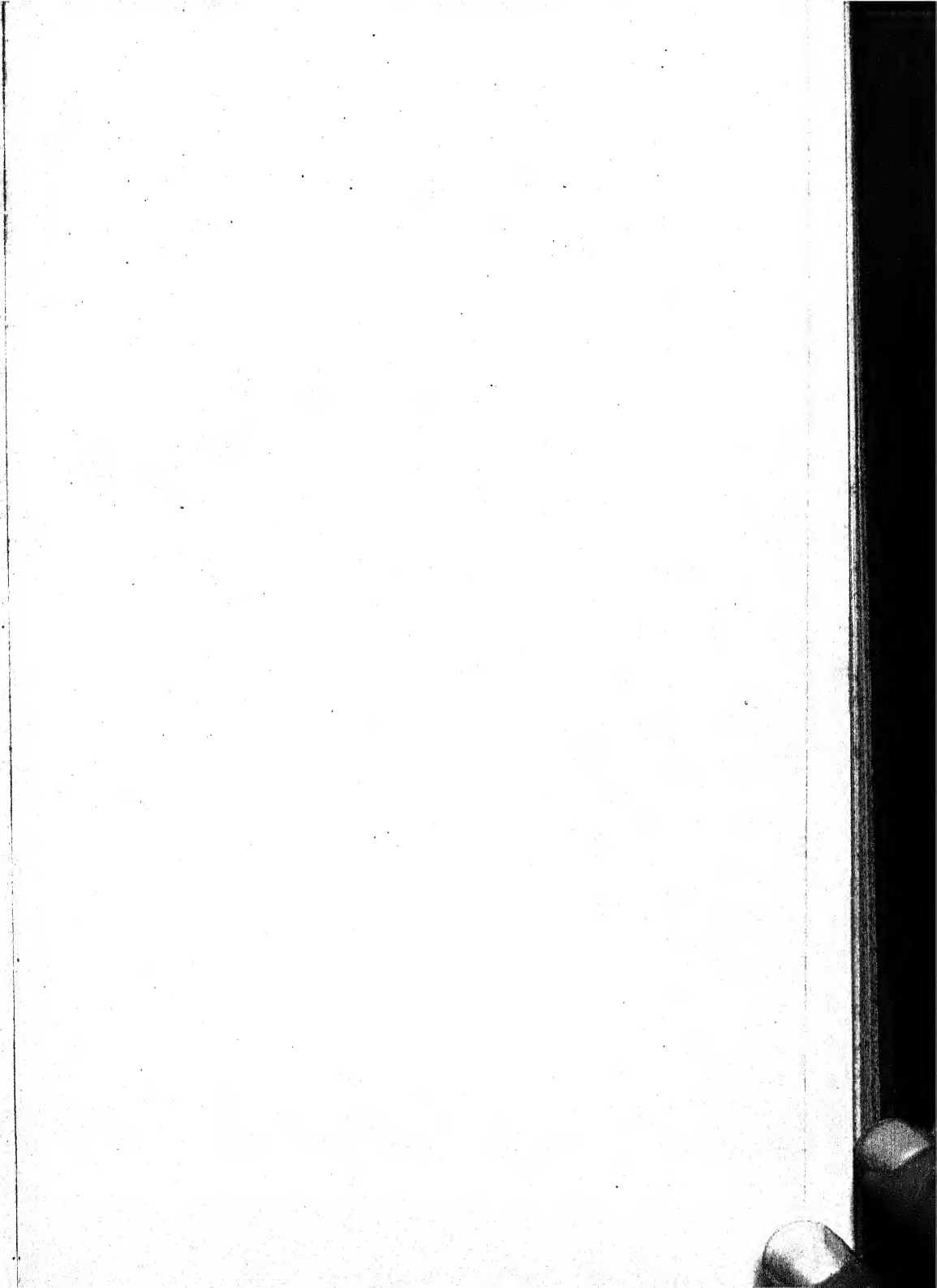
industrialism and Big Business. Cruisers and small craft, resting upon a small but still respectable battle fleet, will generally predominate in a weaker navy and will present the stronger navy with many of those puzzles and strategical dilemmas which are inherent in sea-warfare, and which have revealed themselves in all campaigns. Such puzzles must be met on our part by skill and seamanship and not by an exhausting competition in material in times of peace. It seems, therefore, that it is little short of an impertinence for England or America to attempt to coerce the great European navies, and the navy of Japan, into a particular class of construction, or to forbid other nations to build submarines. The submarine, like any other vessel, rests on its merits. Those naval Powers to whom sea-power is not, as in the case of England, everything, will be wise to construct submarines for the outlying defence of their ports, thus rendering close blockade by a stronger Sea-Power more difficult.

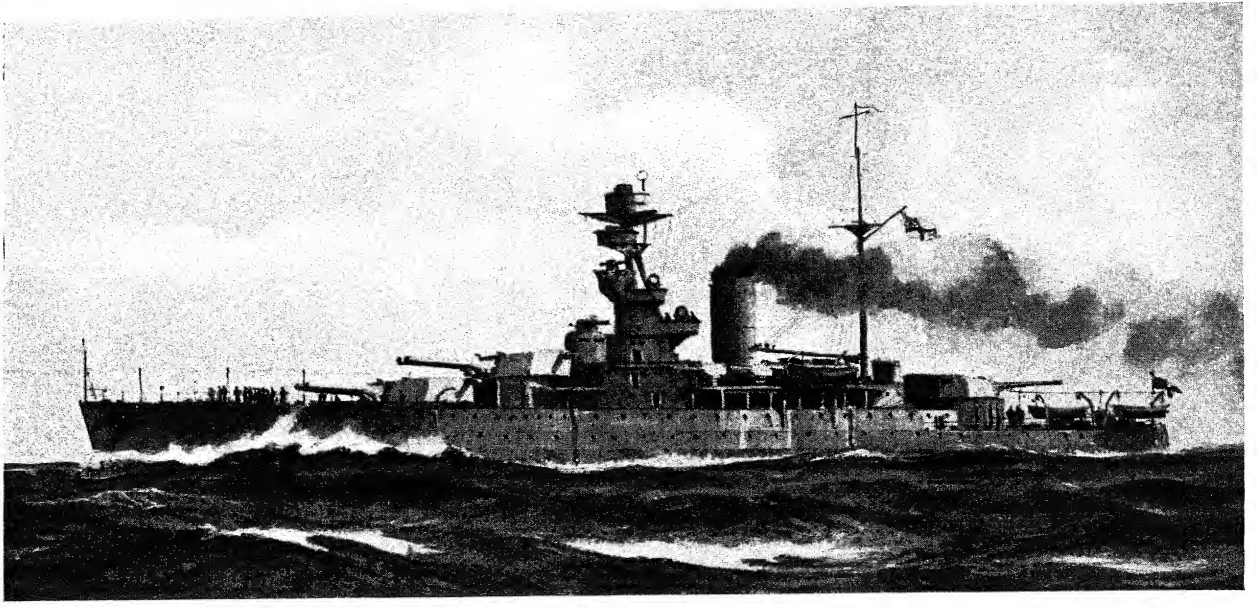
We need not fear ocean-going submarines if other nations are so unwise as to construct them. We surely need not anticipate that France and Italy, or Japan, will emulate the late German policy of the submarine Black Flag which the Germans themselves have now honourably disowned as they, and other civilised nations with the exception of Great Britain, are prepared to disown the Jolly Roger that should be flown at the tails of bombing aircraft. The real point is, however, that we need not *fear* submarine action because we know, as

other nations now know, that we can counter it simply and effectively. It therefore seems, in conclusion, that other first-class Sea Powers will develop navies similar in general outline to our own, though balanced somewhat differently in the proportion of one class of ship to another.

The smaller nations like Denmark, Greece, and Holland will develop small surface craft, *and particularly submarines*, for the defence of their neutrality and territorial waters against all comers.

Let us, therefore, hear no more of " yard sticks," but let all nations gradually rebuild their navies on an *absolute* basis, a basis, that is to say, which serves each one's strategical concepts and particular requirements. If agreed restriction there must be, let it be on a *total tonnage*, and not a *category*, basis. On such a basis competition in speed, calibre of gun, and individual tonnage becomes meaningless, the only competition possible being in numbers, a form of emulation that will quickly languish when we cease to interfere with one another's strategical conceptions and instead exhibit a little good humour, mutual forbearance, accommodation and common sense, all of which curbs on competition will be powerfully buttressed by economic considerations in the coming years.





THE BATTLESHIP OF TO-MORROW

[*Drawn by Oscar Parkes*

CHAPTER XV

A FIGHTING FLEET

UP to this point the argument has been restricted to general principles of sea strategy and to the classes of ships that will be required to embody and exploit these strategical conceptions. With these general principles the great body of seamen will, it is confidently believed, find themselves in harmony. It is now our business to pass from the general nature of our future ships to a detailed consideration of their characteristics. It is not to be supposed for one moment that naval officers will agree with the author, or indeed among themselves, on all details. It is hoped, however, that the ideas set forth may be of interest, that they may contain good seed, and that the reasons for the advocacy of particular characteristics will at least be perfectly clear.

We commence, naturally, with the battleship, and we adhere to first principles as surely as a limpet adheres to its rock. Our minds' eyes must, moreover, be fixed on our own strategical principles rather than on what we suppose, perhaps erroneously, to be those of an opponent, and we shall disregard entirely any existing ships in our own or foreign navies. The author, in fact, invites naval officers to think and plan on an *absolute* foundation and not on a *relative* one.

It was to some extent the failure to design our ships on this principle in the nineteenth century that gave Lord Fisher his excuse, and his opportunity, to introduce suddenly the all-big-gun battleship which rendered pre-existing ships obsolete. Such battleships were possible, and undoubtedly desirable, many years before the *Dreadnought* was spectacularly launched with a fanfare of trumpets. Lord Fisher's *Dreadnought* policy shows most clearly the extreme danger of deliberately, or inadvertently, building a fleet of ships of less fighting worth than existing knowledge makes possible. Vessels limited *by agreement* below the highest standards that knowledge enables us to construct are at the mercy of any man, or country, that suddenly decides to scrap the navy of a possible opponent by abrogating, or terminating, the Agreement. A Navy whose ships' characteristics are fixed by International Agreement is thus subject to *caprice*.

Though a principle to be kept in mind is an adequate *sea-keeping* capacity, it is necessary to distinguish between sea-keeping and a radius of action at economical speed. The radius of action of post-war cruisers is excessive because it disregards a chief strategical source of Great Britain's maritime strength—that wealth of defended fuelling bases throughout the world which other nations lack.

Excessive oil fuel stowage in our new cruisers is also attributable to the necessity of providing an enormous reserve for extravagant horse-powers

which swallow oil as a drunkard swallows spirits, while providing only a fractional increase of speed.

We require a fuel capacity in our new ships that will enable them to keep the sea, at slow speed as opposed to economical speed, for extended periods running, perhaps, into months. Such a fuel capacity will not need to be related to any specified passage at economical speed, for it will prove sufficient for any passage that our ships can be required to perform between British fuelling bases. It will be necessary, furthermore, so to design our ships that the fuel, up to the last ton, can conveniently be fed to the furnaces, thus diminishing the exertion to the duty watch of stokers, whose work will continue for long periods.

At this early stage of design it is not necessary, or possible, to give a figure for the fuel provision, this being manifestly bound up with the tonnage and speed of the vessel. It is mentioned first, however, because great sea-keeping capacity is an essential ingredient of all sound sea strategy of a great maritime power, and it must, therefore, ever be present in our minds as we proceed step by step to design our battleship.

The next point to be considered is the *nature* of the fuel, and here it will only be said that in the New Navy we must not contemplate the use of any fuel but British coal, with the single exception of oil in submarines, where it is, of course, essential. The case for coal as against oil is now well known : a navy dependent upon foreigners for the power to

move a propeller is a fantastic navy indeed. How a return to coal can be simply achieved, with a gain rather than a loss in efficiency, will reveal itself, it is hoped, as the argument develops. We have, therefore, to design an ideal coal-burning battleship of great sea-keeping capacity. That is our problem.

Now these two characteristics, the use of coal and great sea-keeping capacity, can be attained by two means and by two only. One method involves a great hull tonnage, and the other the installation of moderate speed, implying a great saving in horse-power and consequently in boiler and engine weight and space. But a great *reduction* of tonnage, as has already been emphasised, is of the first importance, not on grounds of expense, which is an *incidental* advantage only, but on grounds of the tactical advantage of numbers, and thus of fighting strength. It seems clear, therefore, that the speed of our future battleship will be moderate. The term " a sacrifice of speed " is studiously avoided because the word " sacrifice " implies the foregoing of something in itself valuable. The whole argument has been that high speed is not *required* in the battleship.

Our new battleship, then, will be a coal-burning vessel of great endurance and moderate speed. Her tonnage and speed cannot yet be defined, however, for these characteristics are governed by other features yet to be discussed. They will settle themselves in due course, as will be shown.

Though the tonnage cannot yet be laid down,

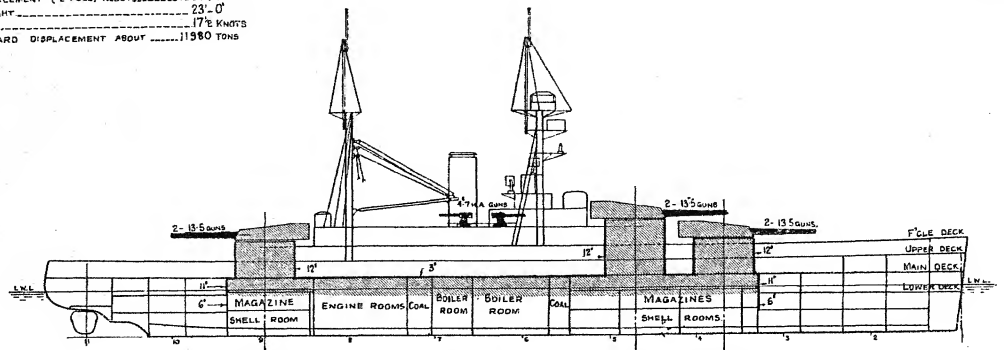
DESIGN FOR A BATTLESHIP.

PARTICULARS.

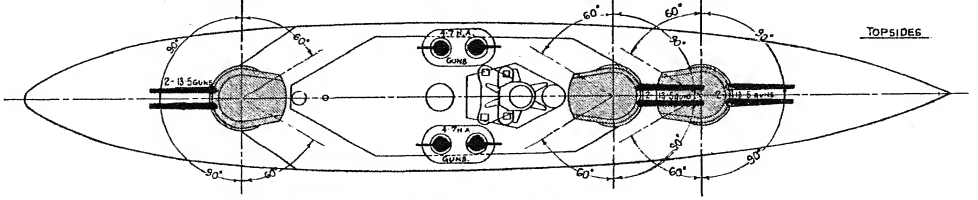
LENGTH B P	430'-0"
BREADTH EXTREME	72'-0"
DEPTH TO UPPER DECK	36'-0"
DISPLACEMENT (⅔ FUEL) ABOUT	12600 TONS
DRAUGHT	23'-0"
SPEED	17½ KNOTS
STANDARD DISPLACEMENT ABOUT	11980 TONS

ARMAMENT.

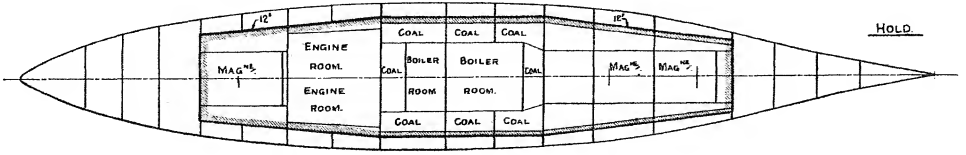
SIX 13·5 INCH GUNS
FOUR 4·7 INCH H.A. GUNS.
FOUR 3 FOR SAL. GUNS



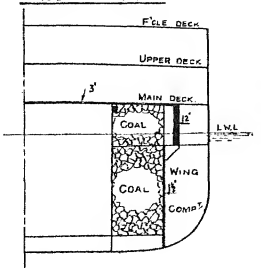
TOPSIDES.



HOLD.



MIDSHIP SECTION.



one thing about it can be said definitely. It will be the least that will enable us to equip our battleship with the best weapons and protection that our great knowledge of guns and armour enables us to design. Speed and fuel will be determined by the reserve of buoyancy of the hull that has been ideally fixed by guns and protection.

The next matter to which attention must be drawn is the question of *protection*. Because our battle fleet must be capable of overpowering, if properly fought and handled, any concentration of force that can be brought against it, it must certainly be able to withstand for a time, though not of course indefinitely, a hammering from the heaviest gun, and we can say at once that the protection round vitals must be sufficient to provide very sound defence against any gun that an opponent can reasonably employ. Conversely, every part of the ship in which damage is not of decisive importance should be of the lightest construction that is consistent with sound and balanced design, light enough where possible to permit shells to penetrate without detonating.

Though not strictly falling within the category of armour, the internal construction under water must be rich in subdivision, present "bulges" giving place to internal treatment. It is relevant to mention that the coal bunkers will provide valuable protection against under-water damage. The correct disposition of the armour will reveal itself when we come to consider the armament, but here again

we can say generally that the armour must be so placed as to provide its maximum protection at what transpires as the ideal fighting range, that range, in fact, which in the future we shall strive by every means to achieve.

We now have a coal-burning, heavily armoured battleship of great endurance and moderate speed. The tonnage and speed are still open questions, and must remain open, until we have determined that overruling characteristic of our vessel which, it is sincerely hoped and believed, will settle the question of tonnage, speed, and correct placing of the armour for us without any effort of thought on our part on these questions *per se*.

The overruling characteristic of our battleship, the characteristic that will settle the still open question of tonnage, speed, and fuel, is the *armament*. Our problem is not one of mounting the greatest number of the greatest guns that a *predetermined* or internationally agreed tonnage and speed will permit. Rather is it to discover the least tonnage that will ideally mount an armament that gunnery officers regard as ideal for obtaining decisive victory over any ships and guns that can be brought against us. We will therefore consider in detail the armament we wish to employ, keeping our minds rigidly fixed on first principles.

In the first place, as all naval officers will agree, we should make no provision beyond the bare minimum that will provide us with our maximum effective hitting power. Economy of effort is a

golden rule in material as it is in the strategy that determines our material, and indeed in all human activities.

First of all is the question of *range*. It seems evident that we should limit the range of the gun to a range which permits us to *see* our target. Not only so, but we should, surely, limit the range of our guns to one at which hitting is remotely possible. Outside such ranges the very slight chance of a hit does not justify us in distorting the design of our armament, and thus of our ship, or of unduly expanding our supplies of ammunition which unpractical ranges involve.

Aircraft spotting at extreme ranges will be entirely disregarded for reasons carefully analysed in *The Navies of Today and Tomorrow*.

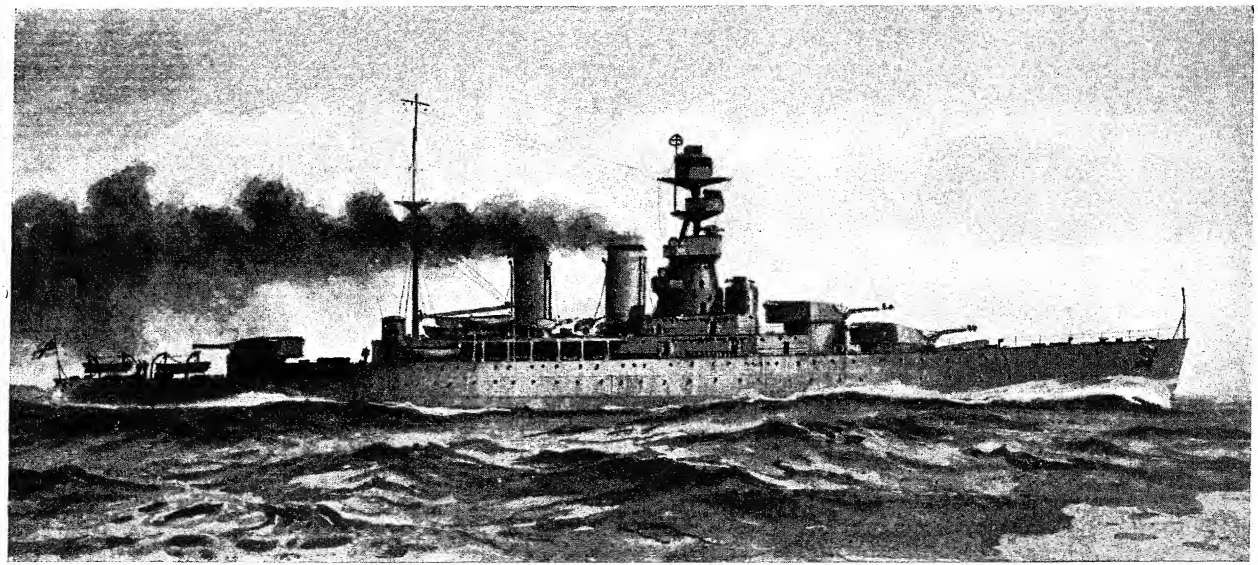
It will be clear that the range limits that we place on our armament will only be such as must be equally deterministic in the case of the enemy, so that with regard to range there will never be any question of an enemy being in a position to utilise his extra speed for choosing a range at which we cannot engage him. The limiting of the range to practicable proportions will simplify our future gun-mountings, and will also considerably lighten them.

On the question of range we are thus in a position, for the first time, to be explicit. The maximum range of our heavy guns will be 25,000 yards, 5,000 yards in excess of that 20,000 which, by the very general assent of our younger gunnery officers, is the extreme limit of practicability, that is to say, of

practicable hitting range. A margin of 5,000 yards is allowed in order to give plenty of elevation in hand to counteract a list due to damage, and for wear and tear of guns.

The question of range is thus simply determined, but the *calibre* of the ideal gun for our ideal battleship is a more intricate problem. What, in the first place, is our conception of the ideal gun? To answer this satisfactorily we must be quite clear in our minds as to the object we have in view. May not our objective be stated somewhat as follows: Our ideal gun must be of a nature, if skilfully handled, which is capable of destroying any ship that an enemy can expose to its fire at any practicable range? This requirement may be said to be self-evident, but there is another requirement which cannot be so simply stated, and it is this: Our ideal gun must be of such a calibre that the *resultant* of several possible and important characteristics is ideal. Thus there is the question of the weight of the gun and mounting, the weight of individual projectiles, the weight of the ammunition supply as a whole, the rate of fire, and the muzzle-velocity of various calibres which affects angle of trajectory. On the operational side there is the question of ease of handling, involving simplicity or otherwise of design.

It will generally be agreed that it is by no means the case that a gun of very great calibre has necessarily an advantage over one of lighter calibre. Great calibres, such as 16-inch, involve great



THE ARMOURED CRUISER OF TO-MORROW

[*Drawn by Oscar Parkes*

weight in the gun and mounting, greatly increased weight in the ammunition supply or, conversely, a reduced number of rounds in the locker. Thus an increase of tonnage over the tonnage required to mount a similar number of guns of a lighter calibre is essential. Again, the life of excessively heavy guns is notoriously short, involving recurring expense in replacement, rapid deterioration in performance pending replacement, or, if rapid deterioration is to be avoided on account of replacement expense, insufficient practice with full charges.

Again, the greater tonnage and therefore size of the vessel required to mount a given number of guns of great calibre implies that such a vessel is a *larger target*, so that she will be more vulnerable on grounds of tonnage and size alone. Thus, to take an extreme case, at very great ranges a vessel presenting a size of target only half that of her adversary can, theoretically, and on the basis of chances, afford to dispense with half her ammunition or, on the same number of rounds, can reasonably expect to score two hits to her opponent's one.

If, on the other hand, the tonnage and size of the vessel mounting the heavier gun is reduced by reducing the *number* of the guns she carries, the vessel of the same tonnage, with perhaps two more guns of lighter calibre than her rivals, has a marked advantage from a *hitting* point of view, as gunnery officers will allow. A case in point is the *Iron Duke* with ten 13·5-inch guns as opposed to the eight 15-inch guns of the *Royal Oak*. So much for the

debit side. On the credit side we have the possibly, though not necessarily, increased effect of a hit from the projectile of very heavy calibre.

Let us turn now to the 12-inch gun, the least calibre that can rightly be regarded as a heavy gun suitable for use against a heavily armoured battleship at long ranges.

Here, on the debit side, we have the probably, though again not certainly, reduced effect of a single particular hit. This disadvantage is, so far as can be judged, the only one.

On the credit side we have all the advantages accruing from reduced weight to set against the serious disadvantages of the increase of tonnage necessitated by the employment of guns of heavier calibre.

In finally determining the calibre of gun for our future battleship we need, therefore, to aim at the lowest calibre that will enable us to hit, and to keep on hitting, at all practicable ranges, a heavily armoured opponent with shells that will be *effective*.

In this connection we shall do well to remember the effectiveness of the fire of German 12-inch guns employed against vessels of our own more heavily armed. At the same time it would be unwise to jump to the conclusion that 12 inches is the ideal. After careful inquiry among responsible gunnery officers of the younger school, the author is disposed to conclude that the destructive effect of 13·5-inch guns as compared with 12-inch guns is sufficiently marked to outweigh, though very slightly, the

disadvantages of increased weight, and therefore increased size and tonnage in the larger vessel required to mount them, other characteristics of the vessels being equal.

The ideal calibre, the saturation point of gunnery efficiency, seems to hover round a point between 12-inch and 13·5-inch. The author will, therefore, be explicit and conclude that 13·5-inches is the gun that should be mounted in our new battleships. He is of course open to correction by gunnery officers, but 13·5-inches represent a gun and mounting of which we have good experience and which has given admirable shooting results. A 13·5-inch gun will be capable of meeting effectually any vessel that carries any other gun that the art of man can devise, and at any range the enemy may select if circumstances give him the initiative in the matter. Taking 13·5 inches then, as the ideal calibre, the next question that arises is the ideal number of such guns to be mounted in a single ship.

Here we are at once faced with alternatives. Let us assume that for political or economic reasons our battle fleet broadside of the future is limited to 150 such guns. Such a limit is purely arbitrary, but that circumstances will fix some limit is clear. With 150 guns to the broadside we can elect, for example, to mount 10 guns in 15 ships, 8 guns in 16 ships, or 6 guns in 25 ships.

In deciding on our policy there are several uncontroversial factors to be borne in mind. Thus, ten 13·5-inch guns require a very great tonnage to

mount them adequately, both on account of weight and space. Great tonnage introduces docking restrictions in all parts of the world. It places many eggs in a single basket which is as vulnerable to gun-fire as a smaller vessel, if the smaller vessel is correspondingly armoured and perfectly designed. The chances of a hit on the larger vessel are considerably increased, not only on account of the greater size of the target she presents, but because one ship cannot efficiently engage two at the same time, whereas two can engage one if necessary. Thus the larger ship will always be under fire from the smaller, while some of the smaller ships will be totally immune from attack by their opponent's gun-fire.

So much for the debit side. On the credit side there is some advantage of gun-control when a large salvo is employed, and thus an increased chance of hitting the smaller vessel from this cause ; an advantage offset, it must be repeated, by the reduction in size of target, and thus of the chance of hitting the smaller target.

Turning from the 10-gun vessel to the other extreme of the vessel mounting 6 guns only, such a vessel has all the advantages due to a great reduction in size and tonnage which the 10-gun vessel has to forgo. The fleet so armed can oppose the enemy's 15 ships with 25 armed with similar weapons. It is possible that gunnery officers may consider that 6 guns in one vessel are insufficient to ensure good salvo firing, but the author's experience

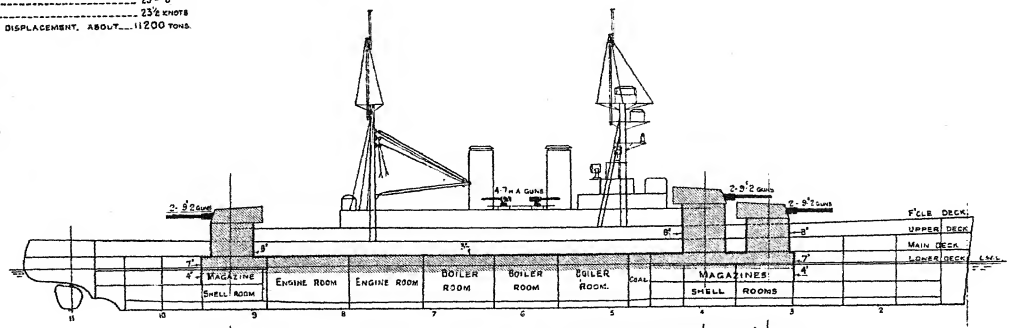
DESIGN FOR AN ARMOURED CRUISER.

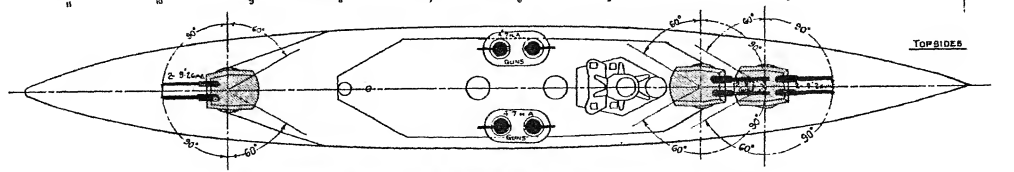
PARTICULARS

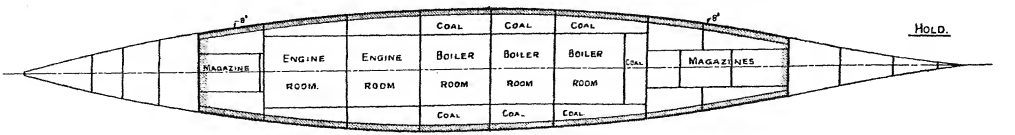
LENGTH B P	480'- 0"
BREADTH EXTREME	66'- 0"
DEPTH TO UPPER DECK	35'- 0"
DISPLACEMENT (½ FUEL) ABOUT	12000 TONS.
DRAUGHT	23'- 0"
SPEED	23½ KNOTS
STANDARD DISPLACEMENT, ABOUT	11200 TONS.

ARMAMENT

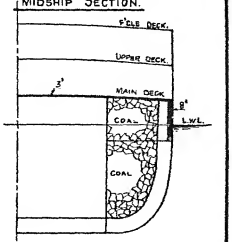
SIX 9·2 INCH GUNS
FOUR 4·7 INCH M A GUNS
FOUR 3 PDR SAL. GUNS.







MIDSHIP SECTION.



as control officer in a battle-cruiser, admittedly not an extensive one, or one upon which he would presume to be didactic, inclines him to the view that with 6 guns very accurate shooting can be made, and he is convinced that the great advantages to be obtained by *numbers* of vessels far outweigh any possible loss in the ease and efficiency of control involved in the reduction to 6 guns in one firing ship. *Numbers* of ships is a matter of supreme importance to a fleet which intends to keep the sea for extended periods, not only on tactical grounds, but because it enables units to be detached without risk of a debacle from a slightly less powerful battle fleet in the hands of an opponent always alert for such contingencies.

We can now, therefore, give a third explicit figure in the analysis of our new battleships by fixing the number of guns to be mounted at 6.

The next point to be decided is the method of mounting these 6 guns. We may mount them as 6 single guns, in 3 turrets or in 2. Here the incidence of numbers is reversed. The more gun positions mounted in a single ship, the greater the chance of some positions being hit. On the other hand, one hit leaves more guns in action. We may rule out of account 6 guns mounted separately on grounds of ship construction alone, and we are left, therefore, with a choice of 2 triple turrets or 3 twin turrets. It appears that on the ground of chances the pros and cons of twin and triple turrets nearly, but not quite, cancel out, because one hit

may well damage two turrets if superimposed. For this reason it seems fair to say that on the grounds of chance alone 2 triple turrets have a very slight advantage, as they would be well isolated from one another.

Furthermore, we can achieve a considerable saving in weight and space by mounting 3 guns in a single turret, so that from a purely ship design aspect 2 triple turrets have something to recommend them. On the other hand, there are important operational objections and gun-mounting difficulties in triple turrets which are considered to outweigh the advantages. The author concludes, therefore, that the six 13·5-inch guns will be mounted in 3 twin turrets. Now how does our battleship shape ?

She is a heavily armoured, coal-burning vessel of great sea-keeping capacity, of moderate speed, and armed with six 13 5-inch guns of a maximum range of 25,000 yards, mounted in 3 twin turrets, 2 forward and 1 aft.

Thus a *form* is materialising out of the ghost of abstract principle.

The tonnage and speed are still, however, vague. It has already been said that the tonnage will not be fixed arbitrarily, but will be allowed to *emerge* from the armament characteristics which, in the last analysis, will fix it. We shall eventually be able to fix the tonnage at the least figure which will give an ideal form to our battleship as a stable but mobile seagoing gun-platform.

Returning, therefore, to the armament; having fixed the main armament, what of the secondary? Here the author would restate his conviction that the essence of sound construction, as of that sound strategy which material implements, lies in the ruthless elimination of all non-essentials.

For what purposes does the existing secondary armament of battleships exist? For the defence of the vessel against torpedo craft. Just that and nothing else. It is clearly of little, if any, value for the attack of the opposing battleship because its range, in the absence of freak mountings, will generally be inadequate, disregarding the ineffectiveness of 6-inch shells against a heavily armoured battleship, and the complications in fire control which mixed armaments involve. Assuming, therefore, that the secondary armament is for the purpose of engaging torpedo craft formations, we see at once that we are merely reinforcing one of the functions for which our fleets of torpedo-boat destroyers exist. In fact, we are hedging. We do not, in fact, trust our T.D.B.s.

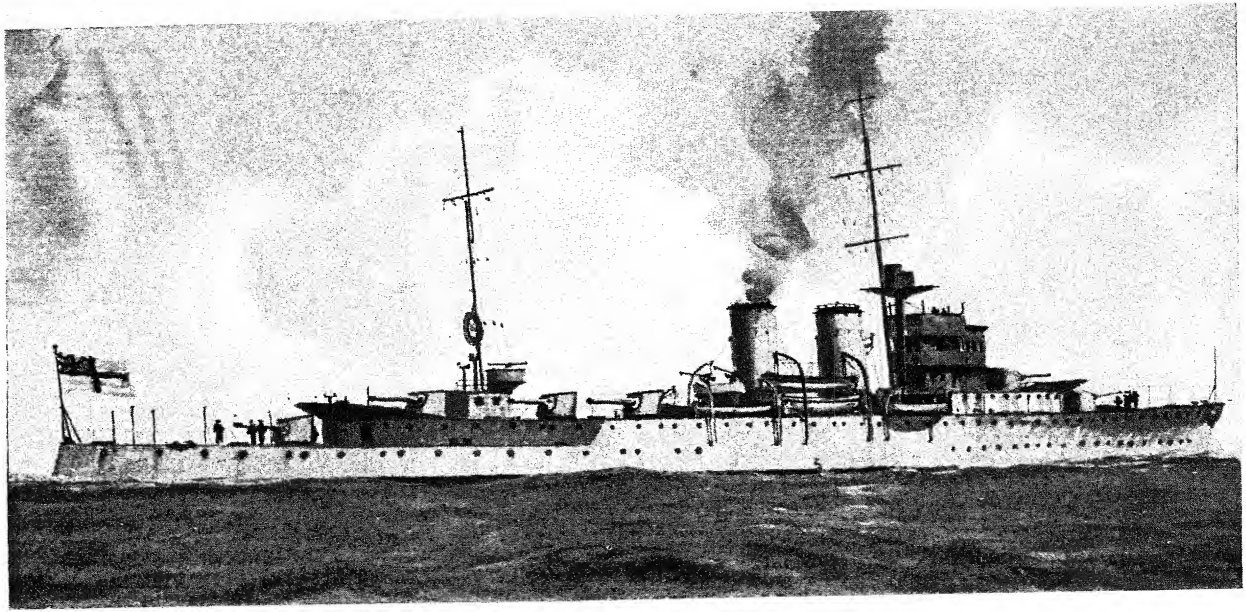
It is sometimes argued that the secondary armament must be retained because T.B.D.s are insufficiently robust to ensure that they will be with the fleet when the need for their co-operation arises. Furthermore, their primary duties as torpedo craft may interfere with their duties as destroyers. These doubts are well-founded and form, indeed, the very grounds upon which it has been urged that our present composite torpedo craft should be

expanded into small, robust, high speed second-class cruisers while shedding their torpedo equipment. Thus we can ensure that these vessels shall be with the battle fleet in all circumstances ; that they shall be sufficiently numerous for correct tactical disposition in the van and rear of the battle fleet ; and that they will be ideally adapted for dealing with the enemy's torpedo craft, if, as may be doubted, surface torpedo craft are perpetuated much longer in foreign navies.

We can therefore transfer the secondary armament bodily from the battleship to the second-class cruiser, leaving our battleship to mount six 13·5-inch guns and nothing else whatever, beyond a few 12-pounders, maxims for landing purposes, and a moderate anti-aircraft equipment.

Here at one stroke we simplify our battleship and reduce its tonnage to a very marked degree. With the disappearance of the secondary armament we save the weight of the guns and mountings, no inconsiderable figure, a saving of weight particularly valuable when we reflect that this weight is placed high up in the ship. We save also the weight of the ammunition and of the armoured shields which nominally, though not in reality, protect the guns' crews.

Weight, however, is possibly the least of the saving, the greatest advantage of all being the saving of *space*, which is so fruitful a cause of the need for a great hull tonnage. Not only do we save the space required for the guns, mountings and



THE SECOND-CLASS CRUISER OF TO-MORROW

[*Drawn by Oscar Parkes*

ammunition but, what is of even greater importance, we save the space necessary for the accommodation of the guns' crews. Not only does the reduction of the ship's company to the barest necessities of a six-gun ship enable the tonnage of the vessel to be greatly reduced, but it enables us to increase to the maximum those watertight subdivisions which saved so many German ships from loss, and which, in their case, were largely made possible, as already shown, by the absence of living accommodation for great bodies of men over long periods.

The jettisoning of the secondary armament has not been urged *in order to reduce the tonnage of the ship*, for such reasoning would contradict the whole argument. It is eliminated because it is *unnecessary*, and the advantages in reduced tonnage are, therefore, *derivative*, leaving us with our ideal armament intact. Our battleship will therefore require a tonnage sufficient only to mount adequately a total armament of six 13·5-inch guns and to provide adequate protection to enable it to remain in action, and endure punishment, for extended periods.

We are now getting near to the point at which the vital question of tonnage will settle itself, and at this point it is necessary to refer once again to speed, which becomes the deciding factor in the final design of the ship, and in the assessment of tonnage. There are clearly two ways of settling the speed of our battleship, which has to mount six

13·5-inch guns. We may fix it arbitrarily, in which case the tonnage must be adjusted to enable sufficient horse-power to be installed to give us the predetermined speed. Thus we may decide that the speed of our future battleship shall be 18, 20, or 24 knots. By this method the tonnage of our battleship will be the least that can mount six 13·5-inch guns and permit of the installation of the power required for the speed *selected.*

The alternative method is to fix the tonnage, regardless of speed, at the least figure that will adequately mount the six guns and, in the hull thus determined for us, *to install propelling plant and fuel for which space is available.*

In the former case speed is selected and tonnage conforms.

In the latter case the tonnage is settled by the protection and armament, and speed and fuel have to conform to the tonnage.

It need hardly be said that the latter alternative is the correct one for reasons which the whole strategical argument makes plain. By this method we obtain our ideal fighting hull and armament, and a battle fleet of numerous small vessels, instead of a few mastodons. The cost of such a fleet will be found to be greatly reduced and the speed of the battle fleet, though moderate, will be reasonable.

With regard to the *armour*: this must be of a thickness over vitals estimated to give protection against the heaviest shell we have reason to contemplate, and the armour must be designed

accordingly. It must be so placed as to provide its maximum protection at the range which gunnery officers agree to be the ideal fighting range of the ships we have so carefully designed. Experience has fixed this range at about 15,000 yards, and this is the range, therefore, at which the admiral will endeavour to engage. Such a range, while remaining decisive, introduces the factor of superior skill and training into the engagement, and further brings into full play the great advantage of reduced size of target which our battleships, if smaller than the enemy's, present.

And finally with regard to *coal storage*: such a tonnage as we have allowed first principles to settle for us permits of a coal storage that *will* enable such ships to keep the sea at very slow speeds for long periods. Those who doubt that such is the case seem to be rather in the position of those who doubt that Truth, though of infinite aspects, is one and indivisible. It is an undeniable fact that if we adhere loyally to first principles in the major characteristics of a composite created edifice the whole is perfect, no part being at variance with another part. This truth finds its supreme expression in the human body where perfect knowledge has gone to the design and its embodiment. It is equally true of man's creations when he submits the construction of the governing features of his machine to the rule of first principles and law, utilising all his knowledge to the full, never overstretching any law, much less transgressing it, and

rightly employing that economy of effort (with a margin for miscalculation) which is the secret of all successful design as it is of effort in every sphere. Balance in design is the gauge of adherence to first principles of fighting, a perfectly balanced ship or fleet being synonymous with Truth.

Any discussion of internal details of our battleship must be forgone, and a natural professional taste for enlarging on every trifling characteristic must be curbed.

The author will content himself with saying that in *The Navies of Today and Tomorrow* he estimated that on 12,000 tons it was possible to design a small, heavily armoured, coal-fired battleship of 17½ knots, as here described, mounting six 13·5-inch guns in three twin turrets. He calculated that the horse-power required would be 12,000. Though officers serving on the Naval Staff said that it was impossible to get so great a fighting power on so small a tonnage, a great firm of ship designers have confirmed the author's calculations in a remarkable manner. From the plans which they were good enough to prepare, it transpires that it is possible to design a small battleship with the characteristics to be found in the Table on the next page.

An illustration of this battleship by Mr. Oscar Parkes, the editor of *Jane's Fighting Ships*, faces page 231. The drawing office plans, upon which the illustration is based, faces page 235.

Having approached the design of our new battle-

ship in considerable detail, and having given a reasoned argument in support of each characteristic advocated, we will confine ourselves to little more than a bare statement of those characteristics which the remaining classes of vessels attached to the battle fleet—the cruisers—will

BATTLESHIP	
Tonnage - -	11,980.
Horse-power -	9,500.
Boilers - -	6 coal-fired Yarrow boilers.
Fuel - - -	1,200 tons of coal.
Speed - -	17·5 knots.
Radius of action -	6,500 miles.
Armour - -	12-inch belt and barbettes, 3-inch armoured deck.
Weight of armour	3,350 tons.
Guns - - -	Six 13·5-inch, four 4·7-inch high angle, four 3 pounders.

exhibit. If the plan of approach to the design of an ideal battleship is sound, by the same methods we shall achieve ideal cruisers exactly balanced with the battleship.

In our cruisers, however, there will be this fundamental distinction from the battleships in design. Whereas in the battleship we accepted for our speed the maximum that could be installed in a tonnage fixed exclusively by our selected armament and armour, in the cruiser we must select our speed in

advance, on tactical grounds, and build our ship round the *speed* as well as round the *armament*. Thus the battleship is designed on *absolute* strategical principles and the cruiser, mainly, on tactical, and therefore *relative* considerations.

It is the author's whole case that the speed of our cruisers must in future be related to the speed of our own battle fleet, which is *fixed*, and not to the speed of foreign cruisers, which is *variable*. By adopting this principle we remove a potent source of armament competition and of premature obsolescence in otherwise sound fighting ships.

It will be assumed that an excess of speed of 6 knots over the battleships is required by the armoured cruisers, thus giving them a speed of $23\frac{1}{2}$ knots. They must also have a sea-keeping capacity related to that of the battleships. Thus the tonnage of the armoured cruiser will be such as will provide adequate space for the installation of horse-power for a speed of $23\frac{1}{2}$ knots and for the mounting of six 9·2-inch guns as the exclusive armament, the armour being selected and disposed on the same principles as in the battleships.

The tonnage and horse-power required for the construction of such a coal-fired armoured cruiser were estimated by the author to be 12,000 tons and 25,000 horse-power. The same great firm of shipbuilders again nearly confirmed this estimate. Plans are in existence which show the possibility of constructing an armoured cruiser of the following nature.

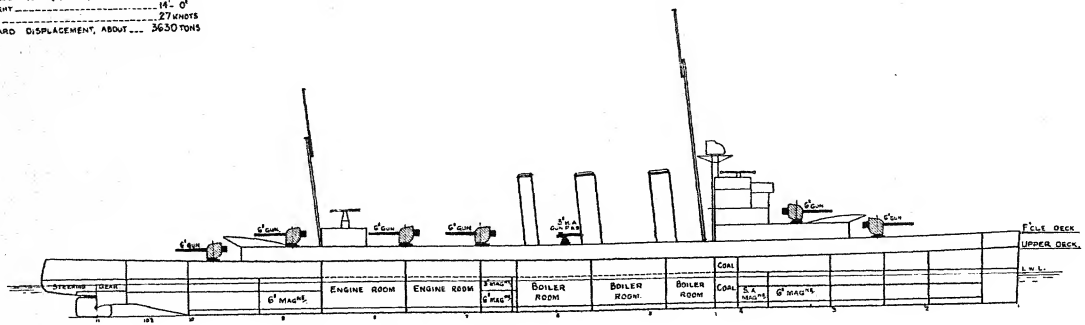
DESIGN FOR A LIGHT CRUISER.

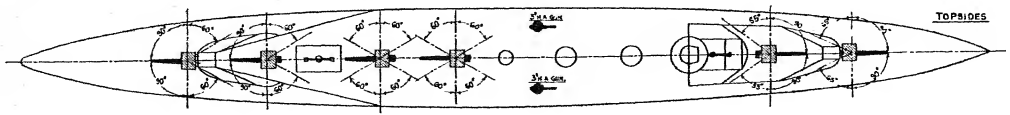
PARTICULARS

LENGTH B.P.	415'-0"
BREADTH EXTREME	47'-0"
DEPTH TO UPPER DECK	24'-0"
DISPLACEMENT (⅔ FUEL) ABOUT	4100 TONS
DRAUGHT	14'-0"
SPEED	27 KNOTS
STANDARD DISPLACEMENT, ABOUT	3630 TONS

ARMAMENT.

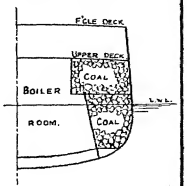
SIX 6 INCH GUNS
TWO 3 INCH H.A. GUNS
FOUR 3 PDR SAL. GUNS.

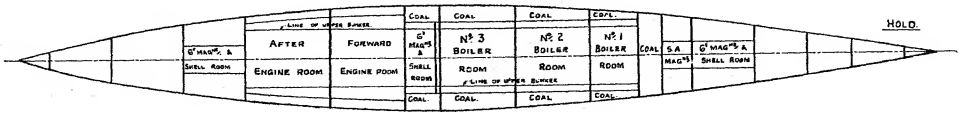




TOPSIDES

MIDSHIP SECTION.





HOLD.

ARMOURED CRUISER.

Tonnage - -	11,250.
Horse-power -	25,000.
Boilers - -	12 coal-fired Yarrow boilers.
Fuel - - -	1,500 tons of coal.
Speed - -	23½ knots.
Radius of action -	5,500 miles.
Armour - -	Main belt and barbettes 8-inch, armoured deck 3-inch.
Weight of armour	2,750 tons.
Guns - - -	Six 9·2-inch, four 4·7-inch, four 3 pounders.

On the same principles designs are available which show that it is possible to construct a second-class cruiser of the following characteristics :

SECOND-CLASS CRUISER.

Tonnage - -	3,650.
Horse-power -	27,000.
Boilers - -	10 coal-fired Yarrow boilers.
Fuel - - -	900 tons of coal.
Speed - -	27 knots.
Radius of action -	6,000 miles.
Guns - - -	Six 6-inch, two 3-inch high angle, four 3 pounders.

Illustrations of these two ships, also by Mr. Oscar Parkes, face pages 239 and 247. Drawing office plans face pages 243 and 253.

The fourth, and final, new class of vessel that the Navy needs is a third-class cruiser of 2,000 tons, of which mention has been previously made. We are free by Clause 8 of the London Naval Treaty to construct as many of these little cruisers as we require. The author has not had time to obtain Drawing Office plans of this ship, but his accurate estimate of the characteristics of the other three classes emboldens him to anticipate that on a tonnage of 2,000, and with a horse-power of approximately 3,000, it will be found possible to construct a 20-knot coal-fired vessel mounting four 6-inch guns. Such vessels will be properly equipped to carry out with real efficiency many of those duties which at present are allocated to torpedo-boat destroyers.

The remaining vessels in the British Navy—small submarines, mine-sweepers, river-gunboats and surveying vessels—will be designed with a single eye to their special function, speed in all three cases being the least important characteristic; to be accepted, in fact, at a figure that the least tonnage needed to embody the special function of the vessel makes possible.

One general reflection only remains to be stated and it is this. Such a Navy as has been described should last, not for years, but for more than a generation. In the absence of some great new discovery bearing some such relation to steam as steam bore to sail, or the modern gun to the old muzzle-loader, vessels such as have been described could not

become obsolescent or obsolete. Steel ships maintained and refitted with that conscientious care for which the Navy and dockyards are famous, and for which the country has always ungrudgingly made financial provision, should have a life as long, or longer, than the old ships built of wood, and sheathed with copper, which sailed the seas successfully for so many years before they were laid to rest on the scrap-heap.

Let us now contrast the fleet of to-day with the fleet designed by the author, assuming that the total tonnage of the two fleets is identical. The total tonnage of the Navy that will be in commission in 1936 is approximately 1,250,000 tons distributed amongst the various classes of ships as shown in Table I.

Now let us consider a Navy of a similar total tonnage, but consisting of vessels such as have been described, *and actually designed.* Our New Navy will, as previously stated, contain minesweepers, surveying ships, river-gunboats, and small submarines. Let us assume that the tonnage allotted in Table I to river-gunboats, minesweepers, and surveying ships remains the same, and that for the small submarines of the future we set aside 35,000 tons. This would give us thirty-eight small vessels similar to the existing, and very efficient, H Class.

Because Aircraft Carriers, Torpedo-Boat Destroyers, Sloops, Depot Ships and Repair Ships have no place in the author's fleet, we are thus left with 1,200,000 tons to be divided between

Table I

Class	No.	Total Guns Mounted	Protection	Mean H.P.	Average Oil Storage (Tons)	Endurance (Miles)	Mean Speed (Knots)
Battleships	12	80 15-inch 18 16-inch 144 6-inch	13-inch belt; 8-inch barbettes (Nelson heavier armour)	45,000	3,400	4,400	23*
Battle Cruisers	3	20 15-inch 12 5·5-inch 30 4-inch	9-inch belt; 6-inch barbettes	123,000	4,100	4,400	31
8-inch Gun Cruisers	15	120 8-inck	Nil	80,000	3,000	10,000	32
6-inch Gun Cruisers	35	125 6-inch	*New* ships nil. *Over-age* ships 3-inch belt.	40,000	1,200	?	29
Torpedo Boat Destroyers	116	464 4·7-inch	Nil	36,000	470?	4,000?	35
Submarines	41	—	—	—		—	16
Aircraft Carriers	6	9 6-inch, 39 smaller ones (various)	Nil	63,000	4,000	6,000	27
Sloops	30	60 4-inch	Nil	2,000	—	—	16
Minesweepers	28	28 4-inch	Nil	2,000	—	—	16
River-gunboats	19	—	—	2,000	—	—	14
Surveying Ships	12	—	—	—	—	—	—
Total No. of ships	317	—	—	—	—	—	—

* See footnote on next page.

battleships of 12,000 tons, armoured cruisers of 11,250 tons ; second-class cruisers of 3,650 tons and third-class cruisers of 2,000 tons.

We may balance our fleet in several ways, according to international circumstances at a particular period, but in view of our great responsibilities in safeguarding our food and oil supplies we will err on the side of liberality in cruiser construction.

Let us therefore fix the proportion of battleships, armoured cruisers, and second- and third-class cruisers in the ratio of 2 : 3 : 2 : 1.

Thus, of the 1,200,000 tons available we utilise :

300,000 tons for Battleships.
450,000 tons for Armoured Cruisers.
300,000 tons for Second-class Cruisers.
150,000 tons for Third-class Cruisers.

On such a basis our New Navy will be as set forth in Table II.

The Navy of to-day and the Navy of to-morrow, as set forth with their main characteristics in Tables I and II, speak for themselves and call for little comment from the author. He must leave their respective merits to the judgment of others. He would, however, like to contrast the remarkable disparity between the *sea-keeping* capacities of

* This mean speed of 23 knots is a "legend" speed, because the "bulges" have considerably reduced it. Furthermore, because the speed of the battle fleet in action must be the speed of the slowest ship, and because some of the ships will have foul bottoms, it is doubtful if the *engagement* speed of our present battle fleet would much exceed 20 knots.

TABLE II

Class	*No.*	*Total Guns Mounted*	*Protection*[1]	*Mean H.P.*	*Average Coal Storage*	*Endurance*	*Speed*
					Tons	*Miles*	*Knots*
Battleships . .	25	150 13·5-in.	12-in. belt and barbettes, 3-in. armoured deck. Coal bunkers	9,650	1,200	6,500	17½
Armoured Cruisers	40	240 9·2-in.	8-in. belt and barbettes. Coal bunkers. 3-in. armoured deck.	25,000	1,500	5,500	23½
2nd-Class Cruisers	82	492 6-in.	Coal bunkers	27,000	900	6,000	27
3rd-Class Cruisers	75	300 6-in.	Coal bunkers	3,000?	350?	6,000?	20
Submarines . .	38	—	—	—	—	—	12
Minesweepers .	28	56 4·7-in.	Coal bunkers	2,200	—	—	12
River-gunboats .	19	—	—	—	—	—	14
Surveying Ships .	12	—	—	—	—	—	—
Total No. of Ships	319[2]	—	—	—	—	—	—

[1] Can be increased by proportionate adjustment of tonnage. (See weights of armour, pp. 251, 253.)

[2] The almost exact numerical equality of the two fleets is a coincidence, if a curious one.

existing classes of ships with the balance of his own, and the enormously increased gun power of the New Navy when compared to that of our present fleet.

He would also draw attention to the greatly *reduced* weight of fuel needed to give his ships an *increase* in the endurance of his fleet as a whole, though coal has replaced oil.

He has also excluded from the total tonnage of our existing fleet the 267,360 tons utilised by the 63 oil tankers in the Royal Fleet Auxiliary, a tonnage approximating to our total cruiser tonnage and useless for return cargoes.

The cost of the New Navy would be little more than half the initial cost of the present one. The personnel required to fully man it would be, so far as can be calculated, under 90,000 officers and men, all but a fraction of whom would enjoy, as at present they do not, appropriate and continuous appointments *at sea*. If the present personnel were increased to 100,000 every naval requirement could be satisfactorily met.

Our existing fleet, as was shown in considering war in the East or in Europe, gives no semblance of security to Britain. How should we fare in "the Next War" with a Navy such as the author has described and designed?

CHAPTER XVI

"THE NEXT WAR"

IN considering the outcome of "the Next War," if England had at her disposal a proper fighting fleet, it will be assumed that foreign navies remain as at present constituted, and that Britain alone possesses the New Navy. Let us first take the case of a naval campaign in Eastern waters.

Though the strategical position of Japan, and her naval resources, remain as described in Chapter VII, "War in the Far East," the position of Britain on the other hand has undergone a revolution, not only in the matter of the ships at her disposal, but strategically.

A glance at Table II in the preceding chapter will show that in such a New Navy there will be no ship for which docking facilities are not available at Hong-Kong and, indeed, throughout the world. For this reason, and because of the lapse of the Washington Treaty regulating Hong-Kong's defences, it is right to assume the cessation of work on the Singapore base and the restoration of Hong-Kong to its rightful position as the key to sea-power in the Far East.

Properly garrisoned by the Army, and with its shore batteries strengthened, Hong-Kong is now in a fit state to offer powerful resistance to capture

from the neutral territory. It is stored with everything needed to sustain a fighting fleet, including ample coal supplies. As a result of a firm policy in Egypt, and by the elimination of sources of friction in Persia and Arabia, our communications with the East may be expected once again to be secure. British colliers have resumed their former traffic, carrying coal to Hong-Kong and other Eastern ports and, unlike the fleet of naval tankers, returning with full cargoes.

As to the Navy itself, we have at our disposal sufficient ships greatly to strengthen, both in numbers and fighting power, our forces in Far Eastern waters. For the purpose of argument, however, and further to demonstrate the fighting qualities of the New Navy, it will be assumed that the number of the vessels in the East is the same as it now is, with one exception, to be mentioned shortly. For existing ships we will exchange corresponding classes of vessels such as have been designed, involving the substitution of the new armoured cruisers for the present large unprotected cruisers ; second- and third-class cruisers for sloops and destroyers ; small submarines for the twelve now at Hong-Kong ; eleven 2,000 ton third-class cruisers for the 22,000 ton aircraft carrier *Eagle* ; and three third-class cruisers for the seaplane carrier *Albatross*.

In the absence of strained relations with Japan the composition of the British Fleet in Eastern waters is therefore as follows :

TABLE III

	Armoured Cruisers	*2nd-Class Cruisers*	*3rd-Class Cruisers*	*Sub-marines*
China Station . .	6	9	16	12
Australia and New Zealand . . .	6	—	11	—
East Indies . . .	3	—	4	—
Total Eastern Fleet .	15	9	31	12

A reference has been made to an exception in replacing our existing ships in the East by a corresponding number of the new vessels. This exception is a small battle fleet of six of the new battleships which we can now afford to station in China —six battleships, it may be of interest to record, of incomparably greater fighting power than the six of almost identical tonnage serving on the China Station in 1904, when the Anglo-Japanese Alliance was happily " in being."

Let us now suppose that Great Britain, as a result of interference by the League of Nations in Japan's expansionist policy in China, has received a demand from Japan for the right of entry of her surplus population into Australia, while making it clear that she has no desire to substitute her national ensign for the Union Jack in the great sub-continent. Her demand would amount to a request for a United States of Australia under the British flag. It would be uncompromisingly rejected by Australia, involving strained relations, and a precautionary strengthening of the China

Squadron by ships from the East Indies and Australia, though three armoured cruisers and three third-class cruisers would be retained in Australia and East Indian waters to be available for trade protection should negotiations break down. The remaining ships would proceed forthwith to reinforce the China Squadron which, when so reinforced, would compare with the Japanese fleet as shown below :

TABLE IV

	Great Britain	*Japan*
Battleships	6	9
9·2-inch Armoured Cruisers .	12	—
8-inch Unprotected Cruisers .	—	12
6-inch Cruisers	37	17
Submarines	12	36
Aircraft Carrier	—	5
Destroyers	—	77

Let us suppose that Britain has been persuaded to reject categorically Japan's claim for immigration into Australia, and that, in consequence, we have presented Japan with an ultimatum to withdraw her demand, with war as the alternative. Let us suppose that the Japanese Government, though aware of the gravity of the step, succumbs to popular clamour and rejects the ultimatum, and that Britain consequently declares war.

What now would be the strategical position ?

Japan, faced with the certainty of overwhelming

reinforcements of Great Britain's fleet within two months, would desire, at all hazards, to capture Hong-Kong. With Hong-Kong in other hands, Great Britain's future ability to conduct a successful naval campaign against Japan, notwithstanding the greatly superior fleet we could now muster at Singapore, would be limited. Coupled with her urgent need to capture Hong-Kong, however, Japan would be faced with the necessity of defending her vital communications with North China and elsewhere, and of securing her fuel supply from attack by the numerically and individually powerful British cruiser fleet.

The capture of Hong-Kong, as has been shown, would demand the employment of an expeditionary army whose communications would have to be reasonably secure if the risk of disaster were to be avoided. Moreover, the Japanese communications would necessitate large-scale defence, including, almost certainly, the employment of the battle fleet in view of British cruiser strength, especially in armoured cruisers, and the existence of the small but formidable British battle fleet.

In the case of Great Britain, the overwhelming strategical necessity would be to ensure the retention of Hong-Kong pending the arrival of reinforcements, while avoiding a decisive battle. On the other hand, Japan would welcome, and endeavour to provoke, a decisive action between the battle fleets within the first few weeks of the campaign. In spite of a greatly superior battle fleet, Japan's

deficiency in cruisers would place her in a dangerous position akin to that envisaged for Britain in the chapter entitled " War in Europe."

On the declaration of war, therefore, the British admiral would defend Hong-Kong by seizing the strategical initiative and launching his cruiser fleet against the Japanese communications. He would support their attack with his battleships, while avoiding action with a concentration of the Japanese battle fleet.

If three armoured cruisers and six third-class cruisers were detached from the British Fleet for convoying British merchant ships from North China ports, there would be available for this cruiser warfare nine armoured cruisers and thirty-one 6-inch gun cruisers. In the British cruiser attack Japan would quickly learn the fallacy of relying upon unprotected " greyhounds " for the defence of her communications, or for an attack on British trade. Her destroyers, employed of necessity to escort her merchant ships and attack ours, would have to meet small 6-inch gun third-class cruisers, which would deal with them as did the small German cruisers with the British destroyers detailed to protect the Scandinavian convoys.

The British armoured cruisers of $23\frac{1}{2}$ knots would have no need to pursue, or to evade, the twelve Japanese Washington " coffin ships." If the Japanese cruisers were used to escort convoys, on sighting British armoured cruisers they would be faced with the choice of utilising their speed to run,

leaving the convoy to the British, or of fighting a hopeless battle and of going down with their flags flying.

On the other hand, the British cruisers, though slower than the Japanese cruisers, would have sufficient speed to retire unscathed on the approach of the hostile battle fleet, and to continue operations elsewhere.

It might well happen that the British cruiser attack on Japan's communications would be sufficiently powerful to compel our opponents to detach battleships to support their 8-inch gun cruisers in the escort of convoys. Should this situation develop (as has been shown it might develop in European waters at the expense of Great Britain), an opportunity might arise of successfully engaging a section of the Japanese battle fleet, an opportunity for which a weaker battle fleet will always be on the alert.

Consequently it seems clear that if Great Britain seized the initiative, Japan would not be free to undertake the capture of Hong-Kong. The British admiral would achieve his major object—the retention of Hong-Kong—while keeping the situation fluid till reinforcements arrived.

It may have been thought that the menace implied by the large Japanese submarine fleet has been overlooked ; but this is not so. On the outbreak of war British and neutral merchant ships would have been *grouped*, with an armoured cruiser and one or more light cruisers defending each group from cruiser or torpedo-boat destroyer

attack. The *grouping* would in itself be sufficient to counter the hostile submarines, though a few casualties might be expected. In the cruiser warfare waged by the British during the first two months there would also be casualties from torpedoes carried in Japanese destroyers and submarines, though such casualties would be slight if experience is any criterion. There is no reason to suppose that a hit by a torpedo on one of the new armoured cruisers would prove disastrous, while the small 6-inch gun cruisers would no doubt enjoy as great immunity from torpedo attack as did our own light cruisers and destroyers in the last war.

We now come to the day when British reinforcements from the West have arrived at Hong-Kong. A glance at Table II in the last chapter will show that such reinforcements could include ten battleships, ten armoured cruisers, and fifty 6-inch gun cruisers, while leaving great Britain sufficient power in the West to deter any European nation from exploiting our preoccupation on the other side of the world. With a fleet so reinforced Britain could immediately establish a blockade of Japan while safeguarding absolutely our own trade and communications. From this stranglehold Japan could release herself only by engaging the British battle fleet. In such an action it is true that the Japanese battleships would be, ship for ship, the more heavily armed, though not, it should be stressed, better *protected*. Moreover, the smallness of the target presented by one of the British battleships would be

equivalent to inches of armour, the protection being further increased by the coal bunkers. Though in ship to ship engagements the Japanese battleships could employ heavier broadsides, there could be no question of the British ships being *outranged*, for reasons which have already been examined. In the battle fleet action British numbers would prove decisive, because two ships with a combined broadside of twelve 13·5-inch guns would be in a position to engage one opponent mounting eight 16-inch guns or twelve 14-inch. Because it would not be possible to divide the fire of one ship between two opponents, seven ships of the British battle fleet would be immune from gun-fire while free to batter rivals fully engaged.

If, then, in 1936 Great Britain could have at her disposal a fighting fleet such as has been designed, on a total tonnage identical with the total tonnage of our existing fleet, it seems clear that security in the Far East is obtainable on the tonnage allowed us by treaty, and at considerably less cost than has been the cost of our existing Navy.

The author would emphasise that nothing is further from his desire than a " next war " with Japan. If it is possible, as he hopes, to modify our policy and restore the great alliance between England and Japan, there will most certainly be no " next war " in the East in the lifetime of anyone now living. Indeed, the risk of war throughout the world will be greatly diminished. If, on the other hand, we persist in maintaining our present

Antipodean policy while showing hostility toward Japanese expansion in China ; and, if we continue to treat Japanese trade expansion as something akin to a *casus belli*, surely it is time we faced realities and equipped ourselves to uphold our dictatorial attitude with adequate sea-power.

* * * * *

In the chapter entitled " War in Europe " it was shown that the chief work of the Navy was the defence on the High Seas, with insufficient forces, of the food supply, and of its own oil-fuel supply, as well as that of the Air Force, the Army, one-third of the merchant marine, and of a large proportion of transport and industry. It can therefore have caused little surprise that in a very short time England was overtaken with a catastrophe unparalleled in her history.

The author has now the more pleasant task of demonstrating that with a properly designed Navy, of a total tonnage not exceeding the total tonnage of the existing fleet, it would be possible to give security to the nation and Empire. With such a Navy, too, it would be possible to gain a *decision* in harmony with the National will, and at a cost in lives and wealth representing a small fraction only of the cost of the last war's *indecision*.

It will again be assumed that Great Britain alone possesses this New Navy and that the navies of other nations are as they will in fact be. The British Fleet, and the British merchant marine,

are now exclusively coal-fired, whereas foreign fleets and merchant ships are still dependent upon foreign oil, for the most part sea-borne.

We will suppose that in Eastern waters we retain the fleets postulated in the last chapter, and that in the West Indies, South Africa, and Canada, the existing 7 cruisers, 4 destroyers, and 6 sloops are replaced by 2 armoured cruisers, 5 second-class cruisers and 10 third-class cruisers. Adding this group of ships to those serving on the China Station, in the East Indies, and in Australian waters, it will be seen that to obtain the British Fleet available in European waters we have to deduct 6 battleships, 17 armoured cruisers, 14 second-class cruisers, 41 third-class cruisers, and 12 submarines from the New Navy.

The available forces in European waters, without withdrawing a single British vessel from the seven seas, would therefore be as shown in Table V.

As before, readers are invited to form a combination against Great Britain of any two fleets set forth in the following table, excluding the American Fleet.

It will be noticed that in the two vital classes, battleships and cruisers, Great Britain has a considerable margin in ships of the line, and a very great superiority in cruisers, over the next two strongest powers, especially when it is considered that the British cruiser squadrons include heavily armoured vessels mounting 9·2-inch guns, which not a single foreign cruiser could hope to engage

TABLE V

	Battleships	*Armoured Cruisers*	*Unprotected Cruisers*	*Torpedo-boat Destroyers*	*Submarines*	*Aircraft Carriers*
Great Britain . .	19	23	102	—	26	—
France	10 (3 old)	3 (very old)	55*	52	109	1
Italy	4	4 (very old)	31	88	71	—
United States . .	15	—	30	115	50	5
Germany . . .	8 (5 very old)	—	6 (1 very old)	25	—	—

* This includes thirty ships of 2,500 tons mounting five 5·5-inch guns and classed in the Return of Fleets as Flotilla Leaders.

Japan's Navy, considered in the last chapter, is excluded from this Table.

successfully. We indeed have arrayed against us a great number of submarines and weakly armed torpedo-craft, but these we have no cause to fear.

Suppose, now, an issue of war has arisen in which Great Britain was involved through her entanglements in the Locarno Treaty. With the New Navy, within an hour of the declaration of war, Great Britain could establish a blockade of her opponents, a blockade, moreover, which she would be able to make effective and to sustain indefinitely.

The lessons of the late war having been digested, *convoy* would immediately be instituted in the Mediterranean, in the Atlantic, in the English Channel and in the Approaches, though in outlying parts of the world ships would continue to sail singly to avoid an unnecessary slowing up of trade. A prearranged organisation for convoy would be in the hands of British consuls and flag-officers throughout the world in the event of hostile cruisers proceeding to the distant trade routes. Ample cruisers would be available to escort merchant ships through the seven seas should circumstances render it necessary.

A glance at the table will reveal that we should have a good margin of armoured cruisers and of 6-inch gun cruisers of the two classes to establish a reliable system of convoy in the Mediterranean and home waters. The *grouping* of merchant ships would, as in the late war, secure us from anything but minor casualties from the submarines which would be left, so to speak, in the air. Rarely able

to locate the convoys on the high seas, and unable on those rare occasions to achieve valuable results, they would be forced into narrow waters in an attempt to torpedo merchant ships as they dispersed from the convoys. At such nodal points large numbers of small auxiliary craft—trawlers, drifters, yachts, and so forth—loaded with depth-charges and fitted with detecting devices, would play havoc with the submarines and the nerves of their crews.

Hostile cruisers—unprotected, relatively weakly armed, but of greatly superior speed—would interfere with British convoys at their peril. It is true that they would be in a position to utilise their speed to avoid action with the British cruiser escorts, but if such were their policy they would do better to remain in harbour and save their oil-fuel which, by this time, would be suffering wholesale capture by the British blockading cruisers.

In the absence of successful engagement, British trade would proceed as steadily as in times of peace, though, on account of convoy, the stream would be a little slower.

Up to this point we have considered only the defence of trade. Let us now turn our attention to the belligerent side of the campaign—the blockade.

It has been shown that if blockade is to be effective, and sustained, the blockading forces must rest upon a battle fleet prepared at any moment to accept action. For the purpose of the argument it will be assumed that it would be necessary to

maintain a balanced fleet of battleships and cruisers in the Mediterranean as well as in home waters, the Mediterranean squadron being the smaller of the two.

It will also be assumed that for the system of trade defence described, 10 armoured cruisers, 20 second-class cruisers, and 10 third-class cruisers have been detached, thus leaving for service with the battle fleets, and for blockade in two theatres of war, 19 battleships, 13 armoured cruisers, 48 second-class cruisers, 24 third-class cruisers, and 26 submarines. These vessels will be apportioned as follows :

	Battle-ships	*Armoured Cruisers*	*2nd-Class Cruisers*	*3rd-Class Cruisers*	*Submarines*
Home Fleet .	13	8	30	14	18
Mediterranean Fleet . .	6	5	18	10	8

In home waters the main base of the British battle fleet would be determined by circumstances. The main base of the Mediterranean Fleet would be Malta or Gibraltar. Because a battle fleet cannot develop its full strength without the services of attached cruisers, we will assume that 4 armoured cruisers, 10 second-class cruisers, and 6 third-class cruisers would be permanently attached to the battle fleet in home waters, and 2 armoured cruisers, 6 second-class cruisers, and 4 third-class cruisers in the Mediterranean.

These two fleets would constitute the blockading

squadrons, while the remaining cruisers of all classes would be on the trade routes, intercepting and bringing into the Prize Courts every vessel carrying contraband which could be proved to be destined for the enemy.

On account of enemy submarines, the armoured and second-class cruisers would carry out, for the most part, a *distant* blockade, but the small third-class cruisers would be constantly engaged in operations in close proximity to enemy ports, their small dimensions, shallow draught and handiness ensuring to them a degree of immunity from submarine attack comparable to the immunity enjoyed by torpedo-boat destroyers engaged on such operations in the last war.

The very numerous, and well-armed, British cruiser fleets would thus be able to maintain an effective blockade which would bring increasing pressure on our adversaries till a point was reached *when the opposing battle fleets would be compelled to seek a decision with the British battle fleets upon which the blockade rested.* The alternative would be to succumb to the pressure and sue for peace.

Of what avail would be the higher speed of the enemy battleships and cruisers when compelled to seek engagement with our own? The strategical necessity for action would lie with our opponents, not with us. The speed of our battleships would be ample for tactical purposes; though smaller, they would be heavily protected, perfectly equipped with our selected weapon, and so fit to engage the enemy

at any range he might select. He could not therefore employ his extra speed for choosing a range advantageous to himself.

The truth is that higher speed, when analysed, rarely gives any fighting advantage, provided that the slower, more numerous, better protected and adequately armed fleet conducts its operations upon sound strategical principles. It is the competitive speed craze, launched by Lord Fisher, that has distorted naval construction for thirty years and committed the navies of Europe and Japan to a fuel over which they can exercise little, if any, physical control; and to astronomical expenditure.

That the fleet would suffer many casualties in war must be anticipated, but with our matchless shipbuilding resources and our ability to equip merchantmen as auxiliary cruisers, a war in Europe, with a New Navy such as has been provided on 1,250,000 tons, could give the country the security for which it yearns.

If it be argued that the campaign imagined could never eventuate, the author agrees, for if the British Navy returns to the first principles of naval strategy, and thus of naval construction, every nation will quickly follow our example, to the great relief of the budgets of everyone concerned.

It has been necessary, however, to give point to the argument by bringing a navy constructed on first principles into collision with foreign navies which, like our own, have for thirty years been without a sound sea doctrine.

In future years it will be necessary for this island kingdom to proclaim her unalterable determination to restore a Two-Power standard in battleships and armoured cruisers, vessels which can, with safety, be *relative* to the number of similar ships in foreign navies. Our needs in the lighter classes of cruiser, on the other hand, are *absolute*, depending as they do upon a world-wide trade *which we must always be in a position to convoy in emergency*.

If our future battleships and armoured cruisers are correctly designed there can be no question of their *obsolescence* when a foreign country lays down a bigger or faster ship.

By adhering to first principles we can eliminate the fatal consequences of competitive building in the characteristics of individual ships. The only competition possible would be competition in numbers, a form of competition unlikely to arise if Great Britain made it plain to the world that she intends to resume her historic position as Mistress of the Seas.

CHAPTER XVII

CONCLUSION

IN writing his book the author has, for the most part, addressed himself as a professional sailor to other sailors and soldiers. In concluding he would entreat his fellow-countrymen and countrywomen to renew their unquestioning trust in the Navy and the Merchant Marine as their sure means of defence in time of trouble.

During the past few years a wave of what is rather vaguely called "Pacifism" has been submerging the country like a flood. Morbid war-books and plays, depicting the foul horrors of the late trench warfare, have necessarily made a deep, though not necessarily permanent, impression on the public mind, especially on the minds of men and women of the younger generation. The wild, barbaric slaughter of the best manhood of all nations, hurled in frontal attack against wire entanglements, machine-guns, and guns spaced sometimes only a few feet apart, has produced a feeling of questioning indignation and disgust in the minds of those who can appreciate what warfare of such a nature implies and involves. So great is the revulsion, even among men who are indeed men and not mere exploiters of the obscene, against what was blind massacre rather than war, that it is not surprising

that confusion of thought has manifested itself. It has manifested itself even in those who, on calm reflection, would never for a moment maintain that "peace at any price" is a creed that can be defended by a nation that is Christian in something other than name.

All of us who seriously profess Christianity, no matter how frail and faltering our practice, must of necessity set our faces rigidly against any war that is based upon, or clearly mixed with, unworthy motives. Officers and men in the Navy and Army hold this conviction at least as strongly as do their civilian countrymen, for Christianity in its militant and truest sense has always been a noteworthy characteristic of the two great fighting services. It is true that sailors and soldiers will, for the most part, wage any war that their master, the civil power, may launch, but they rely, as they must, upon the country as a whole to undertake no war that their conscience does not sanction.

Few will maintain that the present widespread agitation to "outlaw war" is based upon any sudden access of moral rectitude in the nations of the Western World. Indeed, it is a matter of very general comment and uneasiness that the evil passions, of which war is the natural child, are unusually rife. Are we not, in fact, attempting to outlaw the penalties of men's follies and vices instead of striving, as Christian men, to allay those passions that must compel, eventually, the

penalties? Are we not very literally attempting to gather figs from thistles?

It is sometimes said that nothing can justify war, and that no crime against abstract right—*justitia*, to use the noble Roman term—can deserve so ghastly a Nemesis as the late war inflicted upon guilty and innocent alike, though no grown man or woman is entirely innocent of the causes that engender the scourge of war.

Can this truly be the argument of a great country? Surely defence of the weak, and the championship of what we, as a nation, believe to be right, regardless of any consequences, no matter how terrible or alarming, is an attitude of mind that must inspire our country if it is to continue, and extend, what we believe to be its noble mission in an unruly and imperfect world.

It is true that we, like our foreign friends, have not always fought for worthy causes, and the author does not subscribe to the doctrine of "My country, right or wrong." Such a doctrine is in no way in harmony with the truest loyalty. Should we not redouble our efforts to convert ourselves, as well as our fellow-countrymen, and the world, to that old-fashioned militant Christianity of which physical warfare (the embodiment of spiritual warfare), *as a last resource and in extreme cases* may be a necessary consequence?

Great European wars, such as the Napoleonic war and the late war, involve battle between two incompatible principles—freedom and serfdom,

light and darkness. Surely to compound with evil, or even to compromise with it, is cynicism rather than morality.

If we are honest with ourselves and with one another, are we not compelled to confess that it is *fear* and not the love of truth, equity, and justice that has inspired much of the present Pacifism and the clamour to undertake in advance, regardless of the matter that may be at issue, to renounce war? Do we not also know in our hearts that when some great issue of what we conceive to be right or wrong arises, a willingness, indeed a passion, to sacrifice our peace and happiness, and life itself, will always triumph over the base feelings of fear, financial advantage, and comfortable expediency?

A pact in advance to outlaw war seems therefore to be as impracticable as it is unquestionably craven and immoral. The fear which is now the mainspring of policy is due partly to the memory, and partly to the existing misery, that are the legacies of the barbaric and unreasoning massacre of the late war, and partly, and perhaps more extensively, to the honest belief that the last war must be a criterion of any possible future war though incomparably less terrible and bloody. The public is repeatedly assured by its leaders that "the next war" must extinguish Western civilisation, as the late war very nearly did.

Is it true? We have become, if the premise is correct, a nation with fatalism as its only possible creed. We are assenting to the doctrine that matter

has triumphed over mind, that good must succumb to evil if sufficiently strong, and that we of this distraught twentieth century have become the slaves and not the masters of our environment.

The Air Terror has again been examined briefly in this book, and it is the author's earnest hope that he has contributed to an appeasement of this bogy. He would humbly pray all disinterested leaders of public opinion to master this aerial chimera, and having mastered its details to treat it as an unsubstantial nightmare. Thus will they lift a great cloud from the face of the world, earn the gratitude of countless men and women of all races, and exorcise a panic which darkens counsel and which must eventually lead to that very war we are all so busy in verbally outlawing.

With the aerial and gas bogies finally dispelled there still remains the theory, now strangely enough treated as a military axiom which no one disputes, that any future war must again involve the world at large, and England in particular, in another bloody and wholesale slaughter on land. Again why? Surely we can still be masters of our strategy and thus of our commitments and fate in war. Was our revolutionary strategy in the late war in reality a blessing to our brave and faithful allies? Were our Balaclava tactics inevitable? Was the welter of massed material in all cases an aid to victory? The author considers, for his part, that by our inherently unsound continental strategy, and by our departure from our traditional island

strategy, we inflicted on the world, on ourselves, and on our friends and political enemies alike, the greatest calamity that the world has ever had to endure, *a calamity that may be repeated if we persist in such policies as the Locarno Pact while failing to amend our strategical conceptions.*

Sea-power, as strong, chivalrous, and yet relentless in war as it is gentle, hospitable, and friendly in peace, remains the key to England's security, to her authority in the counsels of the nations, and to the beneficence of her mission in this distraught and weary modernist world. Sea-power, supporting strictly limited military expeditions, seems to be an instrument placed in the hands of England by Providence for the settlement, in extreme and elemental circumstances, of the disputes of a tragically imperfect world. The *ultimate* triumph or defeat of a great cause can, in the modern world, be achieved more decisively in a great sea-fight, and some minor engagements, than in the days of sail, through the operation of that sound sea doctrine which is common to steam and sail. Those engaged in the fight are champions for their respective countries: they face one another in their ships with no bitter or revengeful feelings; the relatively few deaths involved are a sacrifice that can be as proudly accepted by the nations involved as they are gladly offered by those whose privilege and honour it is to serve their countrymen at sea.

Casualties at sea may be reduced still further by the rebirth of the wise and chivalrous practice of

our great forefathers who counted it no disgrace for ships of war to haul down their colours when the odds had become overwhelming, and the only alternative was the total destruction of the ship and the drowning of the crew by the victors in the fight. This practice, for some obscure reason, fell largely into disuse in the late war, thus frequently involving the unnecessary sacrifice of brave and loyal men, German as well as English.

Though by no means a Pacifist, there is one point on which the author finds himself in whole-hearted agreement with those who are Pacifists. The manufacture for private profit of guns, mines, bombs, bombing aircraft, poison gas, and other lethal war weapons, seems to him to be indefensible. The slaughter of our own countrymen by weapons manufactured in British armament firms is surely repugnant to every sense of decency. He therefore advocates the transference of all such enterprise from private companies to Royal Arsenals. He would make an exception of hulls and propelling machinery which are in another category and beyond the exclusive resources of any Government Arsenal that we can contemplate.

The author would like in conclusion to express his earnest hope that his criticisms of the war, and of post-war naval policy, will be regarded, irrespective of the merits of the case he has put forward, as a labour of love. In spite of many errors of judgment it remains true that it was the Navy that saved England and the world in those terrible years, and

it was the Navy that alone made possible the noble self-sacrifice and devotion of the million dead and the permanently disabled who won the military victory ashore. It seems to the author, and to very many others, however, that the national trust in its Navy as its sure shield for the future cannot fully be restored until Naval Officers have, by a change of policy, tacitly confessed their errors. We, all of us, and not least the author, are wise, if we are wise, after the event. Our errors were perhaps excusable owing to the complete novelty of sea warfare with modern fleets and weapons. The nation will assuredly judge magnanimously its sailors and its fleet, for England's Navy is, when all is said and done, a very perfect mirror of the country which it so loyally and devotedly serves.

ADDENDUM

AN EARNING MERCHANT FLEET

AS this book is a vindication of British sea-power it will not be out of place to devote an addendum to our Merchant Navy which in peace is incomparably more important than the Navy, and in war is the Navy's equal.

In the last war the Merchant Marine laid the nation under a debt which can never be liquidated. In the Merchant Navy the errors committed by the Royal Navy were, for the most part, conspicuous by their absence.

To-day the Merchant Marine is faced with a crisis which is causing grave anxiety among all who understand the dependence of our country upon a flourishing and self-supporting merchant fleet.

Since the war our merchant ships have been undergoing transformations which, when examined, appear remarkably similar to the transformations in men-of-war which have been subjected to criticism. Because ships and their characteristics are the natural children of maritime doctrine, it follows that Admiralty policy finds a counterpart in shipping policy.

The growing use of oil fuel in the merchant ships is defended mainly on the ground of the importance of speed in modern commerce, just as

an extra knot or two of speed is treated by the Admiralty as of supreme fighting worth. But speed above a certain critical point involves a totally disproportionate increase in horse-power, and therefore great increases in size, and very particularly in length. Hence the growing tendency in the Merchant Marine, as in the Navy, to produce faster and bigger ships, and fewer of them.

It will not be disputed by shipowners, no matter what the views of the public may be, that earning capacity should be the primary consideration in a merchant ship, just as fighting strength should be the purpose of a man-of-war. If, then, the Merchant Marine is demanding subsidies to avoid bankruptcy, it is legitimate to suppose that there has been something radically wrong with post-war shipping policy, and consequently with post-war merchant ships.

The author does not underestimate the evil of foreign subsidies, but distinguished shipowners agree that foreign subsidies are not in reality at the root of the crisis. Apart from the fact that £30,000,000 per annum (said to be the amount of these subsidies) is only a fraction of the profits normally earned by British shipping services, can it be maintained that since the war British shipping has not itself enjoyed subsidy indirectly?

During the six years 1921-26 a total of £21,662,588 was guaranteed under the Trade Facilities Act for shipbuilding. Of this the Royal Mail Steamship Company had about one-third.

Nine foreign companies took advantage of the Act to build or complete thirteen ships, the guarantee granted to them through British shipbuilders being just over £2,250,000. In all, 110 ships, with a total gross tonnage of about 850,000 tons, were built or completed with the assistance of the Act. Of these, half a dozen were coal-fired cargo vessels. The remainder were oil-fired and diesel ships.

As a consequence of the oil policy of the Navy and Merchant Marine, thousands of men have been dumped upon the dole. The dole constitutes a direct subsidy by the taxpayers of about 9*s.* 6*d.* for every ton of oil that displaces a ton of coal. For example, it transpires from careful calculations that the change over from coal to oil by one of our large liners has, in twelve years, allowing her an average of twelve voyages per annum, involved the permanent unemployment of 440 miners, and the taxpayers in a sum of £396,000 in dole. These figures disregard the scores of transport workers, dock labourers, and firemen thrown out of employment. Furthermore, the change of fuel in this single ship has affected our trade balance adversely by over £2,000,000.

Heavy fuel oil is a by-product of the petrol industry, a by-product that *must* be disposed of at any price, and therefore at the best price obtainable. Unlike coal, it has no economic price—a price ascertained in an open market. As Mr. John Johnson has pointed out, oil would not be raised in large quantities in the crude state were it not for the main product, petrol. The demand for

petrol therefore regulates the amount of fuel oil for disposal.

Oil, including fuel and diesel oil, is thus subsidised on an astronomical scale *through the subsidisation of motor-vehicles and aeroplanes*, for these two prime employers of the petrol engine have, throughout the civilised world, had the run of the public purse for twenty years.

To the enormous subsidies enjoyed by aeroplanes a reference has already been made. In the case of motor-roads, without which the number of motor-vehicles would be a small fraction only of what it now is, £520,000,000 was provided in this country alone out of rates and taxes between 1920 and 1932. Throughout the world expenditure has been on a similar, and in some cases on a greater, scale. At the present moment £40,000,000 per annum is being extracted from ratepayers for road maintenance, over and above the £30,000,000 odd which petrol, at long last, is paying in duty. The subsidised motor-roads, moreover, provide a dump for the second great by-product of the petrol trade—bitumen—to the great detriment of British tar.

In short, Socialism has fostered an enormous expansion in the use of petrol, on behalf of which British ships have become dumps for a by-product offered at prices which bring it artificially into competition with coal. Were the offer of cheap oil refused by British companies they would be at a disadvantage with foreign competitors without first-class coal resources. Thus have the international

oil combines held British shipowners to ransom, while the Navy, for thirty years, has given the lead in reducing Britain to a position of servility.

The truth is that the Navy, and the liner companies which pay rates and taxes, have been subsidising their own oil fuel while compassing the ruin of the tramp steamers. These, by the loss of their outward coal cargoes for bunkers, have been deprived of the chief means by which they once throve and, by their services, enriched the country.

Let us now turn from the fuel issue to the latest types of merchant ships. It has already been postulated that the function of merchant ships is to *earn profits*, just as the business of men-of-war is to *fight*. It follows that the various classes of merchant ships required should be designed with a single eye to the first principles of commerce just as men-of-war should meet the requirements of strategy. Merchant ships, in fact, should be designed round *earning capacity*, with no regard for "records" and "blue ribands."

The Merchant Marine, like the Navy, needs some ships designed on purely strategical considerations, and others based on what may be called tactical considerations.

In the Navy, as has been shown, small battleships, and plenty of them, are the basis of fighting power, and without such vessels operations by cruisers cannot be successfully sustained.

In the Merchant Marine cargo steamers are the backbone of a thriving shipping industry, cargo

liners and passenger liners constituting, so to speak, the cruisers of the merchant fleet. If the earning capacity of a cargo steamer is treated as the equivalent of the fighting capacity of a man-of-war, should not the cargo steamers of to-morrow be of moderate tonnage and designed to carry the maximum cargo at a speed *natural* to the ship? Such a speed would, in the ideal tramp steamer, be approximately ten knots, and it goes without saying that every tramp-steamer would be coal-fired.

When we turn from the all-important class of ship known generically as the tramp, we come to cargo liners, intermediate liners, and first-class passenger liners, and here we have to consider classes of ships which should bear the same relation to tramps as do the various classes of cruisers to battleships. The faster ships of the Merchant Marine may be regarded as merchant cruisers, and their design needs to be governed by the same considerations that governed the design of the three classes of cruisers in the New Navy. Earning capacity, not "blue ribands," remains the pivot of the design, though in liners speed enters into earning capacity just as it enters into the fighting capacity of a cruiser. For this reason such ships must always have a horse-power in excess of that necessary to give the tramp steamer, like the battleship, her natural speed. Nevertheless, because any speed above the natural speed of a ship becomes progressively costly, there must be a point in the design of the first-class passenger liner at which

speed competition with foreign liners is fatally uneconomic, just as in the cruisers excessive speed can only be purchased at the cost of fighting power.

Some idea of the enormous increase of power necessary to obtain an extra few knots of speed, when once the critical point on the "speed and power" curve has been reached, was furnished by Mr. A. T. Wall, O.B.E., A.R.C.Sc., Member of Council, and Mr. H. C. Carey, in their paper read before the Institution of Naval Architects on July 2, 1931. It was shown that in a ship of 550 feet the horse-power must be increased from 42,000 to 80,000 to raise the speed from 24·2 knots to 27·5 knots. Power must in fact be nearly doubled in order to obtain an increase of one-eighth in the speed. In a ship of 1,000 feet the horse-power must be raised from 226,000 to 362,000 to raise the speed from 30·8 knots to 36·4 knots, an increase of three-fifths in the power for an increase of one-sixth in the speed. From this it will be seen that the bigger the ship proportionately greater is the increase of speed obtainable from an increase of power, though even in very big ships the reward in speed is trifling for an extravagant increase in power. If this is true of large passenger ships, the evil becomes accentuated as the length of the ship is reduced.

The remarkable growth in the average tonnage of individual ships, passenger as well as cargo, is thus seen to be an outcome of the speed fetish rather than of any inherent advantage of size in itself.

The truth is that in recent years the technical

advisers of the Admiralty and the big shipping companies have obtained a position of dominance in regard to questions of policy that used to be the province of admirals and shipowners. As Sir John Latta said recently: "My experience of the temperamental proclivities of most engineers has been that they tend to exhaust their skill and resourcefulness in efforts to design a perfect machine merely as a perfect machine." He added: "It was over-dependence on technical advisers which largely accounted for former Boards of Admiralty having committed the country to enormous capital ships such as the *Hood* and *Nelson*." Engineers, in short, have become the masters instead of the honoured servants of policy, and it is hardly surprising, therefore, that men-of-war and merchant ships have sacrificed their fighting and earning qualities for the sake of engineering feats and, in the case of liners and cruisers, of "records." Neither will those who appreciate the enormously increased cost of speed above the critical point be astonished at the need for subsidies to maintain "blue ribands" whether at sea, on land, or in the air.

The cost of fuel alone for a single voyage of the new Cunarder can be imagined when it is appreciated that the *Mauretania*, with a fraction only of the new vessel's horse-power, consumes about 7,500 tons of oil per round voyage.

It is freely asserted to-day that speed is the governing factor of success in modern commerce. Is this true? Surely punctuality, and cheap freights

and fares, are the chief needs in an impoverished world in which millionaire travellers are becoming rarities. In recent years the British mercantile marine has led the world in high-speed sea transport, if we exclude the extra knot or so of the *Bremen* and *Europa*. These subsidised German ships are now to be challenged by two mastodons whose construction requires guarantee by the taxpayer.

In June 1931 the British Empire owned 1,484 vessels, with a speed of 12 knots and over, or about 50 per cent of the fastest ships of the world. Greece, whose competition is now so bitterly resented, owns 23. In the Greek merchant marine every oil-fired and diesel ship has been disposed of, and Greek ships, without exception, burn coal. They do so in spite of the fact that they have to pay a higher price for it than the price generally available to their British rivals.

It is the custom to-day to attribute all disasters to world depression. Few indeed attribute world depression to unsound commercial principles, or are still disposed to judge a tree by its fruits. It is sometimes said that the growing substitution of oil for coal is no more than an aspect of what is loosely called "natural evolution," an alternative term for "progress." Yet man has surely not ceased to be a free agent in selecting a line of progress which does not conflict with his well being. He can still be the master of his fate.

It must be admitted, on the other hand, that we are all apt to welcome change if the change involves

an increase in convenience, as the use of oil undoubtedly does. This being so, can shipowners be blamed for taking the line of least resistance when their ships were held up at the ports for lack of coal supplies during the great coal strikes of 1921 and 1926? Speaking in retrospect of the disastrous coal strike of 1926, the late Mr. A. J. Cook said: "We believed that if we could stop our production in this country we could create such a paralysis that our demands would have to be considered. As a result this country produced 130,000,000 tons less, while, when the figures of the world's production came in, there was only a drop of 3,000,000 tons, which means that the time has come when no country's cessation of production can have the effect we hoped it would in the days gone by."

Not only has the maritime world been from time to time deprived of coal supplies, but the price of coal has been forced up to a point at which fuel oil (which must be disposed of) can be offered at a price, and without fear of stoppage, which makes it a tempting alternative to coal. It is impossible, moreover, to withhold admiration for the brilliant handling of the oil trade, and its avoidance of those wearisome disputes which have brought its rival, the coal industry, nearly to ruin. Yet, when all is said and done, the substitution of oil for coal has proved disastrous to Britain. It has undermined, and is still undermining, her maritime supremacy.

In this book the *technical* consideration of the case between coal and oil for British ships has been

avoided as far as possible, every aspect of the fuel question having already been examined in *Back to the Coal Standard.*

As it may be thought that the author is singular in his views, he will make no apology for setting down in black and white the authorised views of men eminently qualified to judge on this issue.

Admiral Sir Reginald Hall, K.C.M.G. (Director of Naval Intelligence during the War), writes :

" *Back to the Coal Standard* should be carefully studied by the public, for not only does it show how precarious has become our command of the sea, but it reveals vividly, and in proper perspective, the incalculable economic value of our native raw product—coal.

"The experience of the late war should make the Navy immediately reconsider its dependence, now complete, on motive power from sources outside the kingdom. The interests of oil kings of alien birth are not always those of this country, and a situation may arise when those controlling the oil supply, without which the Navy cannot move, can demand and secure terms or conditions which would have to be met to ensure vital supplies for the Fleet.

" During the late war there was a time when this situation seemed likely to arise.

" In the event of war our cruisers not operating with the battle fleet will be needed for convoy, which is essential to safeguard the food supply. To do this they must also secure the oil supply. It will be a nice question as to whether they are to be used for securing means of movement or for securing food. With present numbers they cannot do both."

Engineer-Admiral H. S. Garwood, C.B., O.B.E., writes :

" *Back to the Coal Standard* provides a clear and convincing statement of the value to the country of this national product, and its many advantages if wisely and economically exploited.

" From the Navy point of view, I cannot see that there is anything to lose or fear in a return to coal as fuel and the general effect it would have on the merchant fleet would do much to improve the industrial position.

" As far as capital ships were concerned the whole of the offensive operations of the war prior to Jutland, and at the Jutland battle itself, were carried out almost entirely by coal burning units.

" Practically no commensurate results were ever achieved from the higher speeds of the oil burners when they joined up."

Sir John Latta, Bt. (Chairman of Lawther, Latta & Co., and Chairman of the Nitrate Producers Steamship Co., Ltd.), writes :

" *Back to the Coal Standard* is by far the most comprehensive and convincing disquisition that I have ever come across in justification of our Government and people generally putting their backs into redeeming our greatest asset from destruction, whither it is rapidly progressing. Those who know the subject best must be impressed by its sound and varied form of reasoning taken from every-day life.

" With regard to the Navy, it completely explodes the fallacy which seems to have captured the imagination of the Admiralty, that safety reposes in discarding coal in favour of the enemy's greatest asset, oil."

Sir Richard Redmayne, K.C.B. (late H.M. Chief Inspector of Mines), writes :

" *Back to the Coal Standard* ought to be read, not only by those directly concerned in the production and sale of coal, but by the public generally, for it is the most informing work on the subject of our great national asset, from the point of view of what I may term ' coal politics ' that there is."

Mr. John Johnson (Chief Engineer to Canadian Pacific Steamships, Ltd., and Member of Council of Institute of Naval Architects), writes :

" *Back to the Coal Standard* should be studied by those responsible for the construction and operation of British ships. In recent years, the economic value of coal has been obscured by the physical properties and advantages of oil, but technical advances in the art of handling and burning coal have, for all practical purposes, eliminated the handicaps under which coal has previously laboured, and there is no longer any reason why it should not be used for the propulsion of ships, and considerable economies and advantages secured thereby."

The late Sir John Biles, K.C.I.E., LL.D., D.Sc., and Member of Council of Institute of Naval Architects), wrote :

" I agree with what has been written by Sir John Latta, Sir Richard Redmayne and Mr. John Johnson."

Mr. A. H. Pollen (Director of Daimler, B.S.A., Car and General, and the Motor Union), writes :

"Captain Acworth was led to the study of the coal question by the preposterous paradox that the first business of our Navy in war would be, not to seek out and destroy the enemy's fleet nor to stand ready to fight the cruisers that might attempt to ravage our merchant shipping, but to safeguard and protect the precarious transport of fuel without which that Navy would be powerless to fight, or even run away. The sound strategic instinct that sent this gallant author on this quest has brought him a clear perception of other aspects of the fuel problem which, taken altogether, must rank in importance second only to national security. His case carries conviction, not only because it is subtly argued and trenchantly stated, but because it is founded on an array of facts furnished by his opponents and irresistibly marshalled to confound them."

Mr. Evan Williams (President of the Mining Association of Great Britain), writes :

"Captain Acworth has done a great public service in writing his book *Back to the Coal Standard.* He makes clear the inherent weakness of a country whose first line of defence rests upon the precarious position in which it has to depend for the whole of its mechanical energy upon the supply of a fuel, the nearest source of which is many thousands of miles away.

"I may be thought to be influenced unduly by the advantages which would accrue to the Coal Industry. Even so, there are a few things that would be more generally beneficial than restoration of prosperity to the Coal Trade, and there is nothing which would make a greater

contribution to this than the return of the Navy to the Coal Standard. But the remarkable tributes of appreciation which have been given by such a number of eminent men to Captain Acworth's book, prove that this is not only the view of a naturally biased coalowner."

INDEX