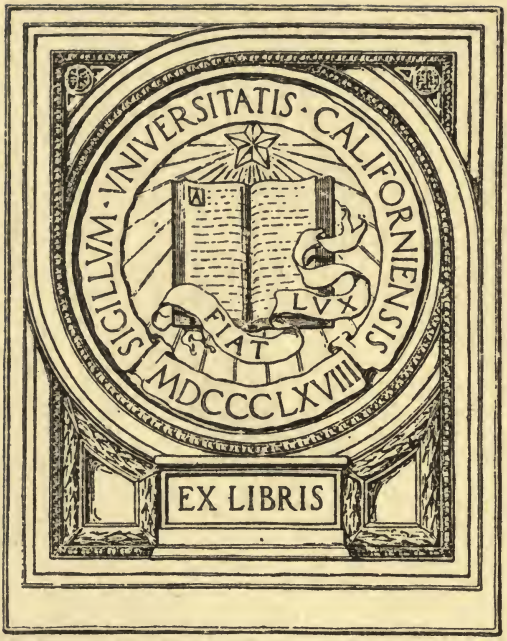
THE BRITISH NAVY FROM WITHIN

BY "LOWER DECK"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BY

"EX-ROYAL NAVY"

HODDER AND STOUGHTON
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CHAPTER I

OUR NAVY

SOME years ago, at a meeting at which the material strength of the Navy had been fully discussed—ships, guns, engines, torpedoes, etc. etc., Lord Charles Beresford took the opportunity to remind the audience that:

> "You may have what size of ship you like, as many as you like, guns, armour, boilers, engines; but remember, it is the human element, and only the human element, that wins battles."

And this little book, while dealing with the Navy as a whole, will concentrate its attention mostly on the human element, and with that intimate knowledge that a life spent on board a ship-of-war gives.

With the fighting history of the Navy of the past we shall not deal. From the first invasion of England by the Romans under Cæsar up to the Battle of Trafalgar, on October 21st, 1805, the British Navy had a glorious history; after 1805 it may be fairly said to have entered on a

period of decay. True, in 1812 we experienced an irritating experience during our war with America, but in 1815 came the overthrow of Napoleon and we settled down to a long peace. It is a truism that no fighting service can go through this experience without deteriorating, and our quarrel with Russia in the "'fifties" of the last century found us in such a bad state that we experienced the greatest difficulty in raising sufficient men to man the ships necessary for the Baltic and Black Sea. So grave, in fact, was the situation that a Royal Commission was appointed to enquire into the situation. They recommended a long-service system (prior to this men used to sign on for a commission). Under this system the Navy was to train its own personnel from boyhood up, a number of training ships were established at the various naval ports, and boys from fifteen to fifteen and a half years of age were recruited. They signed an agreement to serve on for ten years, from the age of eighteen, at which age they were rated Ordinary Seamen, and became officially men. On January 1st, 1885, the period required was increased to twelve years; at the end of these periods men had the right, if their character and physical condition was suitable, to re-engage for pension, which was a further ten years.

By this means the British Navy built up what is unquestionably the finest naval personnel in the world, and here it may be well to go back just a quarter of a century to the year 1888–9, and trace the progress of the Navy in men and cost to date :—

Year		Personnel	Wages £	Total cost £
1888–9	..	62,400	3,214,607	13,776,572
1892–3	..	74,100	3,679,589	15,266,811
1897–8	..	100,050	4,696,000	22,338,000
1902–3	..	122,500	5,962,000	31,255,500
1907–8	..	128,000	6,869,700	31,419,500
1911–12	..	134,000	7,511,500	46,204,799
1914–15	..	151,000	8,800,000	53,573,261

Up to the end of the last century our Navy enjoyed a peace routine. We maintained squadrons all over the world, and the pick of our personnel was to be found anywhere but in home waters. The Mediterranean claimed the pick of both our ships and men. Here naval life was one long holiday. The routine was to lay in harbour for nine months out of the year. About July the whole fleet would congregate at Malta for the summer's cruise. Sometimes it would be east of Malta, taking in the Grecian Archipelago and Holy Land; at others it would be west, visiting the French and Italian ports, paying a visit to the Rock, and then home to Malta for another long rest.

Preparation for war was never thought of. Why should it be? The French Navy had no aggressive designs, and was much below our own, both in material strength and personnel, while the Russian Navy was partly confined in the Black Sea, the other part being in the Baltic. And so we, both officers and men, set out to have a good time. Our ships were kept up to yacht-like perfection as regards their paint-work, while their bright-work shone like gold, and the road to promotion lay not through professional efficiency, but the state of cleanliness and splendour of one's ship. All kinds of drills and evolutions were devised, not because of their war value, but because they had a competitive value, and so ship could be pitted against ship, and an element of sport introduced.

There was nothing really wrong in all this. The British Navy was there to maintain for us our title of Mistress of the Seas, and as no other nation apparently wished to challenge our title, there was nothing to do but pass away the time as pleasantly as possible; when the Navy was called on to perform any task it carried it through with vigour, valour, and efficiency, and immediately settled down again.

This happy state of affairs went on right up to

the end of the last century, when Germany as a Naval Power began to dawn on the horizon, more at first in the ambitions of her Kaiser, but later by the desire of her people. In 1898 Germany passed a Navy Act, which, both in its ambitions and text, gave no cause for fear to us. During the South African War the Kaiser rather startled us, first by a telegram to Kruger, and later by an impassioned speech on the weakness of his navy. In 1900 Germany passed another Navy Act, and this time she left no room for us to doubt what her intentions were, as the Preamble said :

> "Under existing circumstances, in order to protect Germany's sea trade and colonies, there is one means only, viz. Germany must have a fleet of such strength that even for the mightiest naval power a war with her would involve such risks as to jeopardise her supremacy."

With the passing of the 1900 German Navy Act came the awakening of the British Navy, but it was not till some years later that the complete reorganisation of the Navy to meet the new danger commenced. Let us take the four great reforms first.

Our reserves in ships had always been allowed

to lie in the great dockyard basins from one year's end to another, except for the few weeks each year when the fleet was mobilised; then a crew of officers and men would be placed on board each reserve ship. The officers did not know the men, the men did not know the officers, and neither knew their ship; the result was wholesale breakdown and general muddle. The first step was to put an end to this, so what was called the nucleus-crew system was introduced. Under this system every ship in reserve had appointed to it certain of the officers and the bulk of the skilled ratings she would carry if in full commission; thus the more important ratings got to know the ship and all connected with her: stores were on board, coal in the bunkers, so that when the order to "mobilise" went forth, the only people to go on board were the junior ratings, and the ship was ready for sea.

The next great reform was the redistribution of the fleets to meet the new situation. The pick of the Navy, as already mentioned, had for generations been maintained in Mediterranean waters. The Pacific, North America and West Indies, Cape of Good Hope, East Indies, China, all had their quota, in fact, fully two-thirds of our fighting strength was spread all over the world. It was this

weakness that Germany had in view in the Preamble of her 1900 Navy Act, when she said:

> "It is not absolutely necessary that the German fleet should be as strong as that of the greatest sea power, because generally the greatest sea power will not be in a position to concentrate all its forces against us."

The Admiralty, under the guidance of Lord Fisher, at once set to work to remedy that weakness. No immediate reorganisation of the fleet could take place which would transfer our main force from the Mediterranean to the North Sea, so a series of masterly moves were decided on, each innocent in itself, but each designed to lead to the ultimate concentration of our naval forces in the North Sea.

The Russo-Japanese war had shown us one of our greatest weaknesses. When that war broke out Russia had in Far Eastern waters a small old-type gunboat called the *Madjur*. She was neither strong enough to fight nor fast enough to run away. She at once fell a prey to the Japanese.

We had dozens of similar vessels all over the world carrying out the duty of what we called "showing the flag." These vessels were ordered

home and removed from the Active List of the Navy. Many of them were sold right away, others were relegated to the Kyles of Bute and other places, awaiting the time when they could be sold or broken up. To get some idea of the clearance which took place we give a list of ships sold at Portsmouth alone by one sale on July 11th, 1905 :—

Name	Tonnage	Built	Cost £	Sold £
Orlando	5,600	1888	303,065	10,000
Iris	3,730	1880	190,960	8,000
Magician	2,950	1890	149,801	6,000
Blanche	1,580	1891	97,524	4,000
Blonde	1,580	1891	97,406	3,700
Fearless	1,580	1888	92,103	4,250
Barrossa	1,580	1890	91,577	4,550
Beagle	1,170	1890	67,632	4,900
Boomerang	735	1891	52,076	1,900
Karrakatta	735	1891	51,949	1,875
Jaseur	810	1894	50,425	2,075
Grasshopper	535	1888	47,410	1,425
			£1,291,928	£52,675

The next great reform was the introduction of the all-big-gun type of battleship and battle-cruiser, known to all the world now as "Dreadnoughts," that being the name of the first ship of the type. Following in the wake of these four, or coincident with them, were a series of lesser reforms, but all designed to lead to more efficiency

and instant readiness for mobilisation when called on. The following is a fairly comprehensive list :—

(1) Complete reorganisation of the Royal Dockyards.

(2) Improved system of refits of ships and limitation of number of vessels absent at one time from any fleet for repair.

(3) Introduction of the Royal Fleet Reserve, composed only of ratings who have served for a period of years in the active service.

(4) Improvement of the Royal Naval Reserve by enforcing periodical training on board modern commissioned ships in place of obsolete shore batteries.

(5) Establishment of the Royal Naval Volunteer Reserve.

(6) The establishment of a service of offensive and defensive mine-laying vessels.

(7) The introduction of vessels for defensive mine-sweeping in harbours and on the open sea.

(8) A complete organisation of the service of auxiliary vessels for the fleets in war.

(9) The development of submarines and the equipment of submarine bases and all the necessary auxiliaries.

(10) The proper organisation of the Destroyer Flotillas with their essential auxiliaries.

(11) The development of wireless telegraphy afloat; the equipment of powerful shore stations round the coast and at the Admiralty, and the introduction of a special corps of "Wireless Telegraphists" on land.

(12) The experimental stage of aerial navigation entered upon.

(13) The formation of the Royal Naval War College.

(14) The establishment of signal schools at each port.

(15) The establishment of an Inspector of Target Practice and putting the gunnery of the Navy on a scientific footing.

(16) Great improvements in torpedoes and torpedo training.

(17) Complete reorganisation of the arrangements for mobilisation, whereby every officer and man is always detailed by name for his ship on mobilisation, and the mobilisation of the whole fleet on a strictly war footing can be effected in a few hours.

(18) The stores of the fleet placed on a modern basis, both in the storehouses on shore and in the ships themselves.

(19) The complete reorganization of the victualling arrangements of the Navy.

(20) The provision of repair ships, distilling plant and attendant auxiliaries to all fleets.

In addition to these our fleets were kept at constant practice in all weathers in the North Sea until a very high standard of war efficiency and instant readiness for war was obtained. Having given this brief historical outline, we will now make a closer acquaintance with the Navy itself.

CHAPTER II

THE ADMIRALTY

THE administration of the Navy is carried out by a Board of Admiralty officially termed :—

> "Commissioners for executing the office of Lord High Admiral of the United Kingdom of Great Britain and Ireland," etc.

Except for a very short period in 1827–28, when H.R.H. the Duke of Clarence filled the office of Lord High Admiral, the affairs of the Navy have always been administered by "My Lords Commissioners."

This body has passed through many vicissitudes from the administrative point of view. As the Navy has grown, new duties have sprung into existence, which have been shouldered by this lord or that, until something like confusion and much overlapping has resulted. The last redistribution of Admiralty business took place as recently as September 7th, 1912, and placed the whole

administration on a perfectly sound and business-like footing. Here are the duties allotted to each and every one of the Board :—

First Lord

1. General direction and supervision of all business relating to the Navy; political and Board questions.
2. Promotions and removals from the service of naval and marine officers; honours and rewards.
3. Royal yachts and Admiralty yacht, including appointment of all officers.
4. Appointment of admirals and officers in command, including engineer rear-admirals, surgeons-general and deputy surgeons-general, and staff appointments of Royal Marines.
5. Chaplain of the fleet, appointment of and entry of naval chaplains and instructors.
6. Civil appointments and promotions (higher posts).
7. Naval cadetships and nominations to assistant clerkships R.N.

First Sea Lord

1. Preparation for war; all large questions of naval policy and naval warfare—to advise.
2. Fighting and seagoing efficiency of the fleet, its organisation and mobilisation, including complements of ships as affecting total numbers; system of gunnery and torpedo exercises of the fleet, and tactical employment of air craft, and all military questions connected with the foregoing, distribution and movements of all ships in commission and reserve.
3. Superintendence of the war staff and the hydrographical department.

Second Sea Lord

1. Manning (manning means recruiting the numbers authorised by Parliament) and training the fleet; details of complements of ships and establishments; barracks, training and educational establishments, with their complements; also all mobilisation regulations for the personnel.
2. Service and appointments of officers of all branches (except as reserved to First Lord).

3. Royal Marines.
4. Coastguard and Reserve Forces.
5. Hospitals.
6. Discipline. (The proceedings of courts-martial will be confined to the Fourth and Second Sea Lords, but will specially pass under review of the Fourth Sea Lord, who will call the attention of the Second Sea Lord to any special point requiring consideration. The latter will consult the First Sea Lord in cases of importance.)
7. Signals.
8. The following papers are invariably to be marked also to the First Sea Lord :—
   (1) Questions of importance relating to discipline.
   (2) Questions affecting total Fleet Numbers.

Third Sea Lord

1. Design of material for the fleet, including ships and their machinery, armour, naval ordnance and gun mountings, aeroplanes and airships, and docking facilities ; also alterations and additions to ships which affect design or fighting efficiency. Prepara-

tion of estimates of cost of all war construction falling due in any year under current and prospective programmes; Superintendence of the Department of the Director of Naval Construction, Engineer-in-Chief; Director of Naval Ordnance, Director of Naval Equipment, Director of Air Department, and Superintendent of Compressors.

2. Design questions affecting vessels proposed to be purchased for the fleet or to be employed in auxiliary services.
3. Inventions relating to ships, machinery, etc.
4. Salvage of vessels so far as technical and professional considerations are involved.

Fourth Sea Lord

1. Transport service, including hired auxiliary vessels other than armed merchant cruisers; passages.
2. Superintendence of naval stores, fleet coaling and victualling services; ordnance and medical stores, etc., and all questions relating thereto.
3. Full and half pay; allowances and compositions, including table money, prize questions, pilotage and surveying pay, and

freight of treasure and all extra payments; debts of officers and men; naval and marine pensions; character, conduct, and badge questions; naval savings banks.

4. Medals, uniform regulations.
5. Naval detention quarters and Bodmin naval prison; deserters—rewards for apprehension; removals of "R."
6. General salvage money questions and money demands for salvage of naval stores.
7. Collisions.

Civil Lord

1. Works and buildings, including purchases of land; coastguard buildings, sites, and leases.
2. Staff of civil establishment (except as reserved to First Lord), including classification, appointment, promotion, pay, allowances, and pensions; dockyard police.
3. Greenwich Hospital business, including appointments (except of naval chaplains) to livings; superintendent of the Royal Hospital School, curator of the Painted Hall, and appointments to Greenwich Hospital pensions.

4. Charitable funds, compassionate allowances, subscriptions and allowances to ministers of religion and grants in aid of churches and schools.

5. Marine and dockyard schools.

6. Special questions affecting retirement and pay of naval and marine officers and men, when discretionary power is specifically provided for by Orders in Council. (Works questions of an important character, or if likely to affect questions dealt with by the Financial Secretary, will be marked to him also.)

Additional Civil Lord

1. Contracts for matériel for the fleet (including ships and their machinery, armour, naval ordnance and gun mountings, aeroplanes and airships), works, yard machinery, and stores of all description; contract arrangements in connection with the disposal, salvage, or loan of vessels and stores; superintendence of the Contract and Purchase Department.

2. General organisation of dockyards, including provision of labour and plant, and all

business in connection with the building and repair of ships and their machinery, whether in dockyards or private yards.

PARLIAMENTARY AND FINANCIAL SECRETARY

1. Finance, estimates, and expenditure generally, and all proposals for new and unusual expenditure.
2. Accounts—cash store and dockyard expenses.
3. Purchase and sale of ships and of stores generally.
4. Payment of hire of ships for armed merchant cruisers, troopships, colliers, freight ships, etc.
5. Questions involving reference to the Treasury principally, except the less important works questions dealt with partly by the Civil Lord.
6. Exchequer and Audit Department, questions connected with.
7. General labour questions, including annual petitions.

PERMANENT SECRETARY

1. General office.

2. Discipline of the clerical staff of the various Admiralty departments.

3. Admiralty procedure.

4. Recommendations for appointments and promotions in the Admiralty office.

5. Correspondence.

6. Communications with foreign naval attachés.

7. Communications with ministers of religion (other than the Church of England).

In the absence of the Permanent Secretary the Assistant Secretary will act in his place.

. . . . .

In a memorandum issued by the First Lord at the time these changes were introduced, it was explained that the object was to divide and reorganise business. This reorganisation has fixed responsibility on individual shoulders, a thing which could be hardly said to exist before. For the carrying out of all this work the Admiralty is split up into certain departments, each with its specially appointed personnel, who naturally become expert in the work of their special departments. These are as follows :—

Department of the Secretary of the Admiralty.
Admiralty War Staff: (1) Operations Division; (2) Intelligence Division; (3) Mobilisation Division.
Hydrographic Department.
Navigation Department.
Department of the Director of Naval Equipment.
Department of the Director of Naval Construction.
Department of the Engineer-in-Chief.
Department of the Director of Dockyards.
Dockyard Expense Accounts Department.
Naval Stores Department.
Compass Branch.
Department of the Director of Naval Ordnance.
Air Department.
Accountant-Generals Department.
Victualling Department.
Transport Department.
Department of Medical Director-General of the Navy.
Director of Works Department.

Under our political system the head of the Admiralty (First Lord) is a politician with a seat in the Cabinet. The Sea Lords are naval officers, from admiral down, who accept these offices, and

then return to sea for the control of our seagoing fleets. During the past decade an extraordinary change has taken place at the Admiralty as regards their treatment of the men. The victualling and clothing of the fleet, which necessarily affect the men every day of their lives, have undergone so many changes and improvements of late years as to leave very little cause for complaint. While the discipline of the Navy, fully dealt with in another chapter, is now administered on enlightened lines, which gets the very best results with an ever-diminishing punishment list. As an example we may state that whereas in 1902, with a total lower-deck personnel of 104,724, the number of courts-martial for the year were 373, in 1912, with a lower-deck personnel of 119,903, the number of courts-martial only amounted to 111, and 13 of these were dismissed!

CHAPTER III

NAVAL DISCIPLINE

NOTHING in the Navy has so altered during the past ten years as the system of maintaining discipline. Discipline—the art of forming the manners, a state of subjection, method of government, correction and external mortification—is the one great thing on which the whole life and fighting efficiency of the Navy rests. Without it the service could not be carried on, a man-of-war would be unable to perform its duties, and those belonging to our fighting ships would be in a perpetual state of quarrel and disorder. The very bedrock of naval discipline is the prompt obedience to all external marks of respect to superiors in rank.

The Navy, with the exception of such Marines who are on shore in barracks in the United Kingdom, is governed by Act of Parliament, which Act remains in force until it is repealed. The first part of this Act is the Articles of War, and this has to be posted up in some conspicuous place in every ship and read publicly to every one on board

once every three months. The time chosen is invariably immediately after morning divisions, 9 a.m. After prayers have been read the "Disperse" is sounded, followed by "Officer's Call," and the pipe "Clear lower deck: every one aft." Then the Captain mounts the bridge, or some suitable place where he can see the assembled officers and men. The order is given "Off caps," and he reads out the "Articles of War." The bulk of the Articles, after laying down the offence, end up with: "Shall suffer death or such other punishment as is hereinafter mentioned."

The first Article is that relating to the public worship of Almighty God, which is ordered to be according to the liturgy of the Church of England, solemnly, reverently, and orderly administered; that the chaplains are to perform their duties diligently; and that the Lord's Day be observed according to law. After this comes a lot of offences and their penalties, the offences being ranged in accordance with their seriousness. Misconduct in the presence of the enemy; not pursuing an enemy; discouraging the service or deserting one's post; misconduct of subordinate officers and men when in action; spies; corresponding with an enemy; neglect of duty; mutiny, with or without violence; inciting others to mutiny; civilians

endeavouring to seduce officers or men from allegiance to His Majesty; uttering seditious words; concealing traitorous designs; striking or attempting to strike a senior; insubordination; quarrelling; desertion; inducing to desert; and so it goes on, running down the whole gamut of known naval offences, and finally comes the covering clause stating that the penalties against naval discipline not specified, and also for crimes against the Act, unless expressly specified, are to be according to the "law and custom of the sea."

The second part of the Act contains the "General Provisions"; the third part contains the Regulations as to punishments; the fourth part to courts martial; the fifth part to penal servitude and prison; the sixth part contains the "Supplementary Provisions," states the Act is to be called the Naval Discipline Act, and when it is to commence; that every person in or belonging to His Majesty's Navy and borne on the books of one of H.M.S. ships in commission, is subject to it; and also that all other persons made liable to it shall be triable and punishable under its provisions.

All the offences provided for in the Articles of War may be tried by a court martial; but any of

them, not capital, committed by the men may be summarily dealt with by the captains of ships under such regulations as the Admiralty may issue.

By the Act bluejackets and marines cannot be arrested for debt unless the debt was contracted before the debtor joined His Majesty's Service; in fact, the whole government of the Navy is contained in the Naval Discipline Act, the court martial being the great tribunal, its finding final, the sentence taking effect from the moment it is read, though the Admiralty itself may remit portions of a sentence or quash illegal sentences.

In the everyday life of the service, however, it is the "Summary punishments," which the Act allows the Admiralty to issue from time to time, by which order is maintained. For these "summary punishments" there are two "courts"; the inferior is presided over by the Commander or senior lieutenant, and the superior is presided over by the Captain. The Commander sees whatever defaulters there are every day at either 8 a.m. or 11 a.m., and the great bulk of these are for trivial offences against the good order of the ship. The punishments may vary from "one day's leave stopped" to "fourteen days No. 10," which is the limit of the Commander's power of punish-

ment. Should a man have committed an offence which in the Commander's opinion deserves a severer punishment than the maximum he himself may award, the offender is placed in "Captain's Report," and is removed to the superior court.

Captains as a rule see their defaulters and "request men" once a week, viz. on Thursday forenoon, and he has power to award punishment up to 90 days' detention.

The Naval Discipline Act dates back to 1866 (29th and 30th Victoria, cap. cix., 10th August, 1866), it was amended by the Naval Discipline Act of 1884, and again amended some five years ago. The last amendments were not large, and consisted of the introduction of two words and the alteration of one. The addition was "should be liable to imprisonment *or detention.*" Prior to this addition all men who committed offences against Naval Discipline of a sufficiently serious nature to deserve, in the opinion of the Captain or a court martial, a punishment more severe than "cells," was ordered imprisonment and was sent to a civil prison—either Lewes or Bodmin—where he served his sentence amongst criminals punished for offences against the civil law. In 1908 "detention" was thought a more fitting method of punishment, and

now at each naval port there are detention barracks where offenders may be sent for any period up to 90 days. They are under the control of naval police and instructors, and the work they perform during their period of punishment is drill and instruction which fits them for their profession. This was an enormous stride ahead, and has resulted in infinite good to the youngsters—for they are mostly youngsters—who commit offences.

Prior to September, 1912, the Captain of a ship had power to summarily disrate any petty officer under his command to the rating of able seaman. For many years the petty officers themselves had asked that they might be placed on the same footing as non-commissioned officers in the Army in this respect, and have the right of trial by court martial before disrating could take place. On September 27th, 1912, this request was granted and a long-felt grievance removed.

The same year saw a complete rearrangement of the petty punishments for trivial offences. The movement that led to all these changes was originally started by enlightened naval officers introducing punishments of their own, entirely different in their nature and effects from those prescribed by law. While this was quite illegal, the beneficial results were beyond dispute. The standard punish-

ment of the Navy for all petty offences prior to September, 1912, was what was known as "10 A." Its main features were: "Grog to be stopped; eat meals under a sentry's charge; after half an hour for dinner stand for the remainder of the time on the upper deck in the place appointed; extra work in watch below; to be deprived of smoking, and to be under a sentry's charge during smoking hours; if in harbour, to stand on the upper deck in the place appointed from 8 to 10 p.m." Practically every part of this punishment is of a degrading nature, especially the "standing on the upper deck in the place appointed," which really resolved itself into putting men into a corner facing the paintwork. This punishment was introduced at a time when the moral and intellectual outlook of our seamen was anything but what it is to-day, and may have been quite suited to those of a past generation. But it had long outlived its usefulness, and was at last consigned to oblivion. The punishment that took its place was extra drill and instruction.

These changes were only the outward and visible signs of a much greater and far-reaching movement. The Navy has always enjoyed two great schools of disciplinary thought, who may be called the St. Vincent and Nelsonian Schools. St. Vincent was

one of those austere men who thought that all discipline must rest on fear; the only way to instil that fear was by punishment, and in his day punishment rose to a severity never before known. Contemporary with St. Vincent was Nelson, who hated punishment in every shape and form, and whose contention was that true discipline could only have one basis, and that was mutual respect between officers and men. He further contended that the true test of discipline in a fighting force was the way men comported themselves in battle, and certainly by the glorious victories he himself achieved, he established the practical value of his own theories. Curiously enough, however, the St. Vincent type of discipline prevailed right up to the end of the last century and beyond; then the growing standard of intelligence of the lower deck caused every officer to think, and gradually the Nelsonian spirit began to gain ground. What progress that spirit has made may be seen from the following figures, taken from the published returns of the numbers of courts martial and summary punishments inflicted on seamen of the Royal Navy over a series of years.

The figures deal with the summary punishments of petty officers, seamen, and marines afloat.

	1903	1904	1905	1906	1907
Punishments ..	119,754	126,384	127,699	120,615	119,350
Numbers borne	108,868	114,246	112,559	111,578	111,838
Punishments in excess of numbers ..	10,886	12,138	15,140	9,037	7,512

	1908	1909	1910	1911	1912*
Punishments ..	119,247	116,342	117,680	118,408	117,283
Numbers borne	112,751	112,773	115,738	117,962	119,903
Punishments in excess of numbers ..	6,496	3,569	1,942	446	—
Numbers in excess of punishments ..	—	—	—	—	2,620

It is when we turn to the courts martial and offences that we realise how wonderfully clear the Navy is of real crime. There were 121 courts martial held during 1912, and out of these no less than 97 were for striking and attempting to strike, threatening language, and behaving with contempt to superior officers. Now while this is looked on, and rightly so, as a very serious offence in a disciplined service, it is not a *crime* when judged by the ordinary law of the land, and out of the 119,903 petty officers, seamen, and marines afloat

* These are the last returns to hand.

for the year, the only offences punishable by ordinary law were :—

	Seamen.	Non-seamen.	Marines.
Forgery and falsification of accounts	—	5	—
Theft and Embezzlement ..	12	5	7
Disgraceful conduct	7	—	1
Perjury and prevarication ..	2	2	—
Total	21	12	8

Out of the total of courts martial held, 13 of the accused were acquitted.

The effect of all this has been magical in the extreme. As punishments have grown less in their number and more sensible in their nature, so a better feeling has sprung up amongst officers and men ; especially does this refer to the petty officers. In all the great permanent harbour establishments it is the custom to-day for the petty officers' messes to have an annual dinner, to which the Captain, Commander, and other officers are invited, and which they rarely refuse. At these dinners toasts and speeches are indulged in, the officers sitting between their hosts and all being for the time on an equal footing. There are, of course, exceptions to this pleasant state of affairs, but the prevailing system of discipline is one based on mutual goodwill between officers

and men. "My Lords Commissioners of the Admiralty" are exceedingly careful to maintain this feeling, and dire and instant is the punishment meted out to any officer in command of one of H.M. ships who tries to destroy it by a reversal to the discipline of a past generation.

CHAPTER IV

ENTRY AND TRAINING (OFFICERS)

UP till 1902 all naval and marine officers had been entered in the three definite and distinctive branches of the service: Executive, Engineers, Marines. The future Executive Officers, entered as Cadets at from 13 to 15 years of age, were sent direct to the *Britannia* at Dartmouth, where they underwent their schooling and early training preparatory to being sent to sea. The Engineer Students were sent to Keyham College, where they graduated as Engineer Officers; while the Marines, Red and Blue, entered their respective corps, where they went through a long course of training preparatory to a sea life. In 1902 the whole of this system was altered for one of common entry; the scheme was introduced by Lord Selborne, at that time First Lord, and unquestionably gave rise to one of the bitterest controversies that has ever affected the Navy. It is not our task here to take sides in that controversy,

but to set out the causes that led up to the change.

Far away back in the past the dominating influence on board all ships of war was essentially military. In those times the definite Navy ship was not known, so that when soldiers wanted to cross the water to meet the enemy they had to use ships for the purpose; the seamen were simply used to navigate and handle the ship. As time passed a definite Navy came into existence, the purely military element—that is Army element—gradually gave place to the Sea Officer, and to the Seaman proper came the work to navigate and fight his ship, the fighting officer retaining all executive power in his hands. So extraordinarily jealous were these old Sea Officers of their position as fighting officers, that while they would work the ship from port to port they would not navigate her, looking on a knowledge of navigation as something beneath them and *infra dig.* The result was that the Navy carried its own special Navigating Officers, known as Masters and Masters' Mates, and it was not till an Order in Council of 25 June, 1867, that the office of Master was transferred to the Navigating Officer—an executive lieutenant who specialises in navigation.

The Surgeon and Purser, though officers, were

looked down on by the Executives, while when Marines were introduced afloat, the Marine Officer was also subordinate to the Executive Officer.

When auxiliary engines were first introduced into ships of war could the rulers of the King's Navy have seen ahead they would probably have made provision for the gradual development of engineering science. But we have to realise that our old Sea Lords had been brought up to masts and sails, and the very last thing they were capable of realising was that a ship could ever move from port to port by any other motive power than the wind. The Board of Admiralty in Lord Melville's day was confronted by a proposal to introduce steam into the Navy; they looked on it as a monstrous innovation and repudiated it in the following minute :—

> "They felt it their bounden duty upon national and professional grounds, to discourage to the utmost of their ability the employment of steam vessels, as they considered that the introduction of steam was calculated to strike a fatal blow to the naval supremacy of the Empire."

It was under those conditions that the engineer and stoker were introduced into the Navy!

The first of the engineers had to deal only

with auxiliary engines—which were never used if it could be avoided—and were scarcely above the level of a working mechanic. They seem to have laid no claim to birth, breeding, or education, and though entered as officers, their comrades scarcely looked on or recognised them as such. But all the prejudice in the world could not hold back the progress of the steam-engine, and as engines grew in power and complication of mechanism the type of man necessary to manipulate them also improved. So enormously rapid was the development of steam during the last quarter of the nineteenth century, that by its end we had actually got back to the same condition of things that existed several centuries ago, when the soldiers used to dominate the ship without knowing anything of seamanship, trusting to the seamen whom they looked down upon to carry them from place to place. Sails had gone, masts had gone, and a ship of war was a huge piece of complicated machinery. An Executive Officer had all power of control, yet they were being educated as their fellows of a past generation, and when anything wanted doing they had to wait till an engineering officer came along to put things right.

The Marine Officer also held a somewhat anomalous position. Brought up as either infantrymen or

artillerists, but essentially soldiers rather than sailors, their activities were limited to looking after certain portions of the work of their detachments, and "got a better job than the Captain of Marines" came to be a service expression denoting the perfection of easy times.

We also have to remember that the Engineers' branch of the personnel had grown to such proportions that it involved a large part of a ship's company, while the Engineer Officer hardly bore any relationship whatever to his position of a past generation, yet a very great deal of class prejudice existed, a thing which after full consideration the Admiralty felt was anything but beneficial to the service: men are only too prone to identify themselves with any little friction or feeling existing amongst their officers. In 1902, therefore, Lord Selborne introduced a scheme which entirely revolutionised the entry and training of officers for His Majesty's Navy. Instead of there being Executive, Engineering, and Marines, all entered separately and trained separately, there was to be one concise source of entry. Every future officer would be entered as a Cadet at the age of from 12 to 14, and would undergo two years' training; a new College was built at Osborne and an entire new system of education and training was instituted.

These young officers were educated in engineering, gunnery, torpedo, and all parts of engineering. They were to pursue their labours and studies up to the time of Lieutenant rank, when they could specialise either as Executives, Engineers, or Marines, but as all came from a common source, and all had gone through a common training, all class prejudice would be, it was hoped, eliminated.

The progress of the new Cadets was very carefully studied during the first two years of the new system, and at the close of that time the Admiralty felt that the experience gained warranted them in instituting a detailed enquiry into the probable future development of the new officer. A committee was appointed under the presidency of Admiral Sir Archibald Douglas, G.C.V.O., K.C.B., who was at that time Commander-in-Chief at Portsmouth, to consider whether the time had arrived to formulate regulations for the allocation of the duties of future officers in the various branches of the service and to report :—

(*a*) Whether any necessity exists for the distinct classification of such officers under existing branches of the Navy with a view to their remaining specialised (i.e. Executive, Engineer, and Marine) for the whole of their future career.

(*b*) Whether specialisation for a period of their career only is necessary; and if so to indicate the procedure that should be followed to carry out the necessary duties of the service afloat.

(*c*) How best to provide for filling the higher scientific appointments of the Admiralty and the Dockyards.

With the Report we need not deal here except to say that it stated that there would be no need for a final division into the three branches, and that specialisation for a period only was necessary as opposed to permanent classification into definite lines. Since then very considerable modifications have been made to suit both prejudice and experience, but the net result will be, it is expected, a good all-round skilled engineer, able to thoroughly understand the multitude of engines a modern ship contains.

These, however, are the days of the specialist, and even if we successfully overcome the difficulty of the three branches, the specialist will still survive.

To-day the Cadet goes through his course of College training and is then drafted to sea in a special training cruiser. He becomes a midshipman

and is eligible for ships in the fleet. Here he has charge of a boat and other responsibilities thrown upon him to teach him how to handle men. His next step is Sub-Lieutenant, and another series of courses and College, more sea time and promotion to Lieutenant. It is from here that he becomes a specialist amongst specialists, gunnery, torpedo, or navigation claiming him for its own. If he desires, he may, having qualified in other directions, enter the Submarine Service or the Air Service. It is from these specialists that promotion to the higher ranks are chosen. We give here some of the regulations guiding the entry of Cadets into the Navy :—

No nomination is required by a Candidate for a Naval Cadetship. All that is necessary is to send an application to the Assistant Private Secretary to the First Lord of the Admiralty. Applications should not be made until the Candidate has reached 12½ years of age.

Candidates must be of pure European descent, and the sons either of natural-born or naturalised British subjects. In doubtful cases the burden of clear proof will rest upon the parents or guardians of Candidates.

All Naval Cadets entered under these regula-

tions are trained together until they pass for the rank of Lieutenant.

After passing for the rank of Lieutenant, they may be required to serve either as general service Officers or in one of the special branches, undertaking either Engineering, Gunnery, Torpedo, Navigation, or Marine duty.

As far as possible Officers selected for special service will be allowed to choose the branch in which they will qualify, subject to the proviso that all branches are satisfactorily filled.

On the entry of a Cadet, parents or guardians will be required to undertake that, in the event of his withdrawing or being withdrawn from the College, or from the Navy, before being confirmed as a Sub-Lieutenant, they will pay to the Admiralty, if demanded, the sum of £25 per term in respect of each term passed by him at the R.N. College, Osborne or Dartmouth, from the date of his entry to the date of his withdrawal, as a contribution towards the balance of the cost of his training and maintenance not covered by the annual payment of £75.

This undertaking does not apply to Cadets withdrawn at the request of the Admiralty.

The Qualifying Examination is in the following subjects :—

(1) English (including writing from dictation, and reproduction of the gist of a short passage twice read aloud to the Candidates).

(2) History and Geography, with special reference to the British Empire.

(3) Arithmetic and Algebra (two-thirds of the questions in this paper will be on Arithmetic. The use of Algebraic symbols and processes will be allowed).

Arithmetic.—The simple and compound rules, avoirdupois weight, linear and square and cubic measures, the elementary mensuration of rectangular surfaces and volumes, measure of capacity (pints, quarts, gallons), the metric system (the metre, gramme, and litre, with their multiples and submultiples), money (including the relationship of the cent to the dollar, and the centime to the franc), reduction, factors, the addition, subtraction, multiplication, division and simplification of vulgar fractions, non-recurring decimal fractions, simple proportion, ratio and percentage, simple interest.

Algebra.—The meaning of algebraic symbols, substitution of values, easy identities,

equations of the first degree, including simultaneous equations, verification of the solution of equations, problems leading to simple equations, multiplication and division by binomial operator, easy factors (excluding sum and difference of cubes), fractions with numerical denominators.

(4) Geometry. The paper will consist of questions both on Practical and Theoretical Geometry.

All Naval Cadets shall be subject to the Regulations for the time being in force respecting Cadets while at the Royal Naval Colleges at Osborne and Dartmouth and on board the Training Cruisers.

For all Cadets entering under these regulations payment will be at the rate of £75 per annum for the period under training at the Colleges, to be paid in sums of £25 every term in advance to the Cashier of the Bank of England on receipt of claim from the Accountant-General of the Navy. But the Lords Commissioners of the Admiralty reserve the power of selecting from among the Cadets entered on each occasion subsequent to November, 1913, a number not exceeding 25 per cent of the entries, with respect to whom the

annual payment will be £40 only (to be paid in sums of £13 6s. 8d. every term in advance). A proportion of those admitted at the reduced scale will be sons of Officers of the Navy, Army, or Marines, or of Civil Officers under the Board of Admiralty, the reduced scale being reserved for such boys up to a maximum of 10 per cent of the total entries on each occasion. The reduced scale will be allowed only in cases where the pecuniary circumstances of the parents are, in the opinion of the Lords Commissioners of the Admiralty, such as to justify it. *Forms* of application for admission at the reduced scale will be issued in respect of all candidates who are selected after interview to attend the Qualifying Examination, and when duly filled in should be returned as soon as possible *by such parents as desire to make application for the reduced scale.*

Claims will be made upon the Parents or Guardians by the Accountant-General of the Navy for the sums payable as they become due, and the money should be at once remitted.

In addition to the above payments, any expenses incurred by a Cadet for clothing, sports, books, instruments, washing, etc., as well as the allowance of 1s. a week paid as pocket-money, are included in the personal account sent to the

Parent from the College as soon as possible after the end of each term.

The course of study includes the following subjects :—

Mathematics, with Geometrical Drawing.
Physics and Chemistry.
Mechanics and applied Mechanics, with laboratory work.
Applied Electricity, with laboratory work.
Engineering, with workshop practice and Mechanical Drawing.
Seamanship, with Gunnery in the Training Cruiser.
Navigation.
French or German.
English Grammar and Composition.
English Literature.
History, including Naval History.
Geography.
Bible Study.
Drill and Physical Training.

A large proportion of the time of the Cadets is given to the practical study of Engineering in the Workshops and Instructional Steamboats attached to the Colleges, and also in the Training Cruisers.

CHAPTER V

ENTRY AND TRAINING (MEN)

THE entry and training of the men of the Navy, especially the latter, have gone through considerable modifications during the past decade. Engineering training has been introduced for bluejackets, who are to-day more of the nature of mechanics than seamen. We will, however, before going into the details of the training of the two great classes—Seamen and Stokers—take the ratings generally and their methods of entry. Any man or boy wishing to join H.M. Navy, no matter in what capacity, should apply to one or other of the following places :—

The Commodores of the Royal Naval Barracks at Portsmouth, Devonport, and Chatham.

Royal Naval Recruiters at—

Chatham—3, Military Road.
Portsmouth—The Hard, Portsea.
Devonport—New Passage Hill.
Oxford—211, Cowley Road.

London (East)—73, The Grove, Stratford, London, E.

The Station Officer at any Coast Guard Station.

The Royal Marine Recruiting Staff Officer at any of the following towns :—

Belfast—44, Clifton Street.
Birmingham—257, Broad Street.
Bristol—17, Bath Street.
Exeter—9, Goldsmith Street.
Glasgow—392, Argyle Street.
Liverpool—20, Canning Place.
London—7, Whitehall Place, S.W.
Manchester—289, Deansgate.
Nottingham—27, Derby Road.
Southampton—48, Bridge Road.
York—41, Tanner Row.

Bluejacket boys are entered between the ages of 15¼ and 16¾ for training as Seamen ; they must be of very good character and should have the written consent of parent or guardian on the form provided by the Recruiting Officer.

Boys who have been in Prisons or Reformatories are not received ; Industrial School Boys of very good character may be entered with the special permission of the Inspecting Captain of Boys' Training Ships.

Physical Standard.

Age.			Height. ft.	ins.	Chest. ins.
15¼ and under	15½	.. ..	5	0	30½
15½ ,,	15¾	.. ..	5	1½	31
15¾ ,,	16	.. ..	5	1	31½
16 ,,	16½	.. ..	5	2½	32
16½ ,,	16¾	.. ..	5	2	32½

Specially desirable boys of good physique and education are occasionally entered slightly under standard, with the permission of the Inspecting Captain of Boys' Training Ships.

Candidates for Engine-room Artificers must be competent workmen at one of the following trades, and of very good character and ability :—

Engine Fitters and Turners, Coppersmiths, Boilermakers, Engine Smiths. Occasionally a few Pattern Makers and Moulders are entered.

Age.—21 to 28 years.

Physical Standard.

Age.			Height. ft.	ins.	Chest. ins.
21 and under	22	.. ..	5	4	34½
22 ,,	23	.. ..	5	4	35
Over 23	..	.. ..	5	4	35½

Subjects of Examination.

To read and write, and work the first four rules of arithmetic, simple and compound ; be generally

acquainted with the names and uses of the different parts of a marine engine and boiler; understand the use and management of the steam and water gauges and other boiler mountings; know how to ascertain the density and height of water in the boilers; understand the nature and cause of priming, and know what should be done in the event of water passing into the cylinders; know how to act in the event of a bearing becoming heated, and on the occurrence of any of the ordinary casualties of an engine-room.

Coppersmiths, Engine Smiths and Boilermakers not fully acquainted with the construction and working of the marine engine may be accepted if otherwise qualified and able to work well at their respective trades.

Candidates for Stokers must be able-bodied young men of very good character.

No previous experience necessary.

Age.—18 to 23 years.

In exceptional cases men may be entered up to 25 years, with the special sanction of the Admiralty.

Physical Standard.

Age.	Height. ft.	Height. ins.	Chest. ins.		Chest. ins.
18 and under 19	5	3	34½	If 5 ft. 5 in. or over	35
19 „ 20	5	3	35		35½
20 „ 21	5	3	35½	If 5 ft. 7 in. or over	36
Over 21	5	3	36		36½

Candidates for Electrical Artificers must be able-bodied young men of very good character, who are thoroughly efficient Fitters and Turners, or Instrument Makers, with at least five years' practical experience.

Age.—21 to 28 years.

Physical Standard.

Same as for Engine-room Artificers.

Nature of Examination.

Educational.—Arithmetic, vulgar and decimal fractions (simple fractions only), dictation and reading.

Practical.—A practical examination in Fitting and Turning, or Instrument-making, details of which can be obtained from any Recruiting Officer.

Electricians are entered as Chief Petty Officers.

Candidates for Armourers must be able-bodied young men of very good character, who have worked as Whitesmith, Blacksmith, Engine Smith, Ship Smith, General Smith, Gunsmith, Fitter, Turner (Metal), or Cycle Machinist.

Age.—18 to 28 years.

Physical Standard.

Age.	Height. ft.	ins.	Age. ins.
18 and under 20	5	3	34
20 ,, 22	5	4	34½
22 ,, 23	5	4	35
Over 23	5	4	35½

On entry as Armourer's Crew.—To do a small fitting job and a little forge work.

Practically the same applies to all the other artisan ratings, each must be able to do some test job of his particular craft, and as they enter the Navy as craftsmen no training is necessary for them.

When there are vacancies for Writers and Ship's Stewards, examinations are held at the Naval Depots at Chatham, Portsmouth, and Devonport, and also at Queenstown, for the entry of Third Writers and Ship's Stewards' Assistants as required. Full particulars of such examinations, when held, are announced in the public Press.

Age.—18 to 23 years.

Subjects of Examination.

English (including Spelling, Handwriting, and Composition).

Commercial Arithmetic (excluding circulating decimals).

Marks are also given for (*a*) general smartness and knowledge as tested in conversation, and for (*b*) typewriting, and (*c*) shorthand.

Candidates are required to pass a Medical Examination.

These also go direct to the work of their special branches.

A bluejacket boy on entry is sent, in most cases, direct to the R.N. Training Ship *Ganges*, which is in reality the barracks at Shotley, on the east coast. Shotley is situated on a point of land opposite Harwich, with the River Stour on one side and the Orwell on the other. At these barracks every possible convenience is provided from a bakehouse to a bathroom and from a school to a hospital.

The very first thing after entry is to be kitted up, and from thence the boy passes from one course of instruction to another until he is fitted for drafting to sea.

Until a few years ago all boys who entered the Navy were given the same dead level of training; that is, no special care was taken to earmark promising boys, and so keep them under observation for future petty officers and entry into the wardroom as commissioned officers. To-day all that is altered and close observation is now kept, and a boy's record follows him to sea.

There is one feature of training-ship life worthy of special mention, because of its possible ultimate bearing on the service afloat. Up till 1907 all boys in the Training Service were given instructions in the preparation of their food, which they drew in messes on exactly the same lines as the men afloat.

This had long been recognised as a wasteful system, and when the revision of victualling took place in 1907 the Admiralty were anxious to introduce what was called the "General Mess," which had some time previously been introduced into the American Navy. Under this system instead of each mess drawing the food-stuffs allowed for the men in the mess, the ship's victualling officer draws the food in bulk for the whole ship's company, who do not see their food until it is placed before them at meal time, ready for consumption. Although this is an infinitely better system than the mess unit system, the men did not take kindly to the idea and the Admiralty wisely refrained from forcing on them what they did not want. Instead, they introduced it into the training service, and every new entry to-day, seaman or stoker, is catered for on the general mess system, which enables them to be victualled on really lavish lines. The idea was that if all youngsters who enter the sea service are brought up on

general mess lines the old and wasteful system now in vogue will gradually give way to the new. So far there is no sign of this, though it is to be hoped that gradually the change will come.

Naturally the first thing to do with a boy or youth who joins a fighting service is to lick him into shape physically; this is done both by means of physical training and small-arm drill. Then the boys are taken, under properly qualified instructors, through every phase of their profession: the working of cables and anchors, sail instruction, compass, boat work, gun drill and various other things. When they pass into the sea service they are still, while boys, messed together with a petty officer instructor to look after them. At the age of eighteen they are rated Ordinary Seamen, and at once have to start qualifying for the higher rating of Able Seamen. For this they have to have a fair knowledge of the bench, the actual course of training in the use of mechanical tools and in stokehold work being as follows:—

(*a*) Training in the use of simple tools under a Chief Stoker or Stoker Petty Officer and working at watertight doors, sluices, fire mains, ventilating systems, etc., is convenient. The following being a list of tools

he has to be able to handle: Screws and jacks, purchases (Weston's and others), Spanish windlass, hammers (hand and sledge), drafts and pincers, brace and bits, ratchet brace, screwdriver, spanners, tommies, wedges, files, hatchet, chisel.

(*b*) Ordinary stokehold day work, sweeping tubes and locks, cleaning, etc.

Alternate watches of the two duties working in three watches, in harbour or while under easy steaming at sea.

General stokehold watch keeping in three watches in harbour or while easy steaming at sea. In ships with cylindered boilers part of this instruction to be, if possible, in picket or other boats fitted with water-tube boilers.

That course of instruction has to take up thirty full working days. In addition they must have a fair working knowledge of guns, etc. But the regulations lay it down definitely that ordinary seamen are to be continuously instructed in the qualifications required for A.B. Their systematic instruction is to be part of the routine of every ship and is to be carefully enquired into at all inspections.

Having passed for Able Seaman and attained to that rating, they then pass to the gunnery and torpedo school for instruction in the higher branches of those two sciences, and also if they desire study for the higher substantive rank of Leading Seaman; as they advance at each grade they have to pass both professional and educational examinations; if a man desires to qualify for Warrant Officer then there are special courses and opportunities allowed for the same.

With the stoker class the regime is very similar. All new-entry stokers are sent to one or other of the depots, where they are first instructed to handle a rifle, given instruction in field gun and other drill, and then attend special classes for instruction in their own particular work.

All men of the stoker class are instructed in the use of simple tools, as well as in the performance of stokehold duties. Stokers, 1st Class, with two years' service as such, who show special aptitude for mechanical work, obtain the necessary certificate, and are recommended, are rated Acting Leading Stoker as required, and after not less than three years as Stoker, 1st Class, or as Acting Leading Stoker and Stoker, 1st Class, combined, are given a short course of instruction in a Mechanical Training establishment, at the close of

which, if they pass a satisfactory examination, they are confirmed as Leading Stoker. Those not selected for Mechanician are eligible later for advancement in vacancies to Stoker Petty Officer and Chief Stoker, subject to their possessing the prescribed qualifications.

A limited number of Acting Leading Stokers who display special intelligence and mechanical ability are noted as suitable candidates to qualify later for Mechanician. At the conclusion of the above-mentioned course they are specially rated Acting Stoker Petty Officer, and, if subsequently confirmed in that rating and recommended for advancement they are eligible, after not less than two years' service afloat as Acting Stoker Petty Officer and Stoker Petty Officer combined, for a two years' course of instruction for the rating of Mechanician. The instruction comprises Fitters' and Turners' work, a knowledge of the construction and working of engines and boilers, and general educational subjects. Those who pass the examination at the close of this course are rated Acting Mechanician and are confirmed in that rank after one year's service on passing the prescribed examination, and if they pass at the first opportunity are allowed to count the whole of their service as Acting Mechanician towards increase of pay.

The rating of Mechanician was introduced in 1905, and these men act as Engine Room Watch-keepers, relieving the Engine Room Artificers from that work to work at their own specialised trades. In the manner so briefly outlined here we have built up one of the finest naval personnels in the world.

CHAPTER VI

NAVAL PAY (OFFICERS)

THE pay of the Navy is a somewhat complicated affair, because, as the naval men say, "his pay ain't all his earnings." In addition to pay proper there are all kinds of allowances. But let us take the officers' pay as it stands. It will be seen that a good many ranks get progressive pay; our list includes all officers from Admiral of the Fleet to Surgeon, taking the different classes in rotation :—

	YEAR OF 365 DAYS.					
	MINIMUM.			MAXIMUM.		
	£	s.	d.	£	s.	d.
Admiral of the Fleet	2190	0	0	—		
Admiral	1825	0	0	—		
Vice-Admiral	1460	0	0	—		
Rear-Admiral	1095	0	0	—		
Commodore, 1st Class	1095	0	0	—		
Captain of the Fleet	1095	0	0	—		
Post Captain	410	12	6	602	5	0
Staff Captain	511	0	0	—		
Commander	401	10	0	—		
Lieutenant	182	10	0	292	0	0
Mate	146	0	0	—		

	YEAR OF 365 DAYS. MINIMUM.			MAXIMUM.		
	£	s.	d.	£	s.	d.
Sub-Lieutenant	91	5	0	—		
Midshipman	31	18	9	—		
Cadet	18	5	0	—		
Chaplain	219	0	0	401	10	0
Engineer Rear-Admiral	1095	0	0	—		
Engineer Captain	638	15	0	730	0	0
Engineer Commander	488	0	0	602	5	0
Engineer Lieutenant	182	10	0	365	0	0
Engineer Sub-Lieutenant ..	136	17	6	—		
Secretary	273	15	0	547	10	0
Paymaster-in-Chief	690	10	0	—		
Fleet Paymaster	383	5	0	602	5	0
Staff Paymaster	328	10	0	346	15	0
Paymaster	273	15	0	310	5	0
Assistant Paymaster	91	5	0	237	8	0
Clerk	73	0	0	—		
Assistant Clerk	45	12	6	—		
Inspector Surgeon-General ..	1300	0	0	—		
Deputy Surgeon-General ..	821	5	6	—		
Fleet Surgeon	492	15	0	635	15	0
Staff Surgeon	365	0	0	456	5	0
Surgeon	255	10	0	328	10	0

Theoretically every one in the Navy, from Admiral of the Fleet to Ship's Boy, gets the same daily rations; but officers in high positions have to do a lot of entertaining for the State, and so, taking from Admiral of the Fleet to Commodore 1st Class :—

	PER ANNUM. MAXIMUM.		
	£.	s.	d.
Table money is granted at rates varying according to the character of their appointments, the maximum rate being £4 10*s*. 0*d*. a day ..	1642	10	0

	PER ANNUM. MAXIMUM. £	s.	d.
Table Money whilst proceeding to or returning from Station in Flag Ship	547	10	0
Table Money to a Flag Officer or Commodore of the *First* Class, superintending a Dockyard *Abroad*	730	0	0
Ditto to a Flag Officer or Commodore of the *First* Class, superintending a Dockyard *at Home* ..	547	10	0
Ditto to a Commodore of the *Second* Class, in addition to his Full Pay and Command Money as Captain and allowance as Commodore, *Abroad*	365	0	0
Ditto to a Commodore of the *Second* Class, in addition to his Full Pay and Command Money as Captain and allowance as Commodore, *at Home*	182	10	0
Special allowance to the Commanders-in-Chief at Portsmouth, Devonport, The Nore	500	0	0

Then we come to the Servants of Commanders-in-Chief of the great Ports, and find :—

	£	s.	d.
Commuted Allowance in lieu of Retinue of Servants :—			
Commander-in-Chief, Portsmouth	500	0	0
Ditto Devonport	500	0	0
Ditto The Nore	500	0	0
Senior Officer, Queenstown	250	0	0
Senior Officer, Coast of Scotland	250	0	0
Flag Officer in command of R.N. War College, Portsmouth	200	0	0

As we have shown, the pay of a Captain ranges from £410 to £602 a year ; there is in addition the following :—

	PER ANNUM. MAXIMUM. £	s.	d.
Scale of Command Money to Captains, in addition to Pay :—			
When in command of a Sea-going Battleship, Battle Cruiser, Cruiser, Port Guard Ship or such other Ship as the Admiralty may direct	328	10	0
When in command of any other Ship, or of an Establishment	219	0	0
When appointed Chief of the Staff	328	10	0
All Flag Captains	219	0	0
When borne for Full Pay and employed on Special Service, but not in command of a Ship or Establishment	91	5	0
Scale of Command Money to Commanders in addition to Pay :—			
When in command of *Sea-going* Ships or Tenders	91	5	0
When in command of *Harbour* Ships or Tenders ..	45	1	6
Lieutenant-Commanders and Lieutenants in the independent command of any ship, or in command of any tender or a flotilla of Submarines, receive an increase of full pay of 1s. a day ..	18	5	0
Command Money to Lieut.-Commanders and Lieutenants in addition to full pay :—			
When in independent command of any Ship or in command of any Sea-going Tender	68	8	9
When in command of any Harbour Service Tender	45	12	6
Allowance when employed as part of Staff of Engine-room Department, if duly qualified to perform duties of a junior Engineer Officer ..	45	12	6
Lt.-Comdr. (E) / Lieutenant (E) — When performing (E) duties— in addition to full pay ..	91	5	0
Lt.-Comdr. (E) / Lieutenant (E) — Charge Pay, Senior Engineers-Allowance, and Flag Allowance are also payable at the rates applicable to Engineer Lieutenants	73	0	0

	PER ANNUM. MAXIMUM. £	s.	d.
Allowance to Lieut.-Commanders and Lieutenants in addition to full pay:—			
Senior of a Ship allowed a Captain in Command, but not allowed a Commander	45	12	6
Senior of a Ship allowed a Captain in Command and also a Commander	27	7	6
Senior of a Ship commanded by a Commander ..	27	7	6
Senior of a Ship allowed a Commander in command, or the alternative ranks of Commander or Lieut.-Commander or Lieutenant in command, when actually commanded by a Lieut.-Commander or Lieutenant	27	7	6
For Gunnery or Torpedo Duties, according to qualifications as Gunnery or Torpedo Officer ..	Maximum. 73	0	0
	Minimum. 27	7	6
For Navigating Duties	45	12	6
For Navigating Duties if of 5 years' seniority ..	54	15	0
For Navigating Duties if passed for 1st Class Ships for Pilotage without regard to seniority ..	73	0	0
For Navigating Duties when appointed to a Flag Ship, in addition to Navigating Allowance, Flag Allowance	45	12	6
	to 91	5	0
Lieut.-Commanders and Lieutenants who have obtained 1st Class Certificates in Gunnery or Torpedo at the completion of the short course, if on the Admiralty List for appointment to Ships not carrying an Officer for Gunnery or Torpedo duties, when so appointed	18	5	0
Lieut.-Commanders and Lieutenants on the Admiralty List (under order in Council of 13th May, 1901) for appointment to Ships allowed, but not carrying a Gunnery Officer when appointed for Gunnery duties	18	5	0

	PER ANNUM. MAXIMUM. £	s.	d.
Navigating or other officer performing the Duties of Naval Instructor in a ship in which an officer of that rank is allowed but not borne	45	12	6

Half-pay is substantially half the pay proper minus all allowances, so that being on half-pay is a real hardship.

CHAPTER VII

THE NAVY PAY (MEN)

THE pay of the Navy is to the landsman an inexplicable riddle, and it is also safe to say that the same is true of the average service man himself, for very few, if asked, could say just what pay and allowances any but his own rating get. Seeing that on the lower deck of a modern man of war there are no less than 90 different rates of pay and allowances, and that the pay-tables of officers and men take up no less than 21 closely printed pages of the official Navy List, it is not to be wondered at that the average writer carefully avoids this somewhat complicated subject. Yet it is infinitely interesting. Giving the officers a chapter to themselves, we will deal exclusively with the lower deck rating, that is, men below the rank of Warrant Officers. These include all ratings from Chief Petty Officer to Boy. There are no less than 20 different classes of Chief Petty Officers, but perhaps a better idea will be conveyed if we give the different ratings in full. These are :

Chief Petty Officers.

Master-at-Arms.
Chief Writer.
Chief Engine-room Artificer.
Chief Electrician. [Class.
Chief Petty Officer, Seaman
Chief Yeoman of Signals. [ist.
Chief Petty Officer Telegraph-
Chief Carpenter's Mate.
Chief Armourer.
Engine-room Artificer.
Mechanician.
Electrician.
Ship's Steward.
Chief Ship's Cook.
Chief Bandmaster.
Chief Stoker.
Chief Sick Berth Steward.
Draughtsman.
Officers' Chief Steward.
Officers' Chief Cook.

Petty Officers.

Ship's Corporal.
First Writer.
Petty Officer, Seaman Class.
Yeoman of Signals.
Petty Officer Telegraphist.
Sailmaker.
Carpenter's Mate.
Blacksmith.
Armourer.
Plumber.
Painter, First Class.
Cooper.
Stoker Petty Officer.
Second Ship's Steward.
Sick Berth Steward.
Ship's Cook.
Bandmaster.
Officers' Steward, First Class.
Officers' Cook, First Class.
Head Krooman.
Tindal of Seedies.

Remainder of Ship's Company.

Leading Seaman.
Leading Signalman.
Leading Telegraphist.
Sailmaker's Mate.
Leading Stoker.
Second Cooper.
Armourer's Mate.
Blacksmith's Mate.
Painter, Second Class.
Plumber's Mate.
Second Sick Berth Steward.
Sick Berth Attendant.
Leading Cook's Mate.
Band Corporal.
Ship's Musician.
Second Writer.
Head Krooman.
Tindal of Seedies.
Leading Carpenter's Crew.
Shipwright.
Ship's Steward Assistant.
Ship's Steward's Boy.
Officers' Steward, Second Class.
Officers' Cook, Second Class.
Able Seaman.
Ordinary Seaman.
Boy.
Signalman.
Ordinary Signalman.
Signal Boy.
Telegraphist.

Stoker, First Class.
Stoker, Second Class.
Armourer's Crew.
Carpenter's Crew.
Cooper's Crew.
Third Writer.
Boy Writer.
Bandsman.
Second Head Krooman.
Second Tindal of Seedies.
Officers' Steward, Third Class.
Officers' Cook, Third Class.
Cook's Mate.

MARINES.

Colour-Sergeant.
Bandmaster, First Class.
Sergeant.
Bandmaster, Second Class.
Corporal.
Band Corporal.
Bombardier.
Gunner.
Private.
Musician and Bugler.

These are divided up into six branches, viz. Military Branch, Engineer Branch, Artisan Branch, Medical Branch, Accountant Branch, Police. Here are their numbers, with their maximum and minimum rates of pay :—

CLASS.	Pay per day from s. d.	to s. d.	Numbers.	Total Pay. £
Seaman Class	1/1	6/–	44,947	1,849,208
Stoker Class	1/5	6/4	39,274	1,704,251
Artisans..	2/1	6/9	4,632	320,151
Electrical Artificers ..	5/6	8/–	823	83,639
Engine-room Artificers	3/–	8/–	4,706	536,196
Mechanicians	4/6	7/–	766	61,618
Miscellaneous Ratings*	1/–	6/–	8,881	420,047
Boys	—	–/7	5,374	51,768
			109,403	5,056,779

There are also in the Navy two further divisions which affect all these and called continuous and

* These include Writers, Police, Ship's Stewards, Cooks, etc.

non-continuous service men. The continuous service men are those who engage for, first, 12 years (seaman class from the age of 18), and for a second period of 10 years to complete time for pension. Every continuous service man, provided his conduct is all right, is eligible for a pension, the non-continuous service man is not eligible for a pension. Non-continuous service engage for a period of not more than 5 years, when they may, if they wish, re-engage for another 5, and so continue.

In connection with these two there is a somewhat startling anomaly. Pensions, as we all know, are "deferred pay." This fact was made quite clear some short time since by the First Lord, who, in replying to a question in the House on admirals and other officers with pensions seeking lucrative appointments with gun manufacturing firms, pointed out that, as "pensions are deferred pay, the Admiralty have no power to interfere."

When the Australian Navy was about to be founded Admiral Sir Reginald Henderson, K.C.B., was invited by the Commonwealth Government to draw up recommendations for their guidance. Dealing with the system of pensions in the British Navy, he said :

(*a*) A seaman who completes 12 years' service and then leaves the Navy receives no deferred pay, although if he wished, and is permitted, to re-engage for a further 10 years, he would receive a pension on completion of the total of 22 years' service, the first 12 years reckoning as part of the pensionable service; or

(*b*) In the case of a man who dies in, say, his 21st year of service, no benefit from deferred pay would accrue to his next of kin.

He therefore suggested that the exact quota of "deferred pay" should be stated and be held in trust for the man at compound interest, to be handed to him in bulk when he left, instead of a pension. This course has been adopted. Coming back to our own Navy, it is only reasonable to assume that non-continuous service men not entitled to a pension, and therefore having no portion of their pay deferred, would receive a higher rate of pay than the pensionable men. Yet when we turn to the official pay-tables we find the very reverse is the case. Here are the rates :—

Ratings.	Continuous Service. One day. s.	d.	Non-continuous Service. One day. s.	d.
Ordinary Seaman	1	3	1	1
Able Seaman	1	8	1	5
After 6 years' man's service	1	11	—	
Leading Seaman	2	2	1	7
After 3 years, if passed for Petty Officer ..	2	4	1	7
Petty Officer	3	0	1	11
After 3 years	3	2	1	11
After 6 years	3	4	1	11
Chief Petty Officer	3	8	2	4
After 3 years	4	0	2	6
After 6 years	4	4	2	6

This anomaly, which at first sight is inexplicable, becomes quite consistent when traced to its source.

Prior to 1853 the Navy had no fixed personnel. As ships commissioned it was left to the respective captains to raise crews, the men signing on for the commission, at the end of which they were free to go where they pleased. In 1853 a Royal Commission was appointed to enquire into the manning of the fleet, and recommended a system of continuous service, the men to be raised as boys, properly trained, and then drafted into the sea-going fleet. Like all new things, it did not take on with the old type of seaman, and so for years the continuous service system ran concurrently. Desiring to raise a long service personnel, the Admiralty of the time did all they could to discourage the short service men, and so fixed their

pay at a lower rate than the long service men, and that system remains to this day, although, for the purpose of building up a Fleet Reserve, the Admiralty some years ago reintroduced a system of short service.*

We will now return to our long service personnel and their rates of pay. Should the seeker after information endeavour to verify the figures of minimum and maximum rates given in the Navy Estimates with the pay-tables given in the Navy List, he would find them all out. For example, while the Navy Estimates give the maximum pay of the Seaman Class as 6s. per day, the Navy List states it to be 4s. 4d. The difference is explained by the Navy List giving the pay only and the Estimates including pay *and allowances* under one heading. It is these allowances that are so puzzling to the lay mind. There are two scales of pay, one called the substantive and the other non-substantive. The substantive rates for the seaman class are Boy 7d. per day, Ordinary Seaman 1s. 3d., Able Seaman 1s. 8d. to 1s. 11d., Leading Seaman 2s. 2d. to 2s. 4d., Petty Officer 3s. to 3s. 4d., Chief Petty Officer 3s. 8d. to 4s. 4d. Quite outside of being a seaman he may become a gunnery expert, torpedo expert, a physical

* This is dealt with in a separate chapter.

training expert, or may join the submarine service, for all of which he receives extra pay, in accordance with the value of the expert knowledge or ability he has attained, and these extra rates are called non-substantive rates. They have developed and grown in number as the Navy has developed.

When the most powerful gun the Navy carried had a destructive limit of about two hundred yards, and ships were run alongside each other before firing began, it required no great amount of skill to hit the target, therefore no specialists were required. As naval guns grew in size and range, and got more complicated in their fittings, it became necessary to train a certain number of men as guides to their fellows, and so the non-substantive rating of "Seaman Gunner" was established. These were paid 4d. per day extra, and were allowed to count each 5 years served as 6 for pension. At the beginning of the present century a great development in gunnery took place, and it was necessary to train further experts to look after certain special work, therefore the number of non-substantive rates began to increase and multiply, until in 1907 the whole system was overhauled, when there was a revision of rates of pay, and a new system established. These two systems are now running concurrently, and will

do so till all the old rates die out by lapse of time. They are :—

	Per day. s.	d.
New System.		
Gunnery Lieutenant's Writer—to Seamen Gunner employed as in ships having hydraulic or electric gun mountings	0	3
Gunnery Non-substantive Ratings :—		
Seaman Gunner (S.G.) (A.B.'s and Leading Seamen) ..	0	3
Gunlayer, 3rd Class (G.L. 3 Cl.) (A.B.'s and higher ratings)	0	2
Gunlayer, 2nd Class (G.L. 2 Cl.) (A.B.'s and higher ratings)	0	6
Gunlayer, 1st Class (G.L. 1 Cl.) (Ratings above A.B.)	0	8
Gunner's Mate (G.M.) (Ratings above A.B. if passed for P.O.)	0	8
Old System.		
Trained Man	0	1
Seaman qualified in Gunnery (Q.G.)	0	2
Seaman Gunner (S.G.)	0	4
Sight-setter (S.S.)	0	6
Gunlayer (G.L.)	0	10
Turret Sight-setter (T.S.S.)	0	10
Turret Gunlayer (T.G.L.)	1	0
A Turret Gunlayer, who, with Admiralty approval re-engages after completing time for pension, may receive in addition to the above, continuous pay of 1s. a day.		
Gunnery Instructor (G.I.)—in addition to any one of the allowances marked above	0	8

A.B.'s and Leading Seamen who are Gunlayers or Gunner's Mates also draw pay as S.G. Gunner's Mates may hold rating of Gunlayer 1st Class.

All these payments are, of course, in addition to their substantive rates of pay.

When the torpedo was first introduced into the

service it became necessary for men to specialise in torpedo work, and for a time men were allowed to be both gunnery and torpedo specialists; but as the torpedo and all work in connection with electricity grew, torpedo ratings specialised in that subject alone. These rates were also revised in 1907, and to-day are :—

	Per day. s.	d.
New System.		
Torpedo Coxswain (T.C.) (Chief and other P.O.'s, G. or T.)	0	7
Torpedo Non-substantive Ratings :—		
Seaman Torpedo Man (S.T.) (A.B.'s and Leading Seamen)	0	3
Leading Torpedo Man (L.T.O.) (A.B.'s and all higher ratings)	0	6
Torpedo Gunner's Mate (T.G.M.) (Ratings above A.B. if passed for Petty Officer)	0	8
" " " (Chief and other P.O.'s)	1	4
Old System (payable to men who qualified or requalified between 1st Dec., 1903, and 30th Sept., 1907) :—		
Torpedo Instructor (T.I.)	1	8
Torpedo Coxswain (T.C.)	1	0
Leading Torpedo Man (L.T.O.)	0	10
Seaman Torpedo Man (S.T.)	0	4

Note.—A.B.'s and Leading Seamen who are L.T.O. or T.G.M. also draw pay as S.T. The grant of the higher rate of pay for T.G.M. will be regulated by the Torpedo Schools.

With the passing of masts and sails the whole health of the Navy came under consideration. So long as we had sail drill with continual running aloft, and the larger part of the ship's company were seaman ratings employed on that work, they had quite enough physical exercise to keep

them in health. But as the whole nature of the personnel changed, and "iron pots" began to replace our masted ships, it was necessary to find some other form of exercise for the men; for men confined in the small spaces of a ship rapidly deteriorate in health if not looked after. So a physical training system was established. At the commencement this was very crude. The rating of "Gymnastic Instructor" was established, the pay being 1d. per day for same; then in 1904, with the opening of Portsmouth Naval Barracks, a Physical Training School was established, and the whole thing put on a much higher footing and Physical Training Instructors established, this system, with everything else, being revised in 1907. The non-substantive rates of pay for these experts are :—

New System.	Per year.			Per day.	
Seamen and Marines.	£	*s.*	*d.*	*s.*	*d.*
Physical Training Instructor, 2nd Class .	6	1	8	0	4
,, ,, ,, 1st Class . .	12	3	4	0	8
Staff Physical Training Instructor . .	18	5	0	1	0
Senior Staff Physical Training Instructor	24	6	8	1	4
Old System.					
Physical Training Instructor, 3rd Class . .	3	0	10	0	2
,, ,, ,, 2nd Class . .	9	2	6	0	6
,, ,, ,, 1st Class . .	18	5	0	1	0
,, ,, ,, Staff . .	22	16	3	1	3
,, ,, ,, Senior Staff	27	7	6	1	6

Chief and First-class Petty Officers.

In connection with those revisions of rates of pay in 1907 the Admiralty worked off a little joke on the lower deck which it has never forgotten. The pay of the Able Seaman was established in 1860 as 1s. 7d. per day. Some time after there also came into existence the non-substantive rate of "trained man," the pay for which was 1d. per day. As soon as a Boy was rated Ordinary Seaman he qualified for trained man, because until he was so qualified he was not allowed to be promoted to A.B.; therefore the real pay of the A.B. was 1s. 8d. per day. The Revision Committee of 1907 decided to raise the substantive pay of the A.B. to 1s. 8d. per day, and at the same time they abolished the non-substantive rating of trained man, so that the Able Seamen of the service found themselves just as well off with their rise as they were without it! An "Admiralty rise" is still one of the lower deck phrases!

The Signal Class, who also rank as seamen, have no non-substantive rates, as they are looked on as all experts; their substantive rates are therefore fixed higher, being: Ordinary Signalman or Telegraphist, 1s. 3d.; Signalman or Telegraphist, 1s. 11d. to 2s. 2d.; Leading Signalman or Telegraphist, 2s. 6d. to 2s. 10d.; Yeoman of Signals or Petty Officer Telegraphist, 3s. 4d. to

3s. 8d.; Chief Yeoman of Signals or C.P.O. Telegraphist, 4s. 4d. to 4s. 10d. Half of these latter get 6d. a day extra.

The whole of these ratings can rise to the rank of Lieutenant R.N. through Warrant Officer, or to Commander R.N. by direct transfer to Commissioned rank from specially chosen young Petty Officers. This latter opportunity dates from August 5th, 1912. The total number of Warrant Officers of all classes is 2082, their pay and allowances being as follows :—

Class.	Pay per day from	Pay per day to	Allowances from	Allowances to	Nos.
	s. d.	s. d.	£ s. d.	£ s. d.	
Acting Warrant Officers ..	6 0	—	—	—	7
Gunners and Boatswains ..	6 0	9 0	9 2 6	45 12 6	1162
Carpenters	7 0	9 0	9 2 6	45 12 6	218
Artificer Engineers	8 6	10 6	18 5 0	91 5 0	576
Warrant Mechanicians ..	7 6	10 6	18 5 0	91 5 0	36
Warrant Telegraphists ..	6 0	9 0	18 5 0	63 17 6	16
Warrant Writers	7 0	10 0	—	—	15
Warrant Electricians ..	8 6	10 6	—	—	21
Warrant Armourers ..	7 0	10 0	—	—	11
Head Stewards	8 0	10 0	—	—	10
Chief Masters-at-Arms ..	7 0	10 0	—	—	6
Instructors in Cookery ..	6 0	8 0	—	—	3
Head Wardmaster	6 0	9 0	—	—	1
			Total		2082

While Lieutenants promoted from Warrant Officers get from 13s. to 15s. per day, with command money, when in command of their own ships, varying from £45 12s. 6d. to £68 8s. 9d. per annum, also allowances varying from £18 8s. to £45 12s. 6d.

The next great class in the Navy is the Stokers, totalling in numbers one-third of the whole personnel. With the single exception of "Engineer's Writer," for which the pay is 6d. per day, there are no opportunities for these to supplement their pay with non-substantive ratings. We have already shown the enormous growth of Stoker ratings of late years, and yet prior to 1906 this great class had no opportunity of rising beyond the rank of Chief Petty Officer. In 1906 the new rank of Mechanician was created, and so the Stoker of to-day can rise from Stoker Second Class, whose pay is 1s. 8d. per day, to Commissioned Warrant Mechanician, with pay from 13s. 6d. to 15s. 6d. per day, and allowances: these are, when in charge of engines of their own ship, £18 5s. per annum; table money £91 5s., and other allowances ranging from £18 5s. to £45 12s. 6d. per annum.

The Engine-room Artificers are, and always have been since their introduction, the fortunate ones of the lower deck. They enter the service as Chief Petty Officers at 5s. 6d. a day, and in a comparatively short time (that is, compared with other ratings) work themselves up to Engineer-Lieutenant, with pay of 14s. 6d. to 16s. 6d. per day and the usual allowances.

When we come to the Artisans' Branch we find

something of a muddle and strange inconsistencies. The Carpenters and Shipwrights can work their way up to be Carpenter-Lieutenants, with from 13s. to 15s. per day; the Armourers can only succeed to Warrant rank; while the Painter, Plumber, Cooper, and Blacksmith can only rise to Petty Officer rank, with a maximum pay per day of 4s. This is one of the startling anomalies of the Naval rating system. All pay in the Navy goes by rank; that is, to get a rise of pay you must get a rise of rank. It is certainly not possible to extend the rank of either a Painter, Plumber, Cooper, or Blacksmith beyond that of Chief Petty Officer (they cannot even attain to that as things are), but it should be possible to give them progressive rates of pay without rank, and some arrangement whereby they benefited in their pension from long service and good conduct. They and the Sailmakers, of whom there are very few to-day, are absolutely the only people in the Navy to-day whose career ends with the rank of Petty Officer.

Having dealt with the three great branches of the Navy, Military or Executive, Engineer, and Artisan, we will now turn our attention to the smaller classes, taking first the Accountant Branch. These include Writers, Ship's Stewards, and Ship's Cooks. The Boy Writer starts at 1s. a day, and can

work up to the position of Warrant Writer, with 10s. per day. The only supplementary allowances they can earn is :—

	Per day. s.	d.
Writers.—Allowance to, when serving in ships not allowed an Officer of the Accountant Branch. If more than one borne, to senior only	1	0

With the Ship's Stewards the case is different; they have charge of large quantities of victualling, and clothing stores and implements. Their pay starts from Ship's Steward's Boy 7d. per day, and ends with Head Steward of Warrant Officer rank, at 10s. per day. Their supplementary pay is :—

	Per day. s.	d.
Victualling Store allowance to—		
Ship's Steward in receipt of 3s. 6d. a day—when Steward of the Ship, or otherwise allowed for charge of Stores	1	0
Ship's Steward with 4s. and upwards a day—when Steward of the Ship, or otherwise allowed for charge of Stores	1	6
Second Ship's Steward—when Steward of the Ship, or otherwise allowed for charge of Stores, or in any Vessel on board which care and maintenance parties sleep and are victualled	0	6
Ship's Steward's Assistant or other person doing duty as such—in tenders or other vessels not allowed a Ship's Steward or Second Ship's Steward, or in any Vessel on board which care and maintenance parties sleep and are victualled	0	6

As already stated, the Navy pay-table is full of little oddities and inconsistencies. We find one

in connection with the Writers and Ship's Stewards. In the old days both of these classes were recruited from Greenwich School boys. These boys entered on the same day, they both wore exactly the same type of dress, and did the same work. The pay of the Writer Boy is 1s. per day, that of a Ship's Steward's Boy 7d. per day.

Some years ago the authorities took to recruiting these classes from the shore, and from time to time candidates for Third Writer and Ship's Steward's Assistant are allowed to present themselves for examination at one or other of the Naval Depots. All candidates sit down to a common examination, and no mention is made of their future career. At the end of the examination the successful ones, as far as possible, are allowed to choose which they will be—Writer or Ship's Steward. Again, the dress is the same, the work identical, but the Third Writer starts with 2s. per day, the Ship's Steward's Assistant with 1s. 6d. No one is able to explain why. It always has been so, and that ends it.

The Ship's Cooks, who are also included in the Accountant Branch (one of the queer things of the Navy, by the way), start at 1s. 8d. per day, and can go up to Instructor of Cookery, at 8s. per day. These are their absolute minimum and

maximum, for no supplementary pay comes their way.

Perhaps no class in the Navy has improved in late years so much as the Medical Branch—not officers, but men; in general ability and knowledge they bear no resemblance to the Sick Berth Stewards of a generation ago, whom the sailorman contemptuously referred to as "poultice mixer." To-day they are a very fine, highly skilled class, deserving better at the hands of the State than they get. They start at 1s. 6d. per day, and can go up to Head Wardmaster, with Warrant rank, and maximum pay 9s. per day. Their supplementary payments are:—

	Per day. s.	d.
Dispensing Allowance to—		
Chief Sick Berth Stewards, Sick Berth Stewards, and Second Sick Berth Stewards serving afloat, and to such Sick Berth ratings when employed on dispensing duties at certain Naval Hospitals and Sick Quarters	0	2
Laboratory Attendant—Payable only when employed in Hospitals and Hospital Ships, or as specially ordered by Admiralty	0	6
Lunatic Ward Attendant—Payable only when employed in Hospitals	0	4
Masseur—Payable only when employed in Hospitals and Hospital Ships, or as specially ordered by Admiralty	0	6
Operating Room Attendant—Payable only when employed in Hospitals and Hospital Ships, or as specially ordered by Admiralty	0	6
Zymotic Ward Attendant—Payable only when employed in Hospitals	0	6

And the pay-table also tells us that :—

To person acting as Sick Berth rating in a vessel where this rating is not allowed, or, if allowed, is not borne, an allowance of 2d. or 3d. a day according to the responsibilities involved.

While this was a very common experience in the old days, we are happy to say that very little of this kind of thing is found in the modern Navy !

Last, but not least, come the Ship's Police. Small in numbers (about 850), with almost unlimited powers for good or evil, recruited from both seamen and Marines, their wages start at 2s. 8d. per day, and go up to 10s., as Chief Master-at-Arms, with Warrant rank ; there are only six of these latter in the service, so that opportunity is not great. In addition to the foregoing rates, any man below the rank of Warrant Officer can attain to three good conduct badges, each carrying with it 1d. per day pay.

CHAPTER VIII

THE ROYAL MARINES

As I was a-spitting into the ditch a-board o' the *Crocodile*,
I seed a man on a man-o'-war got up in the Reg'lars' style.
'E was scrapin' the paint from off of 'er plates, and I says to 'im,
" 'Oo are you ? "
Sez 'e, " I'm a Jolly—'Er Majesty's Jolly—soldier and sailor too ! "
Now 'is work begins, at Gaud knows when, and 'is work is never through—
'E isn't one o' the Reg'lar line, nor 'e isn't one of the crew—
'E's a kind of a giddy harumfrodite—soldier and sailor too !

RUDYARD KIPLING.

THE Royal Marines are such an integral part of the Navy, as it exists to-day, that no book dealing with our First Line of Defence would be complete that ventured to leave them out. In 1664 one thousand two hundred troops were raised for service on shipboard, and these proving themselves very useful in the method of fighting of the time, were retained and the number extended. By 1775 they had got sufficiently strong for Divisions to be established at Chatham, Portsmouth, and Plymouth.

The badge of the corps is a globe, which was

selected by George IV, which, as he said, is "a badge you have honourably earned, the great globe itself, your most proper and most distinctive badge." This was the outcome of the Marines having no colours; their battle honours were so numerous that no flag could have held them, so George IV solved the difficulty by giving them the globe. The globe is surrounded by a wreath of laurels in commemoration of the magnificent work the Marines did at Belleisle in 1761, and is surmounted by the word "Gibraltar," the defence of the Rock from 1704 to 1706 being one of the most important, as it was one of the earliest, achievements of the Marines. Prior to 1802 they were simply Marines, then they became Royal Marines, and in the Navy to-day they are always referred to as "The Royals," when other and more familiar names are not indulged in, which we will deal with presently. In 1862 they were split into two parts, the "Blues" and "Reds," or Royal Marine Artillery (about 3500 strong) and Royal Marine Light Infantry, the total comprising about 20,000 officers and men. The Royal Marine Artillery are stationed at Eastney, Portsmouth, and wear a blue uniform; the Royal Marine Light Infantry barracks are situated at Gosport, Chatham, and Plymouth,

with a depot at Deal. It is to the depot that all recruits for the R.M.L.I. are sent for their initial training.

Of their total number about one-half are always afloat, serving in our ships of war. When afloat their main duty is to act as sentry in various parts of the ship. The Captain's cabin door, the ward room (officers' quarters), spirit room, magazine, etc., all have Marine sentries posted over them. This, of course, dates back to the days when our ships of war were manned by the press-gang and from our prison hulks; then, of course, ships were always in a state of incipient mutiny, and the Marines were really introduced on board to act as an armed guard for the protection of the officers against the men. To ensure this not only were sentries posted all over the ship, but, while the officers' quarters were right aft and the seamen's right forward, the Marines were always quartered in between; and while the small arms, rifles, cutlasses, etc., were stowed in racks on the half-deck with a Marine sentry over them, the Marines stored their own in their messes, so that they might be always handy in the event of a mutiny.

Outside their sentry duties they do exactly similar work to the bluejackets, and may, should necessity arise, be called on to go down into the

stokehold to act as stokers. Marines afloat can also be detailed for special duties, such as butcher, barber, lamp-trimmer, etc. Those performing these duties in ships, where they are officially allowed, get twopence a day extra pay. The general pay of the Marines (rank and file) is as shown on page 97.

These are what the service calls the substantive rates, and do not represent the possible earnings of the men. There are also gunnery qualifications, each of which carries its own special rate of pay. These are as follows :—

	Per day.
R.M. Artillery :—	
Gunlayer, 3rd Class	2d.
Gunlayer, 2nd Class	6d.
Gunlayer, 1st Class	8d.
R.M. Light Infantry :—	
Qualified man in gunnery	1d.
Gunlayer, 3rd Class	3d.
Gunlayer, 2nd Class	7d.
Gunlayer, 1st Class	9d.

As already mentioned, the Marines were originally introduced on board ship to keep the seamen of the day in order, should necessity arise, and to overawe them by their presence on all occasions; naturally, therefore, no great amount of love was lost between the two classes, all of which has happily died out, and to-day the greatest good

Ranks.	Artillery.		Light Infantry.	
	Year of 365 Days.	One Day.	Year of 365 Days.	One Day.
N.C. Officers and Men :—	£ s. d.	s. d.	£ s. d.	s. d.
Schoolmasters under 12 years' service ..	84 8 1½ to 111 15 7½	4 7½ to 6 1½	84 8 1½ to 111 15 7½	4 7½ to 6 1½
Quartermaster Sergeant	104 3 6½	5 8½	92 0 2½	5 0½
Barrack Sergeant	67 13 6½	3 8½	52 9 4½	2 10½
Quartermaster Sergeant Instructors ..	82 17 8½	4 6½	69 3 11½	3 9½
Hospital Staff Sergeant	—	—	82 17 8½	4 6½
Armourer Sergeant	105 13 11½	5 9½	105 13 11½	5 9½
Colour Sergeant	76 0 10	4 2	63 17 6	3 6
Sergeant	65 7 11	3 7	51 14 2	2 10
Paid Lance-Sergeant	59 6 3	3 3	45 1 6	2 6
Corporal	53 4 7	2 11	39 10 10	2 2
Bombardier	48 13 4	2 8	—	—
Paid Acting Bombardier	33 9 2	1 10	—	—
Paid Lance-Corporal	—	—	30 8 4	1 8
Musician	28 17 11	1 7	25 17 1	1 5
Bugler	28 17 11	1 7	25 17 1	1 5
Gunner	28 17 11	1 7	—	—
,, 2nd Class	27 7 6	1 6	—	—
Private	—	—	25 17 1	1 5
Private	24 6 8	1 4	24 6 8	1 4

feeling prevails, though the old nicknames which used to be as the proverbial red rag to the bull are still used in banter and good-natured chaff.

Nothing in the Navy is called by its right name if a nickname can be found for it (we deal with this feature of naval life in a special chapter), and so the Marines from the earliest days came to be called "The Jollies" (from "Jollie," a slang term, meaning to bluff), or "The Joeys." Later, when they were divided into two parts, the Royal Marine Artillery became "The Bullocks" (from their size), and the Light Infantry "Turkeys" (from their red tunics). There was also the generic term "leather neck," which the bluejacket gives to all soldiers, owing to the old custom of wearing a leather stock to keep their chins up.

Naturally the Marines retaliate. They dub the sailorman "flatfoot." Now flatfootedness is one of the physical defects absolutely barred from the Navy; to call a man a flatfoot, therefore, is to delicately hint that he is physically unfit to be in the service.

The original reason for having Marines on board having long since disappeared, it was perhaps only natural that an attempt should be made to transfer them back to the Army. It may be mentioned here, in way of passing, that "soldier

and sailor too," applied to the Marine, is no mere figure of speech, as while afloat they come under the control of the Admiralty, and are subject to the Naval Discipline Act, as soon as they disembark and return to their barracks they come under the military authorities and the Army Act—so suggestions were made that they should still remain a special corps of Marines and be used for garrisoning our coaling stations in all parts of the world. Thus their cost of upkeep would be transferred from the Navy to the Army Estimates. But they still remain an integral part of the Navy, and are likely to, in fact, the Navy owes a very great deal of its latter-day smartness and efficiency to the Marines.

The Marines, both as a body and individually, are extraordinarily keen in excelling in all they undertake; it is doubtful if any other corps in existence has the same *esprit de corps* as our sea soldier, so that in big-gun shooting, rifle shooting, sport of all kinds, and shipboard evolutions of all kinds, they are always creating records. The bluejacket is very largely bitten by the same microbe, and so a healthy and perfectly good-natured rivalry has sprung up between the two which is unfailingly good for the Navy as a whole. In the sporting world the Marines have won the

Army Football Cup twice in recent years, while the Amateur Cup went to the Gosport Division a couple of years back. At the 1914 Naval and Military Tournament, at Olympia, they won every event for which they entered with a single exception. At a Portsmouth Rifle Meeting, 1914, out of a programme of thirteen events they took two first prizes, six seconds, and five thirds. In 1913 the R.M.A. won the Empire Cup for rifle shooting in a world-wide contest, and for 1914 they have taken first place in Great Britain in the same contest.

CHAPTER IX

THE SHIP'S COMPANY

MANY people express surprise that a modern ship of war, with its comparatively small number of guns and the very latest mechanical appliances for the superseding of manual labour, should carry such an enormous number of hands —anything from 750 to 1000. Further, that the more perfect they get from the machine point of view the more hands do they carry. This rapidly growing increase in the number of men carried is one of the great problems the Admiralty have to solve, and were in the process of doing so when the war broke out. The difficulty is connected with the engine-room and speed. The old *Majestic* class of battleship, with their 14,900 tons displacement, and 17½ knots speed, carried only 750 hands, but in guns four 12-in., twelve 6-in., sixteen 12 pdrs., four 3 pdrs., and two machine-guns. The *Queen Mary*, with her eight 13·5-in., sixteen 4-in., and four 3 pdrs., carries 1000 officers and men, but her speed is 28 knots. The

layman will probably be surprised to learn what each extra knot of speed means in boiler power, and hence increased personnel to meet it. Going back only a few years, we find that whereas the "Lancasters" with their 23 knots speed demanded only 27,000 horse-power, the "Indomitables" with 26 knots demanded 41,000 horse-power, the *Queen Mary*, 28 knots, demands 75,000 horse-power, that is, an increase of 48,000 horse-power for an increase in speed of 5 knots.

If the horse-power was the only thing it would not matter, but this question of speed in coal-driven ships is altering the whole personnel of our Navy, as the following figures will show: For the year 1906–7 the total lower deck ratings, not counting coastguards or marines, was 89,351. Of these 43,617 were "seamen" ratings, that is, men of the executive branch who fight the guns, while 32,894 were stokehold and engine-room ratings—men who drive the engines and feed the boilers. For the year 1913–14 the total lower deck personnel, again excluding coastguards and marines, was 102,718, of these 43,512 were "seamen" class, and 44,777 engine-room and stokehold ratings. This was the first time in the history of the Navy that the engineers' department was numerically stronger than the executive, and this was all

brought about by the increased demand for speed in our ships.

With any increase of speed there must be an increase of boiler space and bunker space for coal, with the consequent increase of ratings to handle this coal and keep those supplied who are feeding the furnaces. A very high authority has declared that if we could substitute oil for coal, even with the present type of engine, it would reduce the present engine and boiler room personnel quite 25 per cent, while if internal combustion engines took the place of the present type, a reduction of quite 60 per cent in the personnel would follow. During the past few years we have been building a number of small ships entirely oil-driven, and also five battleships known as the "Queen Elizabeths," which will use oil only. This policy at once shows its effect on the personnel, for while the total has gone up to 104,487 for the year 1914–15, the engine-room ratings show a small reduction, from 44,777 to 44,746, while the "seamen" ratings have increased from 43,512 to 44,947.

Having dealt with the general, let us now turn to the particular, and place our modern ship's company, dealing with the very latest type of Dreadnought, viz. the *Iron Duke* class. In the first place a ship of this class carries roughly

sixty officers (the *Iron Duke* being Commander-in-Chief's flagship, carries eighty-seven). Of the remainder, roughly one-third are seamen and signal ratings, or what the Navy calls the Executive Branch. A very fair proportion of these are expert gunnery and torpedo ratings, and these would occupy all the responsible positions at the guns, torpedo tubes, magazines, and shell-room, the unskilled portion of the executive branch being utilised in the less important gun positions, handing rooms, and ammunition passages, and so rapid is the fire of our modern guns that a fairly large personnel is required in these positions to keep the guns supplied with ammunition.

Although the number and nature of the guns largely dominates the question of what number of executive ratings should be carried, it does not entirely do so, because the working of the ship in ordinary times has also to be considered. The manning of boats, the working of cables, the general work of the ship outside the engine-room and boiler-room are all carried out by the executive branch, beyond which it has to be remembered that when at sea men cannot be worked continually every day, so that there must be enough to divide into two watches, each watch sufficiently large to work the ship.

The next part of the ship's company is that which is officially called the Engineer Branch. These are the stoker and engine-room ratings, who absorb roughly one-third of the crew. Their work is concerned exclusively with their own department, and so laborious is it that they are divided into three watches, and even then, when there is much steaming to be done at high speed, seamen have to be sent below to help trim coal.

We now come to the other classes, and of these the marines are the largest single unit, a battleship detachment numbering about seventy. These have their own special duties, the two most important being the carrying out of sentry duty in various parts of the ship, and acting as officers' servants. They also as a body have their own special guns to man; outside this, their work consists largely of cleaning ship, and when 900 men are confined in the small space of a battleship, it is wonderful the amount of cleaning necessary.

We now come to what is known as the Artisan Branch, and this includes carpenters, shipwrights, blacksmiths, plumbers, painters, coopers, armourers, and electrical artificers. Their duties are largely explained by their names. The armourers attend to all defects in guns, while the electrical artificers are responsible for the lighting and electric gun cir-

cuits throughout the ship, and by the way, an exceptionally busy life the artisan branch lead in a modern ship of war.

The next is the Medical Branch. Every ship is fitted with a specially equipped "sick berth," which is really the ship's hospital, and all minor cases of sickness are attended to here, the more severe ones being sent to one or other of the naval hospitals, as opportunity offers. In the event of war the sick berth would be supplemented by an "operating theatre," fitted up below the water-line, the doctors and their staff, the sick berth stewards, carrying out this work. These sick berth stewards are all properly qualified medical and surgical assistants, having to qualify at our naval hospitals before they can rise above the rank of "attendant."

The next, and by no means the least important, is the Accountant Branch. This comprises writers, ships' stewards, and ships' cooks: all three are under the direct supervision of the accountant officers. The "writers" so called attend to all office work, pay accounts, and general accountancy under the paymasters. They hold responsible and confidential positions, as all documents pass through their hands.

The ship's steward and his staff have control

of all foodstuffs, clothing, soap, and tobacco, and "implements," these latter including all the articles used by the messes connected with their victualling. The name "ship's steward" is really a misnomer, as they are in no sense of the word "stewards," but the responsible victualling officials of the ship.

The ship's cooks, of course, attend to the cooking and preparation of the ship's company's dinners. In addition to these there are officers' cooks and officers' stewards, who are non-continuous service men, and therefore largely civilian.

Last we have the ship's police, small as regards number, but wielding a great deal of power, a great deal too much, many people think; in fact, only two years ago the Admiralty called attention to this in a special letter to the fleet, in which they said:—

> "The ship's police are to be used entirely as police, and care is to be taken that they are not given powers they were never intended to possess."

Taking them as a body, however, they administer their somewhat difficult duties with tact and forbearance, and very little proved complaint can be lodged against them to-day.

That, then, is our ship's company and its multifarious duties, and if 900 officers and men seem a large number to crowd into a ship, there is not one too many to carry out the work that the running of a man-of-war entails.

CHAPTER X

THE SPECIAL SERVICE MAN

IT has been explained elsewhere that in manning the Navy there are two systems: the continuous or long service men, the non-continuous or short service men. For over a generation the short service man had no place in H.M. Navy, the continuous service system introduced by the Royal Commission of 1853 gradually ousting him till the Navy knew him not.

The great manning source of the Navy before the establishment of training ships and recruiting boys was the Mercantile Marine, and seeing that both the Navy and Mercantile Marine was composed of wooden sailing ships, and that the guns carried in the former were of the most primitive nature, merchant Jack was equally efficient for both services; that being so, our statesmen looked on the Merchant Service as the national feeding ground for the Navy.

When the continuous service system was established in 1853 it was also realised that a "Reserve

for the Navy, in the event of war," was a necessity, so in the same year we find the first attempt at a reserve to supplement the permanent force. This took the form of the Naval Volunteer Act (16 and 17 Vict. c. 73), and authorised the Admiralty to raise Royal Naval Coast Volunteers, not to exceed 10,000 men, by voluntary entry from among seafaring men and others.

In 1854, with the outbreak of the Crimean War, the Navy found itself in dire straits for men; in all directions efforts were made to raise sufficient to man our ships without avail. There was at this time in existence a "Preventive Coastguard" force, under the command and control of the Customs. Practically the whole of these were enlisted for service in the Navy, and such yeomen service did they render that in 1856 the Coastguard Service Act (19 and 20 Vict. c. 83) was passed, and in 1857 the Customs flag was replaced by the White Ensign, and the Coastguard became, to use official language, "the first and most highly trained reserve for the Navy in the event of war," though, as a matter of fact, the coastguard is not, and never has been, a reserve; it is recruited direct from the Navy from continuous service men who must have served at least nine years afloat, and is included and provided for

under Vote 1, which is the active service personnel of the Navy.

In 1859 steps were taken to further increase our Naval Reserves, and in that year the Royal Naval Reserve Act (22 and 23 Vict. c. 40) was passed, authorising the Admiralty to raise Royal Naval Volunteers, not to exceed 30,000 men, and to grant pensions with the consent of the Treasury Vote. This Act practically superseded the Act of 1853, and gave us our present Royal Naval Reserve, which for the year 1914–15 stands at (Home Force) 19,057 officers and men.

The natural development of the above was the Officers of the Royal Naval Reserve Act (26 and 27 Vict. c. 69). This provided for the services of masters, mates, or engineers of ships of the Merchant Service as officers of Reserve to the Royal Navy. Regulations as to conditions of pay, service, retirement, etc., under this Act have from time to time been promulgated by Orders in Council.

For many years the question of our Naval Reserves remained quiescent, and it was not till 1896 that any further attempt was made to interfere with the existing conditions; then we had the Royal Naval Volunteer Act of 1896 (59 and 60 Vict. c. 33), which simply extended the

Admiralty's powers under the Act of 1859 to places outside the British Isles, and so brought in the Colonies.

Having once established these reserves, the number of men contained in them was taken as the foundation of their efficiency for war. But for many years thoughtful Naval officers, especially those connected with the Commander-in-Chief of Reserve Forces, had questioned the soundness of the foundations on which those reserves rested. Since the introduction of the coastguards their duties, which at the beginning consisted exclusively of the suppression of smuggling, had completely changed. They had taken over various exclusively shore duties, which in the event of war would have to be carried on without interruption; if we were to withdraw the whole of the force for service afloat, then we should break down the whole of our very important coast communications. Obviously in counting these men as part of the active service personnel and also as a coastguard, we were counting them twice over.

Similarly with the "Royal Naval Reserve." The growing number of alien seamen in British bottoms, with the ever-growing dependence of these islands on overseas food supplies, makes it absolutely impossible for us to denude the Mer-

cantile Marine of the very pick of its seamen in the event of war. That then was a weakness fatal in itself. But there were others. As already stated, when the R.N.R. was created naval armaments were of the most primitive nature, and required little skill to manipulate. So the "training" of the R.N.R. was established on lines to suit the then conditions. Shore batteries with old-type truck guns were established at various points round our coasts, and the R.N.R. man used to put in fourteen days a year at these, which was called his "training."

As years passed and the muzzle-loading gun gave place to the breech-loader—with its ever-increasing complicated mechanism—torpedoes, etc., the naval seaman became less a "seaman" in the old sense of the word, and more a skilled mechanic, so that the general utility of the R.N.R. for fleet manning perforce grew less and less. Careful consideration of this problem and the danger attached to then existing conditions brought into existence the Naval Reserve Act, 1900 (63 and 64 Vict. c. 52). This Act authorised the Admiralty to raise a new division of the Royal Naval Reserve, to be called the Royal Fleet Reserves.

From that point we entered on an entirely

new phase of the manning question. Hitherto all our reserves for the Navy had been drawn from extraneous sources, the Royal Fleet Reserve was intended to make the Navy itself the feeder of its own reserves. The R.F.R. was divided into three classes :—

Class A.—Pensioners, including Seamen Pensioner Reserves.

Class B.—Non-pensioners : Seamen, Stokers and Marines.

Class C.—Non-pensioners : Artisans.

Classes A and C would of necessity be always strictly limited in number, so it was Class B on which the Admiralty depended for its real reserve.

For various reasons a very fair percentage of long service men leave the Navy either at the expiration of their first period (twelve years), or by purchase before that period expires. The R.F.R., it was hoped, would, by offering special inducements, absorb this waste, and so gradually build up a thoroughly efficient reserve of Naval seamen who could be called on in the event of war, without our having to dislocate our other great sea service, the Mercantile Marine. Experience, however, entirely failed to bear out this happy anticipation ; men did not join in anything like sufficient numbers

to meet Admiralty requirements, so the next step was the Naval Forces Act, 1903 (3 Edward VII, c. 6). This Act removed the restriction on numbers imposed under the Acts of 1819 and 1900, authorised the formation of a Royal Naval Volunteer Reserve, and also authorised the engagement of non-continuous service men to serve part of their time in the Royal Navy and part in the Royal Fleet Reserve.

On July 2nd, 1903, an Admiralty memo. was issued to all Naval recruiting officers, informing them that—

> "My Lords Commissioners of the Admiralty have approved of the entry in the Royal Navy of new classes of seamen and stokers for non-continuous service.
>
> "Candidates for entry for these ratings will be required to sign engagements 'to serve in the fleet for a period of five years, or for such less period as their Lordships may decide, followed by service in the Royal Fleet Reserve to complete twelve years from the date of entry.'"

It must be admitted that this order raised a storm of objections from both within and without the service. It so happened that just before reference had been made in the House to the

growing increase of the Non-Effective Votes (Naval Pensions), and it was thought that the order was really aimed at doing away with long service and so pensions, when, as a fact, it had nothing whatever to do with them, but was simply intended to raise a sufficient reserve.

Not only were the reserves, but the whole fighting organisation, material and personnel under review. Both dated from periods when the requirements of the Navy were far different to what they were in the early years of the century. The first movement was the entire redistribution of our fleet and the withdrawal from effective service of the whole of those ships not efficient for modern war. In 1904–5 the permanent force reached a total of 131,000 officers and men. When the reorganisation of the fleet took place with the withdrawal of old ships, the personnel was reduced to 129,000. To bring about this decrease the Admiralty at the end of 1904 made a special offer to bluejackets and marines serving, to the effect that men of good character who had served not less than four years of their continuous service engagements were to be allowed to purchase their discharge for £4 (the ordinary scale was £18), on condition that they completed their term of twelve years in the R.F.R. Men of over eight years' service could

have their discharge free (their scale of purchase £12) on condition that they did likewise. In a very short time sufficient volunteers for transference to the R.F.R. had been obtained, and that offer was withdrawn.

Now although the continuous service system had undoubtedly built up a splendid fighting personnel, it had several weak points—one was that there was absolutely no eliminating conditions. A boy on joining signed an engagement to take on for ten years' service from the age of eighteen, with the *right* to re-engage for a further ten to complete time for pension. Boys of from fifteen to sixteen and a half years of age who evince a desire for a sea life can hardly be expected to fully realise what they are doing, the result being that a fair percentage of these were found after a time to turn out wasters, either because they discovered that a disciplined sea service was unsuited to their temperament or from other causes. The result was that every ship had its quota of "bad hats," men who were always in trouble and undergoing punishment, and whose only object was to do as little work as possible. Unless they committed some very serious crime, were tried by court martial and "dismissed the service with disgrace," there was no way of getting

rid of them. Many a man in those days completed twenty years' service with a pension of 10d. per day—the absolute minimum. This was known to the lower deck as a "Blackguard's Pension," and fitly describes the type of man who attained to it.

These men, as might be expected, were a source of weakness to the fleet, besides which they prevented that modification of discipline that had become necessary owing to the general improvement in the large majority. The problem was to so modify the continuous service engagement as to eliminate the unfit without in any way injuring the fit. This problem was solved by the Board of which Lord Cawdor was First Lord, and on November 30, 1906, when the last Conservative administration went out of power, he issued a "Statement of Admiralty Policy," which said, amongst other things, that the following general scheme for the seamen and stoker classes had been adopted :—

(*a*) All boys and youths to be entered as at present with an obligation to serve for twelve years : if not found to be smart and intelligent they will be liable to be discharged. Examinations for Able Seamen to be made more stringent, and none to be retained unless considered thoroughly fit for the Service.

(*b*) All men to be entered for twelve years, a limited time to be served in the Fleet and a longer period in the Reserves. On passing for Able Seamen and completing two years' service, men specially recommended to be noted as eligible for the continuous service establishment and for transfer in vacancies; on transfer to be allowed to serve on active list on same terms as in (*a*) from date of entry.

(*c*) On completion of twelve years, men on active list recommended for a second period of service of ten years to be allowed to re-engage and to serve on active list for a pension as under present regulations.

(*d*) No re-engagement for a third period of service on active list to be allowed except in very special circumstances.

(*e*) Men transferred to the Reserve under (*b*) to be allowed on the expiration of their period of service to re-engage in usual periods up to the ages of 40–45. Retainers to be paid as at present.

(*f*) Men in the Reserve would not in the ordinary course be called upon to serve afloat for training, but while on the strength of the

Reserve they would be required to present themselves for drill once a year.

(*g*) A gratuity of £50 to be paid to Reserve men on discharge, at age of 45.

Thus, it will be seen, was another feature of the R.F.R. established, which at the same time raised the whole status of the permanent personnel.

The object of the Admiralty in all this was to build up (*a*) a thoroughly efficient reserve composed of men who had done from five to twenty years' actual service in the fleet; (*b*) to reduce the numbers and cost of the Royal Naval Reserve, leaving sufficient officers and men to man those armed merchantmen adopted in time of war, also to man those ships of the Mercantile Marine armed for purely defensive purposes.

We will now take the respective increase and decrease in numbers in the respective forces since the financial year 1905–6 :—

	1905–6	1906–7	1907–8	1908–9	1909–10
R.N.R. ...	32,505	28,850	25,536	24,084	23,509
R.F.R. ...	16,500	19,500	20,700	21,550	22,950
	1910–11	1911–12	1912–13	1913–14	1914–15
R.N.R. ...	21,915	21,094	20,256	20,244	20,089
R.F.R. ...	24,100	24,700	26,227	28,764	31,137

We may also venture to give their respective costs for the same years :—

	1905-6	1906-7	1907-8	1908-9	1909-10
	£	£	£	£	£
R.N.R. ...	325,134	291,711	273,908	220,084	203,677
R.F.R. ...	80,995	120,150	126,000	133,300	148,900

	1910-11	1911-12	1912-13	1913-14	1914-15
	£	£	£	£	£
R.N.R. ...	193,366	197,473*	202,233	211,047	215,549
R.F.R. ...	160,200	169,500	202,984	236,564	243,827

The actual composition of the Royal Fleet Reserve is :—

Class A.—Pensioners—seamen 7800, stokers 2500, marines 1840, police ratings 187.

Class B.—Non-pensioners—seamen 10,750, stokers 8420, marines 3650, police 10, artisans 70.

Class B is, of course, the Special Service men, and on the outbreak of war we were able to call up the whole of the 31,000 and utilise them as required. A very large number went to fill up the complements of ships in nucleus crews, while others were sent to the R.N. depots to await distribution.

Of the Royal Naval Reserve, twenty-seven large liners have been put into commission as armed cruisers, with a naval Post-Captain in command, the remainder of the officers and all the crews

* It was in this year that we first established a Trawler Section to the R.N.R. for mine-sweeping in the North Sea. They cost: 1911–12, £3500; 1912–13, £6680; 1913–14, £8844; 1914–15, £8994.

belonging to the R.N.R. There are also six fishery cruisers for special service, eleven hospital ships, and thirty-five fleet auxiliaries, all run by the R.N.R. officers and men, so that without depleting the Mercantile Marine we have been able to utilise our reserves to the greatest advantage of the nation.

CHAPTER XI

PORT DIVISIONS

THOSE who like to take a look at the official Navy List will see alongside the name of every ship the following letters, italicised, in brackets (*Ch*), (*Po*), (*Dev*). These signify the Port Division to which the ships belong, either Chatham, Portsmouth, or Devonport. For general administrative purposes the Navy is split into three Port Divisions, and every ship, man, or scrap of material belongs to one or the other. As soon as a ship is built and taken over from the builders, she is at once allocated to a Home Port, and then, no matter whether she is detailed for foreign or home service, it is to that port she returns when she pays off (if from foreign service), or periodically if on home service. Periodically every ship in the Navy returns to a dockyard for repairs and general overhaul. If in home waters, she returns to her specified Port Division or Home Port ; if in foreign waters, to one or other of the dockyards maintained for that purpose. These, according to the Navy

List, are Gibraltar, Malta, Bermuda, Cape of Good Hope (Simon's Bay), Ascension, Hong Kong, Colombo, Wei-hai-wei. Until a few years ago it was the recognised custom of the Navy to leave all kinds of minor ship repairs for the dockyard people, and keep the ship's artisans and mechanics employed making fancy-work for the decoration of the ship. This custom was put an end to some few years since, and now the ship's mechanics have to keep their ship in order, and perform all kinds of repairs. To enable them to do this Fleet Auxiliaries or Repair Ships accompany the fleets, specially fitted up with machinery for forgings and castings of a light nature. Whenever a ship is going into dockyard hands to-day the captain provides a list of repairs to the responsible authorities. These are very carefully scanned, and should there be any that it is thought could have been carried out by the ship's artisans, then some one wants to know all about it! Until this plan was adopted our dockyards were always crowded with ships wanting repairs, the whole administration becoming congested, and our seagoing fleets seriously weakened.

With the men it is the same as with the ships. When a youngster passes out of his training into the active service, he is allowed to choose his

Port Division, and to that he belongs until he leaves the service. At each port there is a general depot, Royal Naval Barracks; but as every man in the Navy must be borne on a ship's books, the Royal Naval Barracks, Chatham, is called H.M.S. *Pembroke;* the R.N. Barracks, Portsmouth, is H.M.S. *Victory;* R.N. Barracks, Devonport, is H.M.S. *Vivid;* while the splendid pile at Netley, where our boys are now trained, is called H.M.S. *Ganges.* And, by the by, there is a peculiar feature about these Barracks. When they were built they were fitted up with very elaborate courts, which are one and all marked Courts Martial Room. When they were finished it was discovered that a court martial must be held on board one of H.M. ships, and so to this day when a court martial is held at Portsmouth, the court sits in the stuffy old cabin of the old *Victory,* for no one has had the courage to suggest an alteration of the law. Naval custom and naval tradition is much too sacred a thing to be interfered with by any one inside the service, and woe betide the outsider who ventures on the task!

Whenever a man goes to any part of the world, his particulars still remain at his Port Division head-quarters. He comes home, pays off, and goes on his foreign service leave, and returns to his depot.

At each of the ports there is also a gunnery school, torpedo school, and signal school, and the specialists in these departments are treated exactly the same as a ship after a trip to sea ; she returns into dockyard hands for a overhaul, the men return to their various schools to "requalify," that is to enable them to still hold their non-substantive ratings, they have to go to school and pass examinations, showing they are thoroughly *au fait* with the latest appliances of their particular branch.

It might be thought that men who had been on board ship actively engaged in professional duties from the day they left their depot or school would hardly be able to deteriorate in knowledge. But the progress in gunnery, torpedo, and signalling work is so rapid that the latest appliance of to-day may be looked on as obsolete to-morrow, and men who are away from their schools for two years or more come back to find very extreme changes in ideas and things. Some years ago the writer went direct from the gunnery and torpedo schools at Portsmouth to a three years' commission in the Mediterranean. When he returned he and others were called off their foreign service leave to take part in the naval manœuvres ; he was sent to a cruiser just completed ; her torpedoes and tubes were of such a modern pattern

that not a man in the ship, Torpedo Instructor included, who had also just returned from foreign service, knew how to handle them, so we had perforce to leave them alone!

The Home Ports are administered by their own respective Commanders-in-Chief, who are officers of admiral rank, and everything pertaining to the port, whether men or material, is under his control, including Detention Barracks and Hospitals. The Royal Dockyards are administered by naval officers, and in supreme control (but subordinate to the C.-in-C.) is the Admiral Superintendent. He has his own staff of naval officers, the next to himself being the Captain of the Dockyard and Deputy Superintendent and King's Harbourmaster, to give him his full title. We find here a total reversal of what holds good at the Admiralty. There the Board which administers a great sea service is presided over by a landsman; at the dockyards, which are exclusively shore establishments employing civil labour, we find a sea officer in charge.

Under the control of the Admiral Superintendent are the various departments of the dockyard: contractors' department, engineering department, civil engineer department, electrical engineer department, stores, and the usual offices for pay,

etc. And so men and ships come and go, but their Port Division holds them wherever they may be.

At every port there is a roster containing the names of every single individual attached, where he is and all about him. When he returns from sea service he first goes through his usual qualifying course, which gives him a spell in barracks, and as soon as he has been through he is noted for distribution once more, and all he has to do is to await his turn for sea. When told off for draft he is informed of the exact amount of pay due to him, the cost of the clothes he has bought, etc., and when the morning of draft comes he packs up his bag, hammock and ditty box, which include the whole of his belongings ; his parchment certificate is handed to an official in charge of the party, and off he goes, till circumstances once more bring him back to the depot of his Port Division.

CHAPTER XII

ROUTINE

THE internal economy of a ship or a fleet is run on very similar lines all over the world wherever a ship of war may be. Let us take a typical daily duty routine during summer when a ship is in harbour :—

A.M.

4.30. Call boatswain's mates and ship's police.

4.45. All hands lash up and stow hammocks.

4.50. Up all hammocks.

5.0. Cooks.

5.5. Hands to cocoa and wash.

5.35. Hands fall in, scrub decks, lower and clean duty boats.

6.15. Hands to bathe.

6.40. Watch below clean mess deck ; watch on deck clean wood and brass-work.

7.50. Band call. Cooks.

8.0. Hoist colours. Breakfast. Hands to clean.*

* The expressions used in the Navy are often very confusing to landsmen. Thus "Hands to Clean" does not mean cleaning at all. It simply means that the ship's company are to dress in the notified dress of the day, either a white working dress or a blue serge suit.

A.M.

8.30. Commander's defaulters.
8.45. Both watches fall in.
9.10. Divisions for inspection.
11.45. Clear up decks. Cooks.
12.0. Dinner.

P.M.

1.15. Clean guns.
1.25. Both watches fall in.
3.45. Clear up decks for evening quarters.
4.0. Quarters.
4.30. Tea. Shift into night clothing.
5.30. Hands to bathe.
7.30. Supper.
9.0. Officer's rounds.
10.0. Pipe down.

That is the kind of routine followed in every ship of war in H.M. Navy. After divisions at 9.10 the hands are told off—some for instruction, others to do the ordinary ship jobs that always want doing, and the same applies to the afternoon. In harbour it is also the proud custom to pipe "Liberty men to clean" and let these go on shore at 1 p.m.

When a fleet is together there are certain days set aside for certain things, all of which are carried out by order of the "Flag" and timed from that

ship. Monday forenoon, for example, is set aside for general exercise. As soon as the disperse from Divisions is sounded every eye is focussed on the flagship to see what signal she will hoist, for no single soul in the fleet knows what order the Admiral in command will give. Standing on the upper bridge of the flagship is that officer, and by his side his Chief of Staff and perhaps his Flag-Lieutenant. It is reported to him that every ship is ready for exercise, and then he gives an order to his Flag-Lieutenant. It may be "Clear for action," "Out torpedo nets," "Out all wire hawsers," or a dozen different things. The ready signalman bends on the flags to the halyards and up they go to the masthead. So far not a soul in the fleet moves, but directly the signal is hoisted ship after ship hoists the Answering Pennant to show that they understand the signal. Again it is reported to the Admiral that every ship has answered—and, by the way, if this is not done in a matter of seconds the laggard ship knows all about it—then the order is given "haul down," and the very moment that that signal begins to move in a downward direction the bugles of every ship blare forth and men rush away to complete their allotted task. The struggle is now for the post of honour—"first ship": the completion of the evolution being signified by

hoisting the finishing pennant on each ship as she finishes. So great is the competition to be first ship that those concerned will resort to all kinds of stratagems to "steal a march" on their competitors. Theoretically every ship is supposed to be in a quite normal and unprepared condition until the signal noting what evolution is to take place is hauled down. Actually there is hardly a ship in the fleet but what has prepared for practically every emergency; all the hawsers and tackle connected with "out boom defence," which means torpedo nets, are laid along. The booms themselves have been lifted out of their "crutches" and are kept in place by a spun-yarn which will break as soon as a strain is placed on it. And so with every possible evolution. Then should the Admiral order the signal "Out all boats; pull round the fleet," there is wild confusion and much profanity, and the ship who has made no preparation whatever is likely to be "first ship," for all the other preparations have got to be undone before a start can be made to get the boats out.

One of the immortal tales of the Navy is connected with "Out sheet anchor." In the ordinary way when a ship comes into harbour she drops a single bower anchor, lets out so many fathoms of cable, and rides to that. In a strong tideway, or

for other reasons, it may be necessary to let go two; then it is a question of "moor ship," which is done by means of a mooring swivel, the putting on of which is a long and heavy task. On other occasions it may be necessary to lay out an anchor astern and this would have to be done by the ship's large boats, launch, and pinnace. So that both officers and men shall be *au fait* with the work connected with the laying out of an anchor under such circumstances, "Out sheet anchor" is one of the set evolutions of the Navy. Needless to add, it is by no means a light task to lower an anchor perhaps weighing tons and sling it to the stern of boats hanging on to the bows of the ship. Still the laying-out of a sheet anchor might be necessary, and the necessity might be a very urgent one, hence, as we have already said, the evolution.

Years ago, when the Mediterranean fleet was at the very height of its glory and resplendent with brass-work from truck to waterline, "Out sheet anchor" was *the* favourite evolution of a Commander-in-Chief. He had very strong ideas that it should be carried out in so many minutes, which every other officer and man in the fleet knew to be impossible. And so week after week, sometimes on a Monday, sometimes on any of the other days, and at quite unlooked-for and unex-

pected times, up would go the signal "Out sheet anchor, boats repair to flagship." How to perform the evolution in the time specified by the Commander-in-Chief became the talk of every wardroom, gunroom, and mess deck in the fleet. Commander and First Lieutenant would spend hours on their respective forecastles discussing the problem with their boatswains, but all to no purpose, they could devise no "gilguy" to help them out. As for the men, it was no use blaming them, for they were as keen as the keenest officer in the fleet to get down to Flag-time if they could. Then one morning H.M.S. *Puncher* (that wasn't her name, but it will do) performed the miracle, and her boat was parading alongside the flagship, and on its way back to replace anchor before a single other boat had left its ship. From that time forth did the Commander-in-Chief flog every other ship of his fleet, his own included, with the example of the *Puncher*.

Marvellous to relate, the next time the evolution was performed the *Puncher* not only improved on her own time, but actually performed the evolution in less time than the Commander-in-Chief himself had thought possible. And so matters stood. Whenever the evolution was called for the *Puncher's* boat wended its solitary way to the

flagship and returned to "replace gear" before the others had even got their anchors slung.

Then one day Nemesis overtook her; her boat was gleefully returning to "replace gear," when up went a signal from the flagship, "*Puncher's* boat drop anchor and weigh by hand." It was a terrible task to impose on a boat's crew, and all the fleet paused to watch events. Whatever the smartness of the *Puncher* in getting the anchor slung to her boat, she was certainly not smart in letting it go. There was a hitch here and a jamb there, and at last a signal from the boat that the slipping tackle was jambed, and they couldn't let the anchor go. But the Admiral was inexorable, and his reply signal was very curt and to the point.

By this time all the other boats were *en route* to the flagship with their anchors when a sight struck them that properly paralysed every boat's crew and every ship's company—the *Puncher's* boat had let go the anchor, and it was floating away on the tide! And so the murder was out. There was no court martial, and, strange to say, after that incident the C.-in-C. lost all interest in his hitherto favourite evolution.

Wednesday forenoon is usually devoted to "Landing Party." Sometimes the men land and

go through Company and Battalion drill, at others they go to small-arm drill on the upper deck, or the shore equipment is brought up from the store-room below, and the men don this so as to make quite sure that should a landing party be required for active service everything is all ready.

Thursday afternoon has been from time immemorial the Navy's early closing day. At 1 p.m. on Thursday, instead of clearing up decks as usual, preparatory to both watches falling in, the pipe goes, "Hands make and mend clothes," which means that the afternoon is for the men to do as they like.

Friday forenoon has always been devoted to "General Quarters," in other words, prepare for action. After Divisions the bugle sounds, "Exercise Action," and every soul at once makes away to the station he would occupy should an enemy be within sight. Seamen and marines man the guns. Stokers not below in the stokeholds and engine-room form fire parties and stretcher parties. Men not required at the guns repair to shell rooms and magazines. The doctors and their staff prepare the operating theatre. Artisans go to shell hoists and magazine passages. The guns are cast loose and loaded—dummy charges the exact weight of the real cordite charges being used—projectiles, and

a further supply of charges are all placed in passages and boats, and as each unit is ready for action, the officer in charge repairs to the bridge and reports, "Foremost turret cleared away, sir," or whatever the case may be. When the last officer has reported his particular part ready, then the evolution is completed and the time taken.

Clear for action is *the* test above all others of a ship's efficiency for war, with the single exception of good shooting, with which we will deal in due course, as the first broadside fired might have a very big effect in the decision of an action, for if the British Navy believes that "thrice blest is he who has his quarrel just," it also believes "and more so he who gets his blow in fust!"

One other evolution transcends even "Exercise action," and that is "Stations Clear for Battle." In every ship of war there is a large quantity of woodwork, largely composed of light bulkheads, which go to make up officers' cabins, etc. Before going into action all this would be unshipped and thrown overboard. So that there should be no mistake and confusion as to which had to go, "Stations Clear for Battle" are exercised periodically. On these occasions the carpenter and his mates go round and mark every piece of woodwork which would be jettisoned, and it is explained to the

men, each of whom has his particular bit, how this woodwork would be unshipped. It is also generally understood that before going into a modern action all boats would be lowered and left behind, all of which is to reduce the danger from splinters and fire, the modern explosive shell being of a very highly inflammable nature.

Every Saturday every ship of war is given over to what the sailor calls the weekly water carnival. Decks are scrubbed; when wooden are holystoned. Then come the steam hoses, and everything is washed down, after which deck cloths are laid down, bright work polished, and the ship made spick and span for Sunday's inspection.

CHAPTER XIII

NAVAL VICTUALLING

THE victualling of the Navy is a huge and complicated subject, yet on its efficiency rests the whole efficiency of our first line of defence, for as the great Napoleon told us, an army—also a navy—moves on its belly. Yet until a few years ago no part of our Naval Administration was so neglected as the Victualling Department.

In Henry VII's time there were no special navy or army victuallers. By James I's time things had progressed, for the scale then was :—

> "Every man and boy is allowed a pound of bread a day. Every man and boy is allowed a gallon of beer a day ; that is to say, a quart in the morning, a quart at dinner, a quart in the afternoon, and a quart at supper.
>
> "Every man and boy is allowed a day, on flesh days, 1 lb. of beef or else 1 lb. of pork and pease."

(This is the first indication of the pork and pea soup of the Navy.)

"On fish days every mess, which is of 4 men, are allowed a side of a salt fish, either haberdine, ling, or cod; 7 oz. butter, 14 oz. of cheese, Friday excepted, on which they have but half allowance."

As Raleigh tells that old oil and fish casks were used for the storage of beer, it could not have been a very delectable beverage when served out to the men.

Butter, cheese, and beer were, of course, only possible so long as our ships were cruising in home waters, subsequently when ships went on foreign service those articles, owing to their perishable character, had to be discontinued. In 1804 sugar and tea were introduced as substitutes for butter and cheese, and by 1824 the last of those perishable articles had disappeared. A vegetable ration was established somewhere between 1806 and 1810, prior to that the only "vegetables" known to the Navy were biscuit, flour, raisins, oatmeal, and dried peas. Cocoa was originally introduced about 1792, on the Jamaica station, and rapidly spread throughout the whole service, chocolate being substituted for it in 1832. Fish as a ration disappeared in 1805.

In the "sixties" of last century many improve-

ments in naval victualling were introduced: pepper and mustard were introduced in 1860, while preserved meats, preserved potatoes, rice, and celery seed, as a flavouring for pea soup, were introduced in 1867. Then came perhaps the greatest concession of all, "soft bread, when in harbour, and it can be procured," was introduced as an alternative to biscuit in 1868. Curiously enough salt as a ration was not introduced till the end of 1903, when "1 oz. every four days" was allowed per man.

Having given that brief outline we will now turn to the administration. For the victualling and clothing of the Navy there are victualling yards at Deptford, Gosport, and Plymouth. Deptford is the largest and most important, being, as it were, the head-quarters. These yards contain stores of beef, pork, rum, tobacco, tea, sugar, cocoa, etc.; there are also granaries for storing wheat and bakeries for making ship's biscuit, flour mills, and oat mills, and at each yard there is an artesian well for the supply of pure drinking water. The whole is presided over and administered by the Victualling Department of the Admiralty, whose head is the Director of Victualling.

There are in addition depots all over the world; these are supplied from the home yards and con-

trolled from the Admiralty, so that the same system of victualling and the same dietary applies all over the world, no matter where a ship of war may be.

A very cursory glance will show the difference between victualling the Army and the Navy; the Army is always on shore and in permanent barracks, except when fighting is going on, so that fresh supplies can come in daily. A ship may be away from her base for indefinite periods, so must carry certain non-perishable articles, and for considerations of storage these have to be reduced to the minimum as regards varieties. In the old days of masts and sails ships used to remain at sea for months at a stretch, so it became the practice to victual the ship for six months, that is, salt pork, salt beef, and biscuit, tea, sugar, and cocoa used to be taken to last that time. Obviously it is not possible for men to live continuously on such a diet for any length of time without suffering terribly in health, but for years the Admiralty ignored all complaints and declined to modify the system of victualling, which was the simplest from an administrative point of view, was easily stored on board and, better still, was absolutely non-perishable. It was the system then, as now, to issue the oldest salt and other provisions in store first, and as very

large quantities of reserve stores were kept for all kinds of emergencies, when salt meats were issued they were often very ancient. Dr. Alexander Turnbull, R.N., in his little booklet on Victualling the Royal Navy, tells of a Paymaster-in-Chief who stated that in the "fifties" of last century were issued to his ship salt beef and pork of the Napoleonic Age.

It was this hard-and-fast system of sticking to rigid dietary that was largely responsible for the mutinies of 1797 (Portsmouth and the Nore), and induced humane captains to compromise with the men in this way: Each man was allowed certain quantities of food daily which were valued by the State at so much; for example, meat at 6d. per lb. In many ships men were allowed to leave behind portions of their dietary and receive its equivalent in cash, with which they could buy other food-stuffs, such as green vegetables, etc. By 1799 this system had become so general that it was legalised under the name of "savings," and a saving it most certainly was so far as the Government was concerned, as the price fixed to be paid to the men for any rations not taken up was two-thirds of their value, so that the Government made a profit of 6s. 8d. on every pound's worth left in their hands by the men!

So long as the ships were largely at sea there were very few facilities for spending this money, and by the middle of the last century the average of savings paid was only £2·1625 per man per annum. From then they rapidly rose, as our ships spent more and more time in harbour, *and for other reasons.* Here are the figures, which will be found in the Report of the Committee on Navy Rations in 1901 :—

1859–60	£2·3250
1869–70	£2·4611
1879–80	£3·2251
1889–90	£3·7544
1898–99	£4·6912

This system of "savings" was destined to revolutionise the whole food supply of the Navy. As the facilities for getting outside supplies grew, the men took up the least possible quantity of the official food-stuffs and spent the money in other directions, so that whenever a ship left harbour for sea the mess shelves would be crowded with soft bread, flour, pickles, jam, potatoes, etc. From this grew the system of having an unofficial ship's store, that is, the whole ship's company would purchase supplies which were kept in the common store, and these were retailed to the messes as they required them, the store being replenished as necessity demanded. Of course, these unofficial

stores were at first found in only a few ships whose captains were willing to stretch the Regulations for the comfort and well-being of the men.

The next development was that instead of ship's companies buying things in bulk from contractors, who, needless to say, had sprung into existence to meet this special trade, the contractors themselves were allowed to open up a shop on board, sending their own employees to act as servers. By this means the men overcame the risk of loss from wastage and deterioration. By the end of the last century so general had the system become that a special Committee was appointed by the Admiralty, on May 21st, 1900, to enquire into the whole thing. The result of their labours was the introduction of various new items to the official rations, and the suggestion that the tenant or shop system should be officially recognised. The Committee's suggestions came into force on October 1st, 1903.

The Admiralty soon discovered that they had by no means solved the problem, for whereas in 1902–3, the last year of the old rations, the amount of savings paid to the men was £515,876, in 1904–5 they had risen to £721,356; while, from a statement made before the Committee of Public Accounts, it was shown that for the year 1905–6, out

of a total of £2,256,600 voted for the victualling of the Fleet, the actual sum spent on provisions was only £762,800.

On July 31st, 1906, another Committee was appointed, this time with full power to go fully into the whole question, and suggest what remedies they thought best in the interest of the service. The result was the very admirable system of victualling the Navy enjoys to-day.

In the first place, the Committee abolished the system of "savings" and reduced the official ration by practically one-half: in this way. The value of the daily ration of each man is valued at tenpence. Hitherto the whole of this had been credited to each man; that part which he did not take up he was paid for in money. The new system gave him an official ration valued at sixpence and a money payment (messing allowance) of fourpence. The men could spend that fourpence as they thought fit; if they required more of the official supplies than their ration gave them, they could purchase them from the official store at cost price, or they could purchase what they required from the contractors.

Hitherto the "canteen," though recognised, was quite unofficial and uncontrolled, and, needless to add, that being so, many objectionable

features had crept in. The Admiralty decided to bring them under official control, and regulate, not only the prices, but also the qualities of all articles sold. So to-day, when a ship commissions, a contractor is appointed to the ship by the Admiralty; he opens up his shop on board, for which privilege he pays a rental, which goes to the ship's company, the Admiralty fixing the rental which has to be paid, the goods he may sell, and the prices and qualities of the same.

In the old days there were only three meals a day: breakfast 6 a.m., dinner 12 noon, supper 4 p.m. To-day we have :—

5.0	to	5.35 a.m.	Cocoa.
8.0	,,	8.45 a.m.	Breakfast.
12.0	,,	1.15 p.m.	Dinner.
4.15	,,	4.45 p.m.	Tea.
7.30	,,	8.0 p.m.	Supper.

The system of feeding is by messes, the number of men in a mess varying according to size of ship, say from ten to twenty-five. Each mess draws its own food, makes its own purchases from either the canteen or official store, settles its own bills, and, in fact, looks after all its own domestic arrangements, so that each mess is able to choose practically what particular viands it shall have from day to day. One still, of course, hears grumbles, but, taking things generally, it is

safe to say that the British Navy to-day has the finest system of victualling of any navy in the world.

Some years ago, at a meeting where the Navy was being discussed, the number of ships, their size, their guns, their speed, etc., having been dealt with, Admiral Lord Charles Beresford took the opportunity of reminding the audience that :—

> "You may have what size of ship you like, as many as you like, guns, armour, boilers, and engines ; but remember, it is the human element, and only the human element, that wins battles."

And we may add that men cannot win battles unless they are in good health, and as proper feeding is the first essential to good health, we have dealt at some length with the subject. Speaking at the London Opera House on September 11th, 1914, Mr. Churchill said of the Grand Fleet in the North Sea :—

> "I have made careful enquiries as to the condition of our sailors afloat under the strain put upon them by this continual watching and constant attention to their duty under war conditions, and I am glad to say that the health of the Fleet has been much better since the declaration of war than it was in the time of peace."

Bakeries are to-day established in the bulk of our ships, also refrigerators, so that soft bread and fresh meat are always to be had—thus are the health and good spirits of the modern sailor maintained.

CHAPTER XIV

GROG!

EVERY one in this country, whatever may be his or her general ignorance of affairs Naval, knows at least that our sailors get "grog," they also know that grog is rum. The knowledge is forced on them year after year by discussions on this subject in Parliament, for as soon as Vote 2 (Victualling and Clothing for the Navy) comes along, up comes the question of the sailor's grog.

When rum was first introduced into the Navy there is no record to show. Beer, which was the official beverage in home waters, had never been supplied to ships on foreign stations, for a fortnight at sea was the longest it would keep. As men in home waters, however, were allowed four quarts of beer a day, and hard drinking was a national characteristic, it was left to Captains in command of ships or Admirals in command of fleets to find the best substitute for beer they could when abroad.

In the Mediterranean there was never any difficulty, owing to the quantities of cheap light wines. In the East Indies arrack was the substitute, and in the West Indies rum. Whatever may be the special virtue of rum as a spirit, it most certainly has virtues from a ship's storage point of view, and was probably the least harmful of all the substitutes for beer, beyond which the men themselves took kindly to it, and so it gradually ousted all competitors, even beer itself, and in 1831 became the established and official beverage of the Navy.

When first introduced the quantity allowed was two gills (half-pint) daily, one gill at noon, the other at night. About 1740 Admiral Vernon, who was in command of the West Indies Fleet, having cause to complain of the drunkenness of the men, who used to save the midday ration and have a carouse in the evening, gave orders that in future instead of the rum being served out neat, it was to have water mixed with it, which would, of course, prevent it from keeping. Now Admiral Vernon, owing to his wearing clothes made of a species of coarse cloth called grogram, was nicknamed "Old Grog," and the mixture of rum and water was first called "Old Grog's tonic," and after was reduced to grog, by which name it has gone ever

since, in fact grog has passed into the English language, and can be found in any standard dictionary to-day defined as "a mixture of spirits and cold water without sugar."

By 1831, when it became the established drink of the Navy, the daily quantity had been cut down to two half-gills daily, one at noon, the other in the evening. In the "seventies" of last century this was further cut down to one half-gill daily, the established time of issue being "One Bell," 1.30 p.m. Up till the time he is eighteen a young man in the Navy is officially a "boy," on his eighteenth birthday he also officially becomes a "man," and up till the early "eighties" his official elevation from boy to man also ushered in his right to draw his rum and smoke. In the early "eighties" a further encroachment was made on the rum issue, and an order passed that in future no one under the age of twenty should draw rum. At the same time all issues to officers were prohibited. Prior to this officers could purchase rum from the ship's Paymaster, at a charge of one shilling a pint!

Having discussed to whom grog is issued, the quantity issued daily, also the time of issue, we will now enquire into the method of issue and the restrictions surrounding it.

Every ship has a spirit room, in which the rum is stored, and this is guarded as carefully as the magazine. It is kept locked, and the key is hung up outside the Captain's cabin door, where it is under the charge of the sentry on duty at that spot, so can only be obtained by a properly authorised official. At six bells, 11 a.m., every day there assemble outside the spirit room the ship's steward, one of the ship's police, sergeant of Marines, petty officer of the day, and the cooper, known to the lower deck as "Jemmy Bungs." The officer in charge of the issue, invariably a Warrant Officer, appears on the scene with the key, the spirit room is unlocked—there is also a sentry here—a cask of rum is taken out, the bung extracted by the cooper, who then inserts the special pump for extracting the rum. The ship's steward reads out the number of men "victualled for rum," the officer present verifies this by inspecting the book, and the petty officer of the day and sergeant of Marines hold the measures while the exact quantity is being measured off. These two are present to look after the interests of the ship's company and see that the proper quantity of rum is issued from the spirit room.

As the rum is extracted from the rum cask it is placed in the ship's company's rum barrico

(pronounced "breaker"). When the exact quantity is drawn off the cask is replaced in the spirit room, which is then locked, and the key returned to its proper place. The rum breaker is also locked by means of a flange which fits over the bung hole. The petty officer of the day and sergeant of Marines then take this away and deposit it on the half-deck under the sentry's charge, the officer taking the key and depositing it in its appointed place.

At a quarter-past twelve the same people, minus the cooper, assemble at the grog tub, and measure off the proper quantity of water—three half-gills of water to every half-gill of rum, making one half-pint of grog for each man. When "one bell" strikes, the bugler sounds off "grog," the petty officer and sergeant of Marines fetch the grog breaker from the half-deck, the officer unlocks it, the rum is poured into the water, and the whole well mixed. Before issuing it to the messes each of the officials present is offered a measure to taste, and see that it is as it should be, and the issue then commences. This is done by messes, one man from each mess appearing at the grog tub to draw his mess's allowance. Men between the ages of eighteen and twenty draw in lieu of grog a money allowance of roughly a halfpenny a day, or, to be exact, 1s. 5d.

a month, or 4s. 4d. for a quarter of 92 days, or, if they wish, tea and sugar to that value. This also applies to any man who is entitled to his rum, but does not wish to draw it. That, then, is the full and complete history of Jack's rum!

CHAPTER XV

THE DOCKYARD THIEF

THERE is a chapter of naval life which is very seldom discussed, because it is a sealed book to all except those who have spent their days in the Navy itself. It is an intensely interesting and amusing side-light and shows in what queer ways a fighting service will expend its energy when it has no fighting to do. Some of the things related may seem fantastic, so before we start to relate them it will be as well to quote an authority. In his intensely interesting *Memoirs* Lord Charles Beresford says :—

> "In the dockyard at Devonport there stood a mast newly fitted with beautiful, new, white signal halliards, the very thing for my cutter. I should explain, that as we were kept very short of stores, stealing in the service from the service for the service used to be a virtue. There was once an Admiral who stole a whole ship's

propeller in order to melt the brass from it; and it was another Admiral who boasted to me of his brother officer's achievement."

Now when an Admiral in the King's Navy will steal a valuable ship's propeller from a dockyard, in order to have it melted down into brass to make pretty work for his ship, and boast of his achievement, we may take it that "stealing in the service from the service for the service" was indeed a virtue, and the accomplished dockyard thief likely to hold a high place in the estimation of his fellows, in fact, to say of a man "he is the finest dockyard thief in the Navy" was to pay a compliment impossible to surpass.

The dockyard thief and stealing from the service for the service were both the outcome of that strange passion for "spit and polish," which grew to such extraordinary dimensions during the latter half of the last century that at last the Admiralty itself had to step in and curb the zeal of its votaries.

Probably, from the very earliest days, a dockyard was looked on as fair plunder by sea forces. That, however, was quite a different kind of plunder from the type with which we are about to deal.

Going back to the old days when war was the great preoccupation, very little time was given to a superficial smartness, if, indeed, it was given to the necessary cleanliness of a ship. Personal cleanliness was, indeed, not of a very high order, and the daily bath, as a necessity of life, was not yet. If a ship got buffeted with wind and sea a tar brush over her side and a wad of oakum to fill holes was all that was considered necessary. Ships spent nine-tenths of their time at sea; when they went into harbour it was for a very necessary refit and perhaps to endeavour to get some of the marine growths off their bottom, for dry docks were not yet.

A ship of war was built for war and war only. She was severely plain, with no atom of fancy work to relieve her forbidding grimness. Her bitts, fife-rails, and other fittings were of plain oak, for service, not for show, and the only embellishments were given with the tar brush or lime-wash brush.

When war went ships were still kept in commission, there were the same number of hands to be kept employed, and so very gradually there crept into the Navy the practice of cleaning here and polishing there and painting elsewhere.

It is not surprising that this movement should

have spread, for it unquestionably added to the comfort of ships. As is the way in the British Navy, one ship not only copied another but went one better, so that the service soon came to the end of its tether as far as Government stores were concerned, for these were strictly utilitarian and not intended for frills and furbelows. When this happened officers with money commenced to put their hands into their pockets to gratify their ideas of smartness. Now naval officers, as a class, are notoriously not wealthy men, but those amongst them with long pockets set the pace and the others willy-nilly were forced to follow, for Admirals at their official inspection of ships began to make invidious comparisons between this ship and that, and officers began to realise that a good report—on which promotion was based—was only to be won by certain ways. Once having got to that stage the competition between ship and ship proceeded apace. When an officer went ship-visiting to another ship he noted her internal brilliance and went one better, and so gradually ships of war attained that smart yacht-like appearance that we used to associate with the Navy until the Admiralty came in and covered everything from truck to waterline with a dull coat of grey.

When the iron ship came in the tar brush no longer did to decorate her sides, so paint was used —black in home and white in tropic waters. The quantity allowed was probably quite enough to suit the strictly utilitarian views of the Admiralty and Treasury, but not by any means enough to suit the views of a smart commander with a long purse. The poor man found himself dragged at the wheels of this modern service juggernaut, and having no private purse for the purchase of paint turned his attention to the dockyard stores, and the bribing of storekeepers became a recognised method of procuring the necessary. While a Commander or First Lieutenant could not get extra paint or other things necessary to the service ideas of smartness, he could get tobacco, rum, serge, flannel or what not from the ship's paymaster by paying for them. Armed with these he would visit the various storekeepers and bribe them to let him have what he required. Some years ago it was discovered at one of our dockyards that thousands of gallons of linseed oil were not in the storage tanks when stock was taken, so a special Committee of Enquiry was appointed to go into the matter. That Committee was composed entirely of Naval officers, every one of whom had no doubt perfectly clear ideas as to where the oil

was! Anyway, the enquiry was held and the mystery was solved—Rats! Dockyard rats, because it was on record that rats had been known to dip their tails in oil cans and by those means extract the oil. Considering the size of the tanks in which the missing linseed oil had been stored, they must have been brobdingnagian specimens who perpetrated the theft. But, gentle reader, when you hear it said "as long as a dockyard rat's tail" you will know the meaning of the phrase and the gentle irony it conveys!

What started out to put ships in order and add to their internal comfort ultimately led to a passion that ended in the very reverse way. As time passed officers brought up in this atmosphere began to look on it as quite in the natural order of things. A midshipman in charge of a boat soon learned that the best way to keep in the good graces of the Commander was to see that his boat was kept excessively clean and smart. The dockyard contained many things conducive to this and nice white roping was much smarter than the ordinary brown hemp as supplied, so to steal white rope and so add to the smartness of the boat was a virtue. That is why those white halliards had such a charm for Lord Charles Beresford, when, as a midshipman, he had charge

of a cutter. What did he do? Here are his own words :—

> "I brought an end of the halliard into an adjacent shed, concealed in which I revolved swiftly on my axis, winding the rope about me. Then I put on an overcoat borrowed for the purpose. But my figure presented an appearance so unnaturally rotund that a policeman experienced in diagnosing these sudden metamorphoses compelled me to divest and to revolve, unwinding in the public eye. He also reported me for stealing Government stores!"

Passing on in rank, the responsibility for things would grow till we came to the Number One (First Lieutenant), who was responsible for all 'tween decks (mess decks?), and the Commander who had the upper deck, upper works, ship's side, etc. When promoted to Captain and in command of their own ship the great joy of life was to see that the various officers carried out their jobs as they had done before them, and so Sunday, the day of rest, came to be set aside for Captain's Inspection.

No landsman could ever imagine the extraordinary lengths to which this "smartness" craze (spit and polish the Navy called it) attained to. From Monday morning till Saturday night unceas-

ing preparation went on for Sunday's inspection. Saturday was given over to the great final efforts, half the day was devoted to scrubbing and washing, the other half to polishing, then everything was covered over with deckcloths and covers, ridge ropes were put up here and there, and the ship's company confined in the smallest space possible over Saturday night so that nothing should be touched and dimmed. Sunday morning, from 5 a.m. to 9 a.m., was devoted to the final touch. Up deckcloths, a final polish here, a touch of paint there, so that when Captain's Rounds started the ship was a blaze of polish from stem to stern. Everything that could be polished was polished, in fact Lord Charles Beresford tells of one ship where even the cable attached to the anchor was burnished!

Now all this polishing and painting cost money. Canvas for deckcloths was not supplied officially, indeed, deckcloths were not recognised. Nine-tenths of the brass work was "private," that is the brass from which it had been made had been stolen from the dockyards, and to keep a ship supplied with all these things the dockyard thief came into existence. Most of the permanent harbour establishments kept one individual, usually a pensioner, for this purpose, who did nothing else

from day to day but visit the dockyard and steal for the good of the ship.

New ships commissioning fresh from dockyard hands would, of course, have only service fittings, so that to make her an equal with her fellows in the fleet great efforts would be needed, for it required not a small amount of brass to give all the necessary embellishments to a big ship. On those occasions officers would stop at little to provide themselves with the necessary material. Hence then the admiral whom Lord Charles Beresford tells us "stole a whole ship's propeller," probably weighing the better part of a ton, to melt down for brasswork. Just over twenty-five years ago there was an old corvette laying in Portsmouth harbour waiting either to be refitted or sold. She had carried an upper deck battery of guns, and the brass racers on which these travelled were still fixed to the deck. One night the whole of these disappeared, together with the brass heads of the pumps, a stupendous task, showing that men must have been secretly at work for days loosening bolts, etc., and getting things in readiness for the coup. It was a very open secret where these things went, as there was a ship fitting out alongside the dockyard at the time. But it was not service etiquette to make enquiries in the

right direction, so the water police set out to trace thieves they knew did not exist, so that they might give a report that would close the whole incident. The police and the authorities knew what was going on, the service knew, the dockyard police knew, and the water police knew, and when a more than usually daring raid was made there would be enquiries and threats and every one would be satisfied.

The other end of the story is a kind of anti-climax. Ships on foreign stations would plunder right and left whenever they got near enough to a dockyard to make plunder possible. Boatswains would steal coils of rope and anything they could lay hands on, ditto the carpenters, till store-room and tiers were overflowing with a medley of new and valuable but quite useless lumber. Then when the ship was homeward bound, as soon as she entered the Bay, storerooms would disgorge their useless treasures and the dog watches would be spent in consigning it all to mother ocean! Officers up on the bridge would be quite conveniently blind to things floating astern, and so the farce was worked out to its end. Needless to add, that while "stealing in the service from the service for the service" was a virtue, to steal from the service for any other purpose would be an unspeakable crime.

As soon as the Navy set itself seriously to work to prepare for war a good deal of the " spit and polish " had to go to make room for more useful work, and for the past decade it has been dying a lingering death ; probably the present war will give it its final quietus, to be resurrected probably out of the generations of peace that are almost sure to follow this titanic struggle !

CHAPTER XVI

GUNS AND ARMOUR

FROM the earliest days and even amongst savage tribes the object of man has been to invent something that would ward off the effect of the hurled missile. When guns were of such a primitive nature that they were only destructive at a point-blank range, the wooden sides of ships formed effective armour to those fighting within the ship. As guns grew in size and calibre they naturally became more destructive, but it was not till the rifling of guns was invented that the real struggle between the gun and the armour plate commenced. With the smooth-bore gun only a round projectile could be used, but with the introduction of rifling came the conical projectile which, being given a spinning motion, was hurled through the air point on, in which position it struck the object aimed at.

No longer was it possible for wooden sides to keep out shot, so builders cast about for some material of greater resisting power and found it

in the iron plate. The first example we have of the "ironside" ship was H.M.S. *Thunderbolt*, launched in 1856, with 4½ inches of iron armour and carrying 16 Muzzle-Loading Rifled Guns. The *Warrior*, however, built in 1860, was the first real "iron-clad," she also carrying 4½ inches of iron armour.

The struggle went on between the M.L.R. gun and iron armour right up to 1881, by which time the *Inflexible* had been designed carrying four 80-ton guns firing a projectile weighing 1760 lbs. and being protected with 24-in. iron armour. But in 1880 the Breech-Loading Gun made its appearance; H.M.S. *Superb*, being the first to carry guns of this type, her armament consisting of sixteen 10-in. M.L.R. guns and six 4-in. B.L. guns.

In 1882 came the *Conqueror* with ten 12-in. and four 6-in. B.L. guns. In the meantime the armour-plate makers had not been idle, and the old iron armour gave place to compound armour, the *Conqueror* carrying only a 12-in. belt.

In 1894 the Magnificent class was designed, carrying four 12-in. and twelve 6-in., but the power of the gun had increased tremendously, so that neither iron nor compound armour could

be carried of sufficient thickness to keep out projectiles, so steel armour was introduced, and since the introduction of steel every effort has been concentrated on giving it excessive hardness with a certain amount of resiliency to prevent cracking.

Contemporary with all this has gone on improvements in the nature of the explosive used. So long as the muzzle-loader was the vogue these had to be short enough for the muzzle to come inside the gun port so that they could be loaded. That being so, the charge had to be instantaneous in its explosion, so that the full force of the gases generated might have effect on the projectile before it left the muzzle. Thus every increase in the size of the gun was followed by an enormous increase in the size in its breech, because that is where all the strain came. Cartridges of black pebble powder were used, as this was instantaneous in its ignition.

With the introduction of the breech-loading gun it was possible to have these longer, as it was no longer necessary to have the muzzle inside, the guns being loaded from the breech. So powder gave place to cordite, which was slower in its ignition. The following table will give some idea of the progress made in the power of the 12-in. gun :—

Calibre in inches	Length in calibres	Cordite charge	Muzzle energy in "foot tons"
12	30	88½ lbs.	28,000*
12	35	167 lbs.	33,020
12	40	211 lbs.	39,280
12	45	325 lbs.	47,697
12	50	400 lbs.	53,400

It is this rapid advance in artillery that renders the modern man-of-war so rapidly obsolete. Two ships might carry each 12-in. guns and yet one hopelessly outclass the other, as a ship carrying a 50-calibre gun could sink a ship carrying a 40-calibre gun before the latter could get near enough for her guns to be within effective range.

All British 12-in. guns fire a 850-lb. projectile. The calibre of a gun is the diameter of the bore, while the length of all guns is measured in calibre, that is, the length of the bore. Thus the total length of a 35-calibre 12-in. is 37 ft., while a 50-calibre 12-in. is 51 ft. 7 in. long.

As the length of the gun began to grow we were troubled with what is called longitudinal sag, so a new system of building up had to be devised and a remedy found in what we call the wire gun. All modern British guns are what are called "wire guns," and are built up in sections. The tube and jackets are made from steel cast originally in

* Muzzle energy in "foot tons" means that on leaving the muzzle the projectile has enough energy to lift the number of tons stated one foot from the earth.

octagonal ingots. Long experience and experiments have shown that all the impurities of steel collect in that part of an ingot which cools last, viz. the centre, so the centre of the ingot is cut right out, thus removing the impurities. This hollow ingot is mounted on a spindle and forged under hydraulic pressure, and tempered and annealed till it possesses the desired physical properties. That is the inner or A tube, which forms the bore of the gun. Over this another tube is shrunk on, then a layer of steel tape is wound on. This tape is a quarter-inch wide, one-sixteenth of an inch thick and of enormous strength, and *no less than* 135 *miles of this tape is used in a* 12-*in. gun.* Then another tube is shrunk on over this tape layer and the gun built up to the necessary dimensions. The same formula applies to all "wire" guns.

The armour-plate manufacturers concluded that they had discovered armour capable of keeping out a 12-in. projectile at ranges at which a modern action would be fought, so the next advance was to the 13·5-in. gun. Of these monsters the following particulars may be of interest :—

Weight	Length	Weight of Projectile	Muzzle Energy	Muzzle Velocity
76 tons	52 ft. 6 in.	1400 lbs.	69,000 F.T.	2821 F.S.

They are capable of puncturing about 17 in. of Krupp steel at 3000 yards.

The heaviest gun at present in use in the British Navy is the 13·5-in., with its projectile of 1400 lbs., though the Queen Elizabeth class are being armed with 15-in. guns, which will, it is understood, fire a projectile of 1800 lbs. Of these guns, Mr. Churchill told the House of Commons that—

> "When the first of these guns was tried it yielded ballistic results which vindicated, with what is to the lay mind marvellous exactitude, the minutest calculations of the designer. It is the best gun we have ever had; it reproduces all the virtues of the 13·5-in. gun on a larger scale, and it is the most accurate gun at all ranges that we have ever had. As it is never pressed to its full compass by explosive discharge it will be an exceptionally long-lived gun.
>
> "Its power may be measured by the fact that, whereas the 13·5-in. gun hurls a 1400-lb. projectile, a 15-in. gun discharges a projectile of nearly a ton in weight, and can hurl this immense mass of metal ten or twelve miles. That is to say, there has been an increase of rather more than 30 per cent—I am purposely vague on this point—in the weight of the projectile for an addition of 1½ in. to the calibre.

"This increase in the capacity of the shell produces results in far greater proportion in its explosive power, and the high-explosive charge which the 15-in. gun can carry through and get inside the thickest armour afloat is very nearly half as large again in the 15-in. gun as was the charge in the 13·5 in."

It is generally believed that the guns are fired by the men at them. To a certain extent this is true, and only to a certain extent. As the power of the gun has grown the distance at which a modern naval action would commence has grown, and to-day it is computed at not less than 10,000 yards. At that distance the enemy ships would be below the horizon to the man in the turrets, so a more elevated position had to be found. After many experiments Admiral Sir Percy Scott invented a "Fire Director," which is placed at the top of the foremast, and "Director Firing" was introduced. With this "Control Station" every gun is electrically connected, and the Director can train, elevate, and fire the guns from this position: all the gun crews have to do is to load them.

As the battle closed these control stations would, without doubt, get shot away, by which time the men in the turrets would be able to see the enemy,

so the guns would be fought and fired from that position. To make every one efficient in firing, the Navy has two great tests yearly, one is called the "Gunlayers' Test," the other "Battle Practice." At the former the individual gunlayers fire their guns, being given a "run" which has a time allowance of from half a minute up to 3 minutes, according to the size of gun. On page 175 are a few results of the firing taken from the last Gun Layers' Test Returns with heavy guns: all guns from 6-in. upwards being called "heavy."

The *Amphion*, by the way, which stood at the very top of the Order of Merit, was blown up by a mine at the commencement of the war.

At battle practice all guns are fired by the control officer, and this test is to ascertain the efficiency of a ship for battle. All particulars of this firing are strictly confidential, the published report only giving the number of points made and the conditions under which the firing took place. On page 176 is an extract from the battle practice returns.

These practices are carried out, the former at a range of 1600 yards, the latter at a mean range of 6000 yards, at a target 90 ft. by 30 ft., the speed of the ships while firing being 15 knots.

In addition to her main armament, all big ships

Order of Merit	Ships	Points	Nature of Gun	Name of Best Shot in Ship	Result obtained by Best Shot in Ship		
					Rounds Fired	Hits made	Figure of Merit
			ins.				
1	AMPHION	150·00	4 B.L. VII	G. J. Ford, A.B.	6	6	0·63
2	Superb	137·75	12 B.L. X	A. E. Goble, P.O.	4	4	0·43
3	K. George V	128·25	13·5 B.L. V	J. W. Butcher, P.O.	4	4	1·04
4	Thunderer	123·50	13·5 B.L. V	C. Finch, Bdr.	4	4	0·517
6	Dublin	108·33	6 B.L. XI	W. H. Vooght, L.-Sgt. R.M.L.I.	6	6	1·10
9	Cyclops	100·00	4 B.L. VIII	J. H. Ivy, A.B.	6	6	0·66
10	Cockrane	99·00	7·5 B.L. II	S. Sluce, P.O.	6	6	0·86
12	Neptune	95·00	12 B.L. XI	M. Carraher, P.O.	4	4	1·52
13	Centurion	90·25	13·5 B.L. V	F. H. Yeo, P.O.	4	4	0·99
15	Conqueror	85·50	13·5 B.L. V	J. Clerk, Sgt.	4	4	1·59
20	Berwick	72·22	6 B.L. VII	J. McElligott, L.S.	6	6	0·94
24	Agamemnon	68·17	9·2 B.L. XI	J. Ward, Sgt.	4	4	0·86
39	Hindustan	56·25	6 B.L. VII	C. E. Plumeridge, L.S.	6	6	0·48
47	Dreadnought	47·50	12 B.L. X	H. Carter, L.S.	4	4	0·845

Order of Merit	Ship	Squadron	No. of Guns	Nature of Guns	Points	General Conditions under which Firing took place
				inch		
1	KING GEORGE V ..	2nd B.S.*	10	13·5 V	974	Excellent
2	Princess Royal	1st B.C.S.	8	13·5 V	786	Very Good
3	Monarch	2nd B.S.	10	13·5 V	766	Excellent
4	Dreadnought	4th B.S.	10	12 X	651	Excellent
5	Orion	2nd B.S.	10	13·5 V	635	Good
6	Neptune	Fleet Flagship	10	12 XI	590	Excellent
7	Bellerophon	1st B.S.	10	12 X	550	Good
8	Inflexible	2nd B.C.S.	8	12 X	512	Very Good
9	Thunderer	2nd B.S.	10	13·5 V	506	Excellent
10	Indomitable	2nd B.C.S.	8	12 X	481	Excellent
11	St. Vincent	1st B.S.	10	12 XI	464	Good
12	Centurion	2nd B.S.	10	13·5 V	457	Good
13	Collingwood	1st B.S.	10	12 XI	397	Good
14	Lion	1st B.C.S.	8	13·5 V	334	Very Good
15	Vanguard	1st B.S.	10	12 XI	302	Good

* B.S. means Battle Squadron, and B.C.S., Battle Cruiser Squadron.

carry what is called an anti-torpedo armament of smaller quick-firing guns. Even the 6-in. can fire as many as 14 rounds a minute, the projectile weighing 100 lbs. They are intended to ward off torpedo attack, though not a few of our greatest gunnery experts object to such guns in big ships at all. Admiral Bacon, one of the finest gunnery experts the Navy has produced, put the view of this school very clearly forward at a meeting of the Institute of Naval Architects held in March, 1912. He said :—

" When we come to the best method of destroying gun-fire we come to the whole gist of the question as to whether we should use 6-in. guns or whether we should use the heaviest possible gun that can be put in a ship. I should like to draw your attention to some advice that was given many years ago by an old Post-Captain to his aide-de-camp, who was a midshipman. He said, ' Boy, if you ever are dining, and after dinner over the wine some subject like politics is discussed, when men's passions are aroused, if a man throws a glass of wine in your face, do not throw a glass of wine in his : throw the decanter stopper '—and that is what we advocates of the heavy gun propose to do, not to slop the 6-in. shot over the shirt-front of a battle-

ship, but to go for her with the heaviest guns we can get ; and the heavier the explosive charge you can get in your shell and the bigger explosion you can wreak on the structure near the turrets and the conning-tower and over the armoured deck, the more likely you are to disable that ship. We object—I speak humbly, as one of a multitude—most strongly to the fire of the big guns being interfered with by the use of smaller guns at the same time, with all the smoke and mess that are engendered by them. The attention of the observing officers is distracted, their sight is to a great extent obliterated, and even the theoretical result is not worth the candle. The ordinary 6-in. gun in a battleship is, as regards torpedo-boat attack, of just as much use as a stick is to an old gentleman who is being snowballed : it keeps his enemy at a respectful distance, but still within a vulnerable range. In these days torpedoes can be fired at ranges at which it is absolutely impossible even to hope or think of hitting the destroyer. You may try to do it, but it is quite useless. Very well, then, the 6-in. gun does keep the destroyer at a longer range than would be the case if the gun were not there, and that is the main use of the 6-in. gun as regards torpedo-boat attack."

To come back to our original subject, Guns and Armour, the gun has such an enormous superiority over armour to-day that it is generally expected that a modern action would prove the uselessness of the latter, even as siege guns have proved the uselessness of fixed fortifications.

CHAPTER XVII

TYPES OF SHIPS

IN the British Navy ships may be divided into three great classes: Battleships, Cruisers, and Torpedo craft, the latter including submarines, which are only under-water torpedo boats. A ship of war is in itself a mobile platform used for the purpose of carrying guns to the vicinity of the enemy so that he may be destroyed. No matter what other subsidiary purposes they may be used for, the main purpose is to act as a gun platform.

That being so, naturally we now struggle to get the greatest possible amount of gun power on one platform that we can. In the olden days, when small smooth-bore guns were the only weapons known, the way of attaining the object was to put as many guns as possible on one deck, then building other decks above: in this way we came first to have the single-deck ship, later known as a frigate, then the two-deck ship, known as a line-of-battle ship, then the three-deckers, of which the old *Victory* is a good example. The battleship

represents in sea war what the fixed fortification and siege guns represent in land war. Thus battleships are nothing more or less than floating mobile forts carrying the greatest number of the most powerful guns that can be put into one "fort." What we call battle cruisers are not cruisers at all in the proper sense of the word, but simply swift battleships.

The modern battleship, like all that has gone before, has developed from an early stage to an ideal. Until the Dreadnought era came along it was the practice to fit a battleship with various types of guns so that she might play a double or even threefold part. These used the very heavy guns, either 10-in. or 12-in., for battering the heavy ships of the enemy; a secondary battery of 6-in. guns for destructive work at short range; and a number of machine and small guns for warding off torpedo attack. A battleship so armed was weakened for its primary purpose—battering the enemy.

The first move towards the ideal was made with the King Edward VII Class, though in another way they marked a retrogression, for they carry five types of guns: four 12-in., six 9·2-in., ten 6-in., twelve 12-prs., twelve 3-prs. The improvement was in the four 9·2-in. guns.

Very shortly after these came the two Lord Nelsons, with their four 12-in., ten 9·2-in., twenty-four 12-prs., two 3-prs. Even here then are four types, but these are the largest amount of heavy guns so far placed in a single ship. It must be borne in mind that each type of gun has its own magazines and shell rooms, therefore it will be easily understood that the greater number of types the greater amount of waste of space and confusion.

With the introduction of the *Dreadnought* we reached the ideal battleship with her ten 12-in. and twenty-four 12-prs.—the all-big-gun-ship, as gunnery experts call her. Her 12-prs. were for purely anti-torpedo purposes, and at the time she was launched the 12-pr. was the ideal gun fitted to cope with torpedo attack because of the then comparatively limited range of the torpedo. The latest super-Dreadnoughts carry a battery of 6-in. guns, not as a secondary armament but as anti-torpedo armament; the increase in the size of these guns is due to the greatly increased range of the torpedo.

The next type of ship is the cruiser, of which we have the armoured, protected, and unprotected types. These have all been developed to meet our national need, and would be used in two

capacities, one to act as scouts for the battle fleets and find out the movements and whereabouts of the enemy; the other to protect our own commerce and drive the enemy's commerce off the sea. Cruisers are of all kinds, sizes, and speeds, built at different periods to meet different ideas of what a cruiser should be. These varieties only tend to show the difference of opinion that exists regarding their function in war.

The torpedo boat was the creation of France, who for years believed that a large number of very small, swift boats carrying torpedoes could, under cover of darkness, attack a battle fleet and trust to their speed to escape and their size to protect them from the enemy's guns. The first torpedo boat built for the British Navy was the *Lightning*, whose displacement was only twenty-seven tons, and whose speed was nineteen knots. She was launched in 1877.

Up till 1893 we followed the lead of France by building torpedo boats, then we developed a new class which we called Torpedo Boat Destroyers. These were vessels of a larger displacement and higher speed than was possible in a torpedo boat, and they were armed with one or two quick-firing guns, their mission being to run down the torpedo boats and sink them with gun fire. The first

destroyer was the *Havock*, launched in 1893, having a displacement of 240 tons, a speed of 27 knots, and carrying one 12-pr. and three 6-pr. guns. She also carried one torpedo tube, so could, if necessary, also act as a torpedo boat.

We soon discovered that the Destroyer could carry out all the functions of the torpedo boat and better, so discontinued building the latter, and devoted all our energies to the former. Our latest destroyers being vessels of 1000 tons displacement, 30 knots speed, carrying three 4-in. guns, and two torpedo tubes.

The latest development of the torpedo boat is, of course, the submarine. She does under water what the other does on top. That is the only difference between the two.

We have now in the latest type of small cruisers Destroyer Destroyers. These vessels have a speed of 30 knots, and being larger can keep their speed in a seaway that would swamp the smaller boats, while with their heavier guns they could blow the destroyer out of the water. The present war will no doubt demonstrate the usefulness of the various types and perhaps end in a complete revolution in shipbuilding.

CHAPTER XVIII

THE BRITISH NAVY

LIST of ships of the Royal Navy arranged in their various classes, together with their tonnage, horse-power, speed, year of completion, where built, and guns.

BATTLESHIPS

Name	Tonnage	Horse power	Speed (kts.)	Completed	Where built	Armament
ROYAL SOVEREIGN CLASS.						
Resistance	27,500	44,000	21	Building	Devonport	15-in., eight; 6-in., sixteen; 12-pr., twelve; torpedo tubes, five.
Renown					Fairfield	
Repulse					Jarrow	
Royal Sovereign ..					Portsmouth	
Royal Oak					Devonport	
Revenge					Barrow	
Resolution					Jarrow	
Ramillies					Dalmuir	
QUEEN ELIZABETH CLASS.						
Barham	27,500	28,000	25	1915	Glasgow	15-in., eight; 6-in., sixteen; 12-pr., twelve; torpedo tubes, five.
Malaya				,,	Newcastle	
Queen Elizabeth ..				1914	Portsmouth	
Warspite				,,	Devonport	
Valiant				1915	Govan	

BATTLESHIPS—*continued.*

Name	Tonnage	Horse power	Speed (kts.)	Completed	Where built	Armament
Erin	27,500	45,000	22	1914	Elswick	12-in., fourteen; 6-in., twenty; 3-in., twelve.
IRON DUKE CLASS.						
Benbow	25,000	29,000	22·5	1914	Glasgow	13·5-in., ten; 6-in., twelve; 3-pr., six; torpedo tubes, five.
Emperor of India ..				,,	Barrow	
Marlborough				,,	Devonport	
Iron Duke				,,	Portsmouth	
KING GEORGE V CLASS.						
Ajax	23,600	31,000	21	1913	Greenock	13·5-in., ten; 4-in., sixteen; 3-pr., four; torpedo tubes, five.
Audacious				,,	Birkenhead	
Centurion				,,	Devonport	
King George V ..	23,000	31,000	21	,,	Portsmouth	
Agincourt				1914	Barrow	13·5-in., ten; 6-in., sixteen.
ORION CLASS.						
Conqueror	22,500	27,000	21	1912	Dalmuir	13·5-in., ten; 3-pr., four; 4-in., sixteen; torpedo tubes, three.
Monarch				,,	Elswick	
Thunderer				,,	Thames	
Orion				1911	Portsmouth	
COLOSSUS CLASS.						
Colossus	20,000	25,000	21	1911	Greenock	12-in., ten; 3-pr., four; 4-in., sixteen; torpedo tubes, three.
Hercules	,,			,,	Jarrow	
Neptune	19,000			,,	Portsmouth	

St. Vincent Class.							
Collingwood	19,250	24,500	21	1910	Devonport	Yarrow	12-in., ten; 3-pr., four; 4-in., eighteen; machine, six; torpedo tubes, three.
Vanguard				,,	Barrow	Babco'k	
St. Vincent				1909	Portsmouth	,,	
Bellerophon Class.							
Bellerophon	18,600	23,000	21	1909	Portsmouth	Bc. & Y.	12-in., ten; 3-pr., four; 4-in., sixteen; torpedo tubes, three.
Téméraire				,,	Devonport	,,	
Superb				,,	Elswick	,,	
Dreadnought	17,900	23,000	21	1906	Portsmouth	Babco'k	12-in., ten; 12-pr., twenty-four; torpedo tubes, five.
Lord Nelson Class.							
Agamemnon	16,500	20,000	18	1907	Glasgow	Babco'k	12-in., four; 9·2-in., ten; 3-in., eighteen; 3-pr., twelve; machine, ten; torpedo tubes, five.
Lord Nelson				,,	Jarrow	Yarrow	
King Edward VII Class.							
Africa	16,350	18,000	18	1906	Chatham	Babco'k	12-in., four; 9·2-in., four; 6-in., ten; 12-pr., fourteen; 3-pr., fourteen; Maxims, two; torpedo tubes, five.
Britannia				,,	Portsmouth	,,	
Commonwealth ..				1905	Fairfield	,,	
Dominion				,,	Barrow	,,	
Hibernia				1906	Devonport	,,	
Hindustan				1905	Clydebank	,,	
King Edward VII ..				1904	Devonport	,,	
Zealandia				1905	Portsmouth	Nicla'se	

BATTLESHIPS—*continued*

Name	Tonnage	Horse power	Spd. (kts.)	Com-pleted	Where built	Boilers	Armament
SWIFTSURE CLASS.							
Swiftsure	11,800	12,500	18	1904	Elswick	Yarrow	10-in., four; 7·5 in., fourteen; 14-pr., fourteen; 12-pr., two; 6-pr., four; Maxims, four; torpedo tubes, two.
Triumph				,,	Barrow	,,	
FORMIDABLE CLASS.							
Bulwark	15,000	15,000	17	1902	Devonport	,,	12-in., four; 6-in., twelve; 12-pr., eighteen; 3-pr., six; Maxims, two; torpedo tubes, four.
Formidable				1901	Portsmouth	Belle'le	
Implacable				,,	Devonport	,,	
Irresistible				1902	Chatham	,,	
Queen				,,	Portsmouth	,,	
Prince of Wales ..				1904	Chatham	,,	
London				,,	Devonport	Babco'k	
Venerable				1902	Chatham	Belle'le	
DUNCAN CLASS.							
Albemarle	14,000	18,000	19	1903	Chatham	Belle'le	12-in., four; 6-in., twelve; 12-pr., twelve; 3-pr., six; Maxims, two; torpedo tubes, four.
Cornwallis				1904	Thames	,,	
Duncan				1903	,,	,,	
Exmouth				,,	Birkenhead	,,	
Russell				,,	Jarrow	,,	

CANOPUS CLASS.							
Albion	12,950	13,500	18	1901	Thames	Belle'le	12-in., four; 6-in., twelve; 12-pr., twelve; 3-pr., six; Maxims, two, torpedo tubes, four.
Canopus				1899	Portsmouth	,,	
Glory				1900	Birkenhead	,,	
Goliath				,,	Chatham	,,	
Ocean				,,	Devonport	,,	
Vengeance..				1902	Barrow		
MAJESTIC CLASS.							
Cæsar	14,900	12,000	17	1898	Portsmouth	Cylindel	12-in., four; 6-in., twelve, 12-pr., sixteen; 3-pr., twelve; Maxims, two; torpedo tubes, four.
Hannibal				,,	Pembroke	,,	
Illustrious				,,	Chatham	,,	
Jupiter				1897	Clydebank	,,	
Magnificent				1895	Chatham	,,	
Majestic				,,	Portsmouth	,,	
Mars				1897	Birkenhead	,,	
Prince George				1896	Portsmouth	,,	
Victorious				1897	Chatham	,,	

BATTLE CRUISERS

Name	Tonnage	Horse power	Spd. (kts.)	Completed	Where built	Armament
QUEEN MARY CLASS.						
Queen Mary	27,000	78,700	31	1914	Jarrow	13·5-in., eight; 4-in., twenty.
Tiger				1913	Glasgow	
LION CLASS.						
Princess Royal ..	26,350	70,000	31	1912	Barrow	13·5-in., eight; anti-torpedo 4-in., sixteen.
Lion				1911	Devonport	

BATTLE CRUISERS—*continued*

Name	Tonnage	Horse power	Speed (kts.)	Completed	Where built	Armament
AUSTRALIAN CLASS.						
Australia	19,200	44,000	26	1912	Govan	12-in., eight; 4-in., sixteen.
New Zealand	18,800			,,	Clydebank	
INVINCIBLE CLASS.						
Indefatigable	18,750	45,000	26	1911	Devonport	12-in., eight; anti-torpedo guns, 4-in. (1907 model), sixteen (Indefatigable 20 4-in.); torpedo tubes, three.
Invincible	17,250	41,000	25	1908	Elswick	
Inflexible				,,	Clydebank	
Indomitable				,,	Govan	

CRUISERS

Name	Tonnage	Horse power	Speed (kts.)	Completed	Where built	Armament
MINOTAUR CLASS.						
Defence	14,600	27,000	23	1908	Pembroke	9·2-in., four; 7·5-in., ten; torpedo tubes, three (submerged).
Shannon				,,	Chatham	
Minotaur				,,	Devonport	
DK. OF EDINBURGH CLASS.						
Achilles	13,550	23,500	23	1907	Elswick	9·2-in., six; 7·5-in., four; 3-pr., twenty-four.
Cochrane				,,	Govan	
Natal				,,	Barrow	
Warrior				1906	Pembroke	
Duke of Edinburgh ..				1905	,,	9·2-in., six; 6-in., ten; 3-pr. twenty; torpedo tubes, three (submerged).
Black Prince				1906	Thames	

Devonshire Class.						
Antrim	11,000	21,000	22½	1905	Clydebank	7·5-in., four; 6-in., six; 12-pr., two; 3-pr., twenty; Maxims, two; torpedo tubes, two (submerged).
Argyll				,,	Greenock	
Carnarvon				,,	Beardmore	
Devonshire				,,	Chatham	
Hampshire				,,	Elswick	
Roxburgh				,,	Glasgow	
Monmouth Class.						
Berwick	9,800	22,000	23	1903	Beardmore	6-in., fourteen; 12-pr., ten; pompoms, ten; 3-pr., three; torpedo tubes, two (submerged).
Cornwall				1904	Pembroke	
Cumberland				,,	Glasgow	
Donegal				1903	Fairfield	
Essex				,,	Pembroke	
Kent				,,	Portsmouth	
Lancaster				1904	Elswick	
Monmouth				1903	Glasgow	
Suffolk				1904	Portsmouth	
Drake Class.						
Drake	14,100	30,000	23	1902	Pembroke	9·2-in., two; 6-in., sixteen; 12-pr., fourteen; 3-pr., two; machine, six; torpedo tubes, two (submerged).
Good Hope				,,	Fairfield	
King Alfred				1903	Clydebank	
Leviathan				,,	Barrow	
Cressy Class.						
Aboukir	12,000	21,000	21	1902	Fairfield	9·2-in., two; 6-in., twelve; 12-pr., fourteen; 3-pr., three; machine, four; torpedo tubes, two (submerged).
Bacchante				,,	Clydebank	
Cressy				1901	Fairfield	
Euryalus				1904	Barrow	
Hogue				1902	,,	
Sutlej				,,	Clydebank	

CRUISERS—*continued*

Name	Tonnage	Horse power	Speed (kts.)	Completed	Where built	Armament
POWERFUL CLASS.						
Terrible	14,400	25,000	22	1898	Clydebank	9·2-in., two; 6-in., sixteen; 12-pr., eighteen; machine, six; torpedo tubes, four (submerged).
DIADEM CLASS.						
Amphitrite				1900	Barrow	6-in., sixteen; 12-pr., fourteen; 3-pr., six; Maxims, two; torpedo tubes, three (two submerged).
Andromeda				,,	Pembroke	
Argonaut				,,	Fairfield	
Ariadne	11,000	10,000	21	,,	Clydebank	
Diadem				1899	Fairfield	
Europa				,,	Clydebank	
Spartiate				1902	Pembroke	
EDGAR CLASS.						
Crescent				1893	Portsmouth	9·2-in., two; 6-in., ten; 6-pr., twelve; 3-pr., five; Maxims, two; torpedo tubes, two (submerged).
Edgar				1893	Devonport	
Endymion				1894	Hull	
Gibraltar				,,	Glasgow	
Grafton	7,350	12,000	19	,,	Blackwall	
Hawke				1893	Chatham	
Royal Arthur				,,	Portsmouth	
St. George				1894	Hull	
Theseus				,,	Blackwall	

Challenger Class.						
Challenger	5,800	12,500	21	1904	Chatham	6-in., eleven; 12-pr., nine; 3-pr., six; Maxims, two; torpedo tubes, two (submerged).
Highflyer Class.						
Hermes	5,600	10,000	20	1889	Fairfield	6-in., eleven; 12-pr., nine; 3-pr., six; Maxims, two; torpedo tubes, two (submerged).
Highflyer				,,	,,	
Hyacinth				1900	Glasgow	
Arrogant Class.						
Furious	5,750	10,000	19	1896	Devonport	6-in., ten; 12-pr., nine; 3-pr., three; Maxims, two; torpedo tubes, three (two submerged).
Vindictive				1899	Chatham	
Talbot Class.						
Diana	5,600	9,600	19·5	1899	Fairfield	6-in., eleven; 12-pr., nine; 3-pr., seven; Maxims, two; torpedo tubes, three (two submerged).
Dido				1897	Glasgow	
Doris				,,	Barrow	
Eclipse				,,	Portsmouth	
Isis				1898	Glasgow	
Juno				,,	Barrow	
Minerva				1896	Chatham	
Talbot				,,	Devonport	
Venus				1897	Fairfield	

CRUISERS—*continued*

Name	Tonnage	Horse power	Speed (kts.)	Completed	Where built	Armament
Astræa Class.						
Astræa	4,360	9,000	19·5	1894	Devonport	6-in., two; 4·7-in., eight; 6-pr., eight; 3-pr., one; torpedo tubes, four (above water).
Bonaventure				,,	,,	
Cambrian				,,	Pembroke	
Charybdis				1895	Sheerness	
Flora				,,	Pembroke	
Forte				,,	Chatham	
Fox				,,	Portsmouth	
Hermione				,,	Devonport	
Apollo Class.						
Æolus	3,500	9,000	20	1893	Devonport	6-in., two; 4·7-in., six; 6-pr., eight; 3-pr., one; machine, four; torpedo tubes, four (above water).
Brilliant				,,	Sheerness	
Melpomene				1892	Glasgow	
Latona				1893	Barrow	
Sappho				,,	Poplar	
Scylla				1892	,,	
Sirius				,,	Elswick	
Terpsichore				,,	Glasgow	
Sentinel Class.						
Adventure	2,700	16,500	25	1905	Elswick	12-pr., ten; 3-pr., eight; torpedo tubes, two.
Attentive				,,	,,	
Foresight				,,	Govan	
Forward				,,	,,	
Pathfinder				,,	Laird	
Patrol				,,	,,	
Sentinel				,,	Barrow	
Skirmisher				,,	,,	

Topaze Class.						
Amethyst	3,000	9,800	23	1904	Elswick	4-in., twelve; 3-pr., eight; Maxims, two; torpedo tubes, two.
Diamond				1905	Laird	
Sapphire				,,	Jarrow	
Topaze				1904	Laird	
Calliope Class.						
Calliope	3,740	40,000	30	1915	Chatham	6-in., two; 4-in., six.
Conquest				,,	,,	
Comus				,,	Newcastle	
Cleopatra				,,	Devonport	
Champion				,,	Newcastle	
Carysfort				,,	Pembroke	
Caroline				,,	Birkenhead	
Cordelia				,,	Pembroke	
Arethusa Class.						
Royalist	3,600	30,000	30	1914	Glasgow	6-in., two; 4-in., six.
Inconstant				,,	,,	
Phaeton				,,	Barrow	
Penelope				,,	,,	
Galatea				,,	Glasgow	
Undaunted				,,	Govan	
Arethusa				,,	Chatham	
Aurora				,,	Devonport	

CRUISERS—*continued*

Name	Tonnage	Horse power	Speed (kts.)	Completed	Where built	Armament
Chatham Class.						
Birmingham	5,400	26,500	25	1914	Newcastle	6-in., eight; 3-pr., four.
Chatham				1912	Chatham	6-in., eight; nine Q.F. and machine.
Dublin				1913	Dalmuir	
Lowestoft				1914	Chatham	
Nottingham				1914	Pembroke	
Southampton				1913	Clydebank	
Bristol Class.						
Bristol	4,800	24,500	27	1910	Clydebank	6-in., two; 4-in., ten; machine, eight.
Glasgow				,,	Fairfield	
Gloucester				,,	Dalmuir	
Liverpool				,,	Barrow	
Newcastle				,,	Elswick	
Weymouth Class.						
Dartmouth	5,250	23,500	25	1911	Glasgow	6-in., eight; Q.F. and machine, nine.
Falmouth				,,	Clydebank	
Weymouth				,,	Elswick	
Yarmouth				,,	Govan	
Colonial.						
Brisbane	5,400	25,000	25·5	1913	New S. W.	6-in., eight; Q.F. and machine, nine.
Melbourne				1912	Birkenhead	
Sydney				,,	Glasgow	

BOADICEA CLASS.						
Active				1911	Pembroke	4-in., ten ; 3-pr., four.
Amphion				1912	,,	
Bellona*				1910	,,	
Blanche	3,440	20,000	26	,,	,,	
Blonde				1911	,,	
Boadicea*				1909	,,	
Fearless				1913	,,	

* The Bellona and Boadicea carry only six 6-in. guns.

SUBMARINES

Class	Date of building	Speed in knots	Displacement	Tubes	Guns
A	1904–06	9–12	200 Tons	2	
B	1904–06	9–13	314 ,,	2	
C	1906–09	10–14	320 ,,	2	
D	1908–11	10–16	580 ,,	3	
E	1911–13	10–16	800 ,,	4	Two 3-in.
F	1913–14	12–20	1,000 ,,	6	Two 3-in.

TORPEDO DESTROYERS

"M" Class (1913–14) (Displacement, 1,200–1,350 tons; H.P., 27,000; 34 knots; armament, four 4-in.; four 21-in. torpedo tubes):—Manly, Mansfield, Marksman, Mastiff, Matchless, Menace, Mentor, Meteor, Milne, Minos, Miranda, Monitor, Moorsom, Morris, Murray, Myngs.

"L" Class (1912–13) (Displacement, 980–1,100 tons; H.P., 25,000; 32–33 knots; armament, three 4-in.; four 21-in. torpedo tubes):—Laertes, Laforey, Lance, Landrail, Lark, Laurel, Laverock, Lawford, Legion, Lennox, Leonidas, Liberty, Linnet, Llewellyn, Lookout, Louis, Loyal, Lucifer, Lydiard, Lysander.

"K" Class (1912–13) (Displacement, 928–1,100 tons; H.P., 23,000; 30–32 knots; armament, three 4-in.; four 21-in. torpedo tubes):—Acasta, Achates, Ambuscade, Ardent, Christopher, Cockatrice, Contest, Fortune, Garland, Hardy, Lynx, Midge, Owl, Paragon, Porpoise, Shark, Sparrowhawk, Spitfire, Unity, Victor.

"I" Class (1911) (Displacement, 750–850 tons; H.P., 16,500–20,000; 30 knots; armament, two 4-in.; two 21-in. torpedo tubes):—Acheron, Archer, Ariel, Attack, Badger, Beaver, Defender, Druid, Ferret, Firedrake, Forester, Goshawk, Hind, Hornet, Hydra, Jackal, Lapwing, Lizard, Lurcher, Oak, Phœnix, Sandfly, Tigress.

"H" Class (1910) (Displacement, 720–750 tons; H.P., 13,000; 27 knots; armament, two 4-in.; two 21-in. torpedo tubes):—Acorn, Alarm, Brisk, Cameleon, Comet, Fury, Goldfinch, Hope, Larne, Lyra, Martin, Minstrel, Nemesis, Nereide, Nymphe, Redpole, Rifleman, Ruby, Sheldrake, Staunch.

"G" Class (1909) (Displacement, 900–1,000 tons; H.P., 2,100; 27 knots; armament, one 4-in.; two 21-in. torpedo tubes):—Basilisk, Beagle, Bulldog, Foxhound, Grasshopper, Harpy, Mosquito, Nautilus, Pincher, Racoon, Rattlesnake, Renard, Savage, Scorpion, Scourge, Wolverine.

"F" CLASS (1907–9) (Displacement, 865–1,050 tons; H.P., 14,000–15,500; 33 knots; armament, five 12-prs.; two 18-in. torpedo tubes):—Afridi, Amazon, Cossack, Crusader, Ghurka, Maori, Mohawk, Nubian, Saracen, Tartar, Viking, Zulu.

"E" CLASS (1903–8) (Displacement, 530–650 tons; H.P., 7,500; 25 knots; armament, four 12-prs.; two 18-in. torpedo tubes):—Arun, Boyne, Chelmer, Cherwell, Colne, Dee, Derwent, Doon, Eden, Erne, Ettrick, Exe, Foyle, Garry, Itchen, Jed, Kale, Kennet, Liffey, Moy, Ness, Nith, Ouse, Ribble, Rother, Stour, Swale, Test, Teviot, Ure, Usk, Waveney, Wear, Welland.

"D CLASS (1895–1901) (Displacement, 300–400 tons; H.P., 6,000; 30 knots; armament, one 12-pr.; five 6-prs.; two 18-in. torpedo tubes):—Angler, Coquette, Cygnet, Cynthia, Desperate, Fame, Mallard, Stag.

"C" CLASS (1895–1901) (Displacement, 300–400 tons; H.P., 6,000; 30 knots; armament, one 12-pr.; five 6-prs.; two 18-in. torpedo tubes):—Albatross, Avon, Bat, Bittern, Brazen, Bullfinch, Cheerful, Crane, Dove, Electra, Fairy, Falcon, Fawn, Flirt, Flying Fish, Gipsy, Greyhound, Kestrel, Leopard, Leven, Mermaid, Osprey, Ostrich, Racehorse, Recruit, Roebuck, Star, Sylvia, Thorn, Velox, Vigilant, Violet, Vixen, Vulture.

"B" CLASS (1895–1901) (Displacement, 300–400 tons; H.P., 6,000; 30 knots; armament, one 12-pr.; five 6-prs.; two 18-in. torpedo tubes):—Albacore, Arab, Bonetta, Ernest, Express, Griffon, Kangaroo, Lively, Locust, Myrmidon, Orwell, Panther, Peterel, Quail, Seal, Spiteful, Sprightly, Success, Syren, Thrasher, Wolf.

"A" CLASS (1894–5) (Displacement, 275–350 tons; H.P., 4,500; 27 knots; armament, one 12-pr.; five 6-prs.; two 18-in. torpedo tubes):—Conflict, Fervent, Lightning, Opossum, Porcupine, Ranger, Sunfish, Surly, Zephyr.

DEPOT SHIPS FOR TORPEDO CRAFT

Adamant.
Alecto.
Aquarius.
Blake.
Blenheim.
Bonaventure.
Diligence.
Forth.
Hazard.
Hebe.
Leander.
Maidstone.
Pactolus.
St. George.
Thames.
Tyne.
Vulcan.
Woolwich.

FLOTILLA LEADERS

Kempenfelt. Nimrod. Lightfoot. Marksman. Swift.