

THE ROYAL DOCKYARDS

BY

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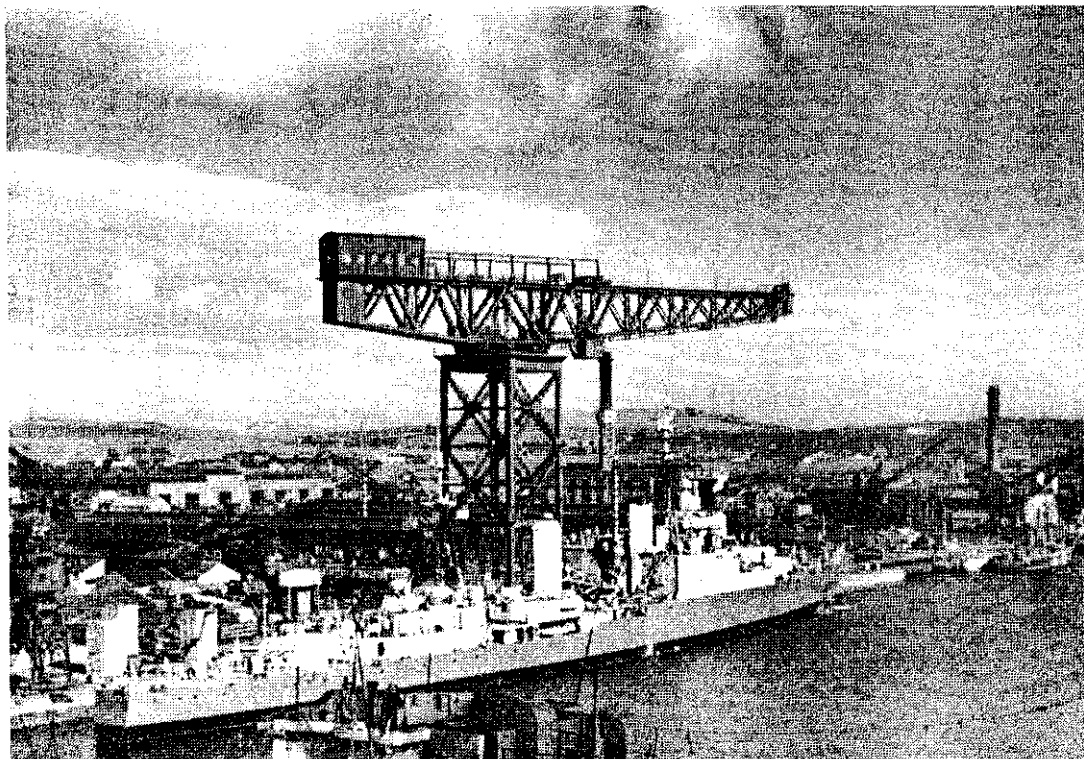
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PART I

SIZE AND SCOPE OF THE DOCKYARD ORGANIZATION

This paper will deal with the organization of the Royal Dockyards at home and it would be as well to have some idea of the magnitude of that organization. There are six Royal Dockyards in Great Britain—at Portsmouth, Devonport, Chatham, Rosyth, Sheerness and Portland, with a total industrial labour force of over 50,000 men and women. Thus the Dockyards represent one of the larger industrial units in Great Britain, and the major individual yards, with 16,000 or more industrials each must be considered very large concerns. Not only are the dockyards large in size and numbers employed, they have also to cover an extremely wide variety of work. They must be able to repair the hulls, machinery, equipment and fittings of all types of warships, to build new ships (though not to the same extent as formerly) and there must be a manufacturing capacity for much of the machinery and equipment fitted in ships. This potential for new construction and manufacture of equipment has to be maintained as a measure of war insurance since, under emergency conditions, a dockyard may be called upon to do almost anything. The yards are, in the main, however, laid out for repair work.

The work of dockyards is by no means confined to ships; they have a responsibility, in conjunction with the Civil Engineer-in-Chief's Department for the installations and equipment fitted in all Admiralty Shore Establishments throughout the country, including Barracks, Air Stations, Experimental Establishments, Stores, Armament and Victualling Depots, R.N.V.R. Headquarters and the like. This work, which includes such matters as electricity supplies, heating, ventilation, cooking and domestic equipment, as well as workshop and technical installations, is assuming ever increasing importance



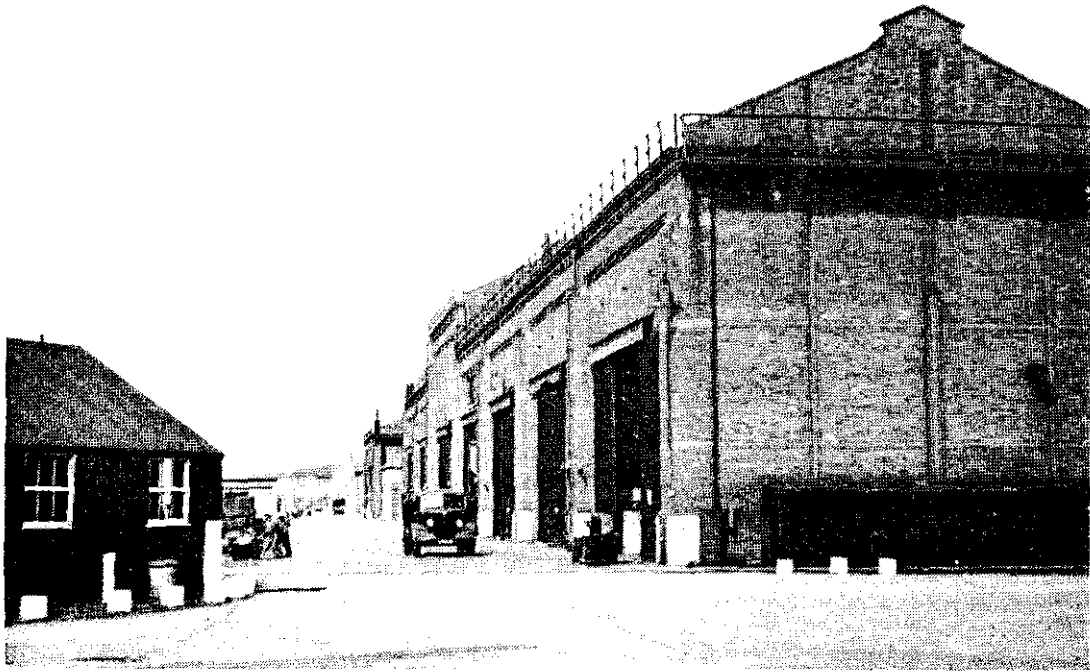
ROSYTH DOCKYARD

and its volume, which was almost negligible before the last war, is now very large. In addition, of course, the dockyards are virtually self-contained as regards the installation, maintenance and repair of their own buildings and equipment, and they have to compete with, amongst other things, such diverse elements as shipbuilding and ropemaking, boilers and weighing machines, electronics and dredging. This then, is the rather large and complex concern whose organization it is proposed to study.

ORIGIN AND GROWTH OF THE DOCKYARD ORGANIZATION

No examination of the organization of the Royal Dockyards would be in correct perspective without some reference to its past history. It is essential to appreciate that it has reached its present form by gradual evolution and it is certain that if the organization were to be created today, without reference to past traditions and practice, it would assume a somewhat different shape and character.

The dockyards are popularly supposed to have been founded by Henry VIII, who also appointed a Keeper of the Royal Storehouses at Deptford and Erith, but there had been royal shipbuilding establishments long before. In the reign of King John, the Keeper of the King's Ships is found superintending the construction of buildings for naval purposes, and in May, 1212, the Sheriff of Southampton was commanded to cause the docks at Portsmouth to be enclosed in a strong wall, in the manner the Archdeacon of Taunton would point out, for the preservation of the King's Ships and Galleys. Storehouses were also constructed for the ships' stores and tackling, and there must have been some kind of yard at Portsmouth at this time. There is evidence that Woolwich, Deptford and Portsmouth Yards were established early in the reign of Henry VIII, but it may be that they were merely placed on a more permanent footing. Chatham Yard was founded by Queen Elizabeth on the site of the present



Tide Bays

gun-wharf, but was moved farther down the river about 1622. Devonport Dockyard, originally known as Plymouth Dock, was first established in 1690. Sheerness was established as an adjunct to Chatham in the reign of Charles II but the present yard dates only from 1822. Rosyth, the most recently established of the home dockyards, was first put into operation in 1915.

The problem of the dockyards and their administration seems to have caused the Admiralty no little concern in the past and this is perhaps not altogether surprising when one considers the size and cost of the organization and the vital part which it plays in making possible the upkeep of the Fleet.

Until the reforms of Sir James Graham, First Lord of the Admiralty in 1832, the administration of the dockyards was carried out by Commissioners, responsible to the Navy Board. Occasionally civilians, they were more often naval officers, who had relinquished their rank on appointment, and acted as civilians. The following extracts from a memo written by Mr. John Barrow, Second Secretary of the Admiralty, for the information of Sir James Graham's successor shows that the situation, prior to the Graham Reforms was certainly highly unsatisfactory. We read that 'while the Navy and Victualling Boards were in existence, constant complaints were made by every Board of the Admiralty of the want of information regarding the purchase and expenditure of stores, the quantities on hand, the expenses of work carrying on, of the repairs of buildings, and, in short, of everything connected with the dockyards, and when any information was called for, it was rarely to be obtained from Navy and Victualling Offices, particularly the former, before a reference had been made by them to the yards and then a long delay was occasioned before the required returns were sent up, and after all, when the information came, it was generally incorrect.'

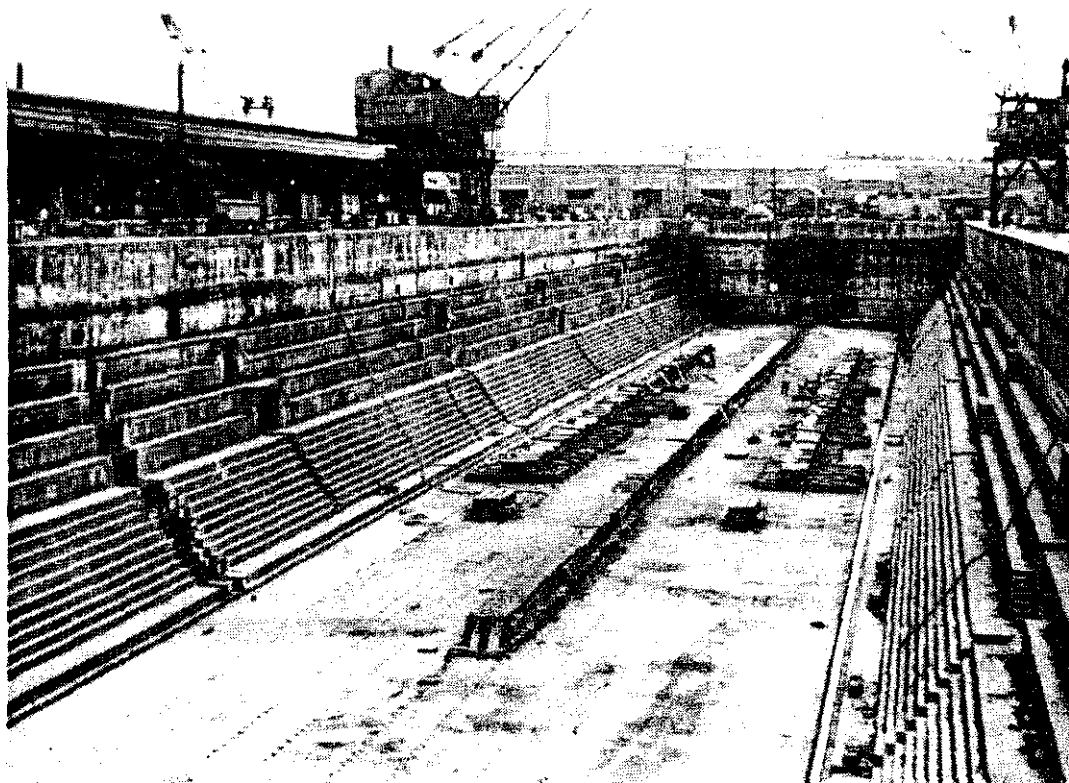
It is also stated in this reference that the old system of management of the dockyards was as 'vicious in principle as it was wasteful in the expenditure of money and materials ; that it was so will readily be conceived when it is

stated that 6,500 men were constantly employed on what is called Task and Job (which implies more work done in a day than an ordinary day's work) and yet there were so many more men in the yards than were required for the work to be done that they were allowed to work only five days in the week. Another absurdity was that the earnings of the very best artificer were limited to a small sum, say five shillings a day, though he was supposed to be working by Task, which implies the work of a day and a half done in one day. The consequence was that every man got his five shillings, within a penny or two, whatever his abilities, or want of them, may have been. This glaring inconsistency had frequently been pointed out by the Board of Admiralty but, so strong was the opposition to altering it, that the farce was kept up of measuring the work, by a number of officers called 'Measurers' with salaries of £180 each, who had no other merit than the ingenuity of that wonderful contrivance, by which the earnings of good and bad workmen were brought out to be as nearly as possible the same.'

This particular incentive system was abolished under the Graham Reforms and was replaced by a proper system of sub-divisions of the labour force into gangs of fifteen and divisions of thirty, each division being placed under a salaried officer who was given the title of Inspector. This would appear to have been the origin of this particular officer grade which continues until this day, although at the present time they are normally expected to supervise a rather larger number of men, despite the great increase in the complexity of work carried out. It appears that this particular reform proved a great success and effected an immediate saving of between £90,000 and £100,000 a year under the heading of wages alone, as well as producing a great improvement in the quality of the work carried out.

Sir James Graham abolished the Navy Board in his administrative reforms of 1832 and merged the whole of the administrative side under the single direction of the Admiralty. At the same time, he carried out corresponding reforms in the control and management of dockyards and victualling yards. The office of Civil Commissioner was abolished and a Rear-Admiral was appointed as Admiral Superintendent. The reason given for this change was that the equipment of all ships fitting out could be greatly expedited, and a large economy effected in the expenditure of stores by reason of the yards being under the immediate eye of a naval officer of high rank and experience. It was also expected that naval officers in charge would be more likely to keep the ships of the first and second class reserve, which were in those days a responsibility of the dockyards, in a proper state of efficiency and readiness.

Supreme control of dockyards has, for many years, been vested in the Controller of the Navy, and it appears that the post of Surveyor of the Navy was created under the Graham Reforms to deal with the building, repairing and equipping of ships. The post of Surveyor of Dockyards existed from 1872 to 1885 and this officer was attached to the department of the Director of Naval Construction, although he was directly responsible to the Controller for the supervision he exercised in the dockyards. From 1885 there was a Director of Dockyards who was personally responsible, under the Controller, for all the work of the dockyards, and the requirement that he should frequently visit them, to confer personally with the Superintendents, Civil Assistants and other officers, was made a leading feature of his instructions. In the same year the post of Civil Assistant to the Superintendent was created at each of the larger yards. These technical officers were intended to be directly associated with the management, and to keep themselves acquainted, by conference with departmental officers and personal inspection, with the progress of work. They were to be consulted as to work to be undertaken and, acting with the authority of the Superintendent, control and supervise labour and materials. Nevertheless, they



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were to have no charge and were in no way to interfere with the responsibilities of departmental officers.

From a report by Admiral Lord Fisher in 1905, it appears that effective control by the Director of Dockyards, in these earlier forms of organization, was much impaired by the extent of the office work which chained him to his desk at the Admiralty. Lord Fisher, in this report proposed a number of reforms, among which the following two were subsequently implemented in the main:—

(a) Abolition of the posts of Civil Assistants to the Superintendents. These officers (not surprisingly having regard to their terms of reference), had reached a position intermediate between the Superintendents and the responsible Heads of Departments, and had largely acquired control over departmental officers. This had not originally been intended and was considered undesirable.

(b) The heads of the constructive and engineering departments were to be constituted Managers of these departments in the full sense, with effective and authoritative control over the workpeople, including the power to enter, discharge, promote or punish men, and to procure their own yard machinery and stores.

There have been no very radical changes in the basic organization since that date, although the evolutionary process has continued steadily.

This brief account of past phases in the growth of the dockyard organization is of interest perhaps, in showing the difficulties which have been experienced, both in the general administration of the various dockyards from headquarters and also in the local administration of each individual dockyard. These difficulties are inherent in the size of the organization, in the variety of tasks it is called upon to perform, the ever-changing nature of these tasks according to changes in the shape and size of the fleet and of its equipment, and not least

perhaps, to the sub-division of the organization on purely professional lines, right up to the highest levels of management.

OVERALL ADMINISTRATION OF THE DOCKYARDS

Control at the Admiralty of the ship repair, ship building and various other functions of the dockyards is vested in the Director of Dockyards who is responsible to the Board of Admiralty for the programmes of work and the organization, efficiency, finance and general control of the departments dealing with these functions. Similarly, however, there are Directors of other Admiralty Departments responsible to the Board for work carried out in such dockyard departments as the Civil Engineering Dept., Naval Stores Dept., Expense Accounts Dept., etc. There are also Branches of the Admiralty Secretariat at headquarters which are concerned with the administrative aspects of matters such as the conditions of service, appointment of officers and non-industrials generally, and also with the employment of industrials.

Locally, the Superintendent is responsible for the direction and co-ordination of all the dockyard departments, but this does not preclude the heads of these departments from maintaining direct contact with their parent Admiralty Departments when appropriate. An additional complication is that, in general, dockyards are not solely repair establishments but also serve as naval bases and provide facilities for berthing, fuelling, storing, ammunitioning and victualling ships of the active and reserve fleets, which matters are very much the concern of the appropriate Commanders-in-Chief. These aspects of dockyard administration, the requirements of which may at times conflict with repair requirements, are also controlled by the Superintendent to meet the general requirements of Commanders-in-Chief.

INTERNAL ORGANIZATION OF A DOCKYARD

The internal organization of a typical home dockyard is shown in FIG. 1 but the following brief notes may be helpful.

Superintendent

This officer has full responsibility for the dockyard and certain other civilian shore establishments, and is assisted by a small secretarial and clerical staff. In the main, he exercises his authority and control through the agency of the heads of departments, who advise him on all matters within their particular province. He is particularly concerned with the more general questions of yard policy and administration, ensuring that departments work in close co-operation in all matters, and that fleet requirements are properly met.

Captain of the Dockyard

Is responsible for berthing and mooring all vessels using the port and for the movement of all ships in the dockyard. He controls tugs, mooring-vessels and other yardcraft and is responsible for the administration of ships paid off into dockyard control. He has a small industrial section dealing with sailmaking and rigging work. He is Deputy to the Superintendent.

Constructive Department

Engineering Department

Electrical Engineering Department

These three departments provide the main productive capacity of the yard. Each department is virtually self-contained with its own workshop and other

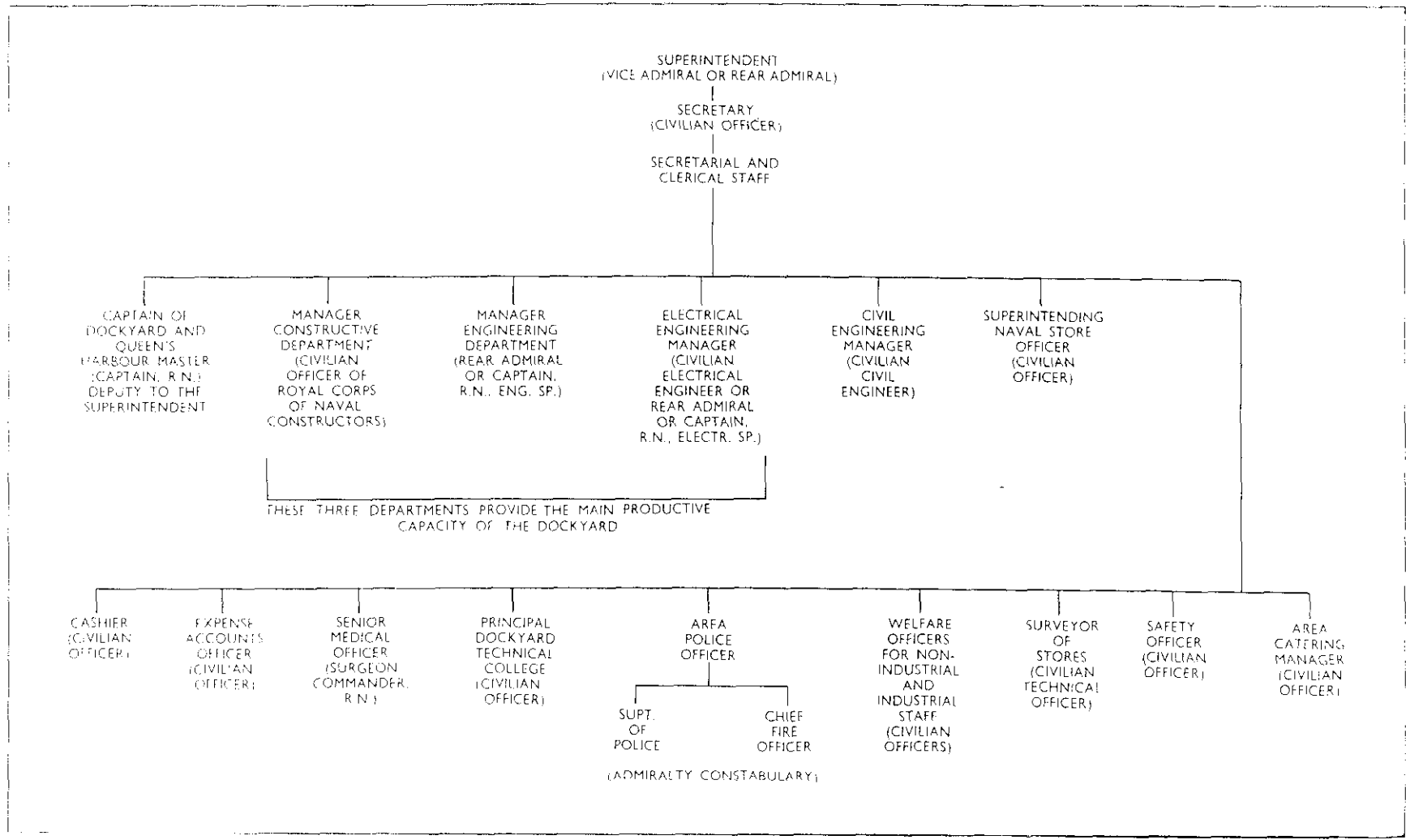


FIG. 1

facilities. Each department also has its own personnel section dealing with entries, discharges and labour matters generally, trains its own apprentices, has its own yard machinery and other specialist sections as well as general ship repair sections.

The managers of these departments have full authority within their departments subject only to the general direction and control of the Superintendent.

Civil Engineering Department

Responsible, under the general direction of the Civil Engineer-in-Chief at the Admiralty, for all buildings and civil engineering work (including docks, jetties, dredging of channels, etc.) in the dockyard and outlying establishments.

Naval Store Department

Responsible, under the general direction of the Director of Stores at the Admiralty, for the provision, storage and issue of all naval store items and materials required in the Command, i.e. for both dockyard and fleet requirements. Also responsible for the operation and maintenance of all motor transport and for the management of fuel oil depots and operation of the Fleet Fuelling Service in the area.

Dockyard Technical College

Provides educational training in general, scientific and technical subjects for all dockyard apprentices.

Safety Officer

A technical officer borne for safety duties throughout the dockyard as required by the Factories Act.

It can be seen that the Superintendent has general control and direction of a considerable number of entirely separate departments, the heads of which are all responsible to him direct. The principal productive resources of the yard are concentrated in three main departments, each largely self-contained and autonomous, divided by lines of professional demarcation as opposed to a natural administrative division, and these departments are themselves supported by a number of other departments which provide common services for the whole organization.

DEPARTMENTAL ORGANIZATION

There is no fixed pattern governing the internal organization of the main professional departments, which is largely left to the discretion of the managers concerned, and there are inevitably variations between one department and another, and one dockyard and another. Nevertheless, since the inherent requirements are much the same in all cases, the main features do not differ very greatly, and it will be sufficient to show a typical case, one with which the author is most familiar, namely the Engineering Department at Rosyth.

From FIG. 2 it will be seen that there are four main sub-divisions of the industrial section of the department, each dealt with by a Naval Assistant to the Manager. The first section, under the Deputy Manager, a Commander, is concerned with the whole of the basic resources of the department, namely personnel, finance and yard machinery. To assist him the Deputy Manager has two civilians of the grade of Senior Foreman of the Engineering Branch, men of long experience in the dockyard service who have been selected for promotion to this grade on the basis of merit. The term 'Senior Foreman'

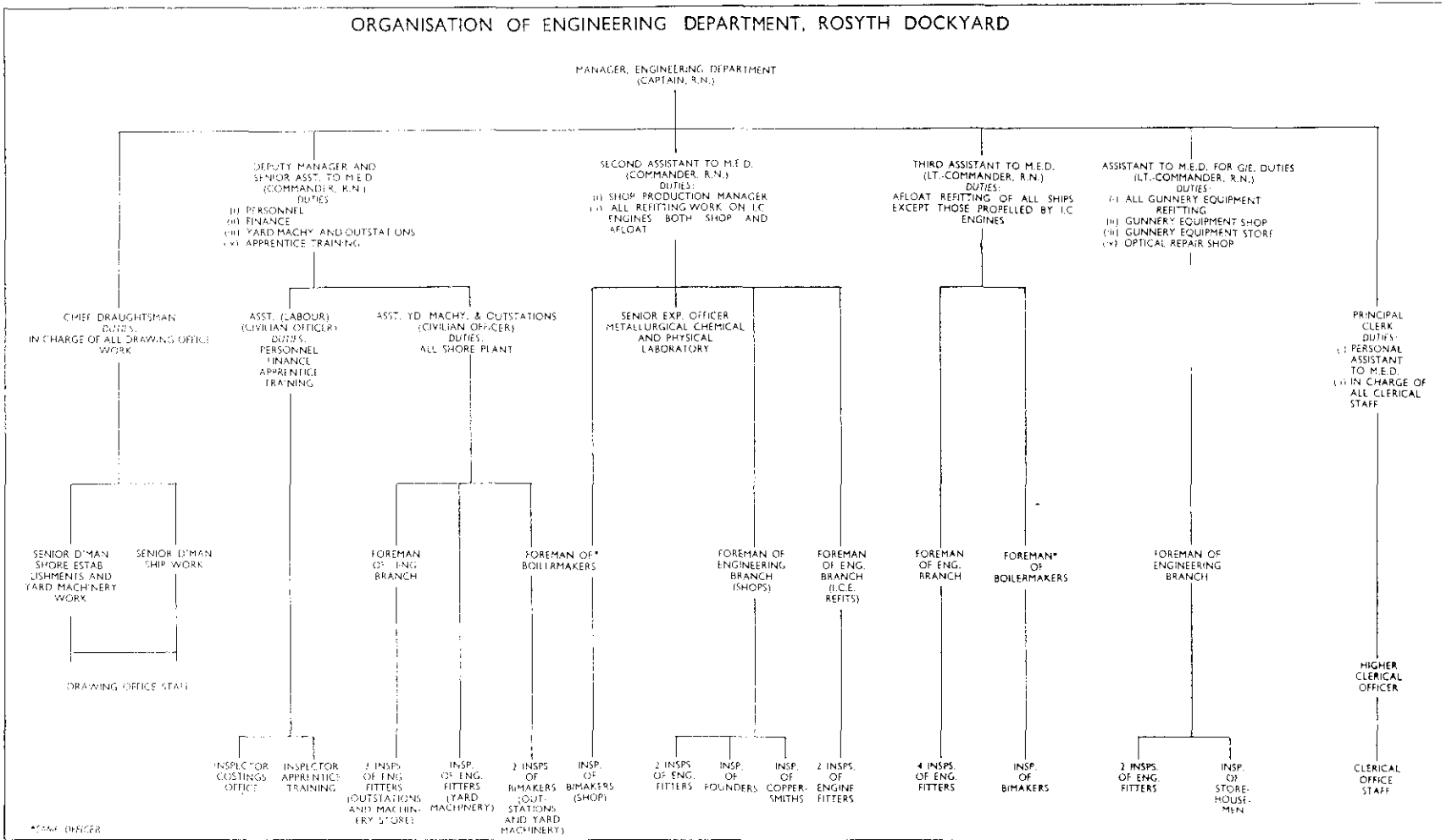
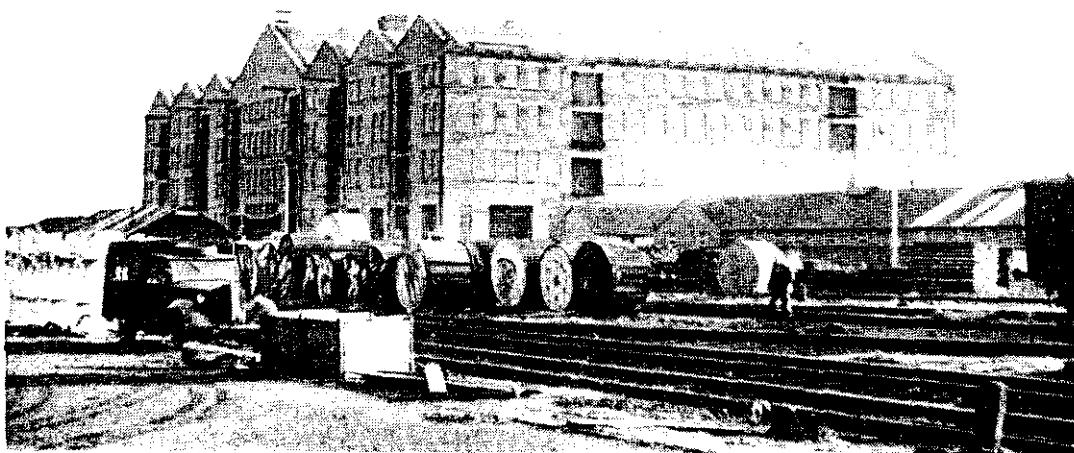


FIG. 2



THE MAIN NAVAL STORE

is apt to be misunderstood by those familiar with the term 'Foreman' as used in outside industry. The grade of senior foreman is a responsible one, carrying a salary of between £1,035 and £1,210 per annum.

The second section, also under a Commander, is basically the Shop Production Section. Apart from the gunnery workshops, referred to later, all the main production workshops of the department are thus placed under single control, and their work, which is largely inter-dependent, can be properly correlated. This officer deals with all aspects of shop practice including the study and development of technical practice, control of standards of work (through the inspection system), planning of work, progress and other administrative matters. His other main concern is the refitting of all I.C. engines both ashore and afloat. In larger yards there would probably be a separate afloat section dealing with this, but the volume of such work at Rosyth does not permit one, and it has therefore been associated with the I.C. engine workshop section. The laboratory section under a Senior Experimental Officer, which provides a general yard service, is also appropriately associated with this section.

The third section, under a Lieutenant-Commander, deals simply with all afloat refitting work, other than that covered by the I.C. engine and gunnery equipment sections. This section may be considered as one of the main spearheads of the department's productive effort and its importance is self-evident.

The fourth section, also under a Lieutenant-Commander, is a specialist section dealing with all gunnery equipment work. It should be explained that, apart from the electrical equipment involved, all gunmountings, directors and gunnery control equipment are refitted by the engineering departments of the dockyards. This highly specialized work, which of recent years has assumed ever-increasing importance, involves most complex hydraulic servo-systems and mechanisms, intimately related to complex electronic devices. Complete co-operation between the engineering and electrical engineering departments is

therefore necessary for the work and in some dockyards special combined workshops have been set up for the purpose. At Rosyth, the same object is achieved by close association of the mechanical and electrical workshops and by the use of a combined test bay, while a proper combined workshop is planned and will, it is hoped, be provided in due course. In this section is combined all afloat and shop gunnery equipment work (which includes torpedo tubes), H.P. air compressors and systems, a gunnery equipment store, and optical repair work of all sorts.

Apart from the industrial sections there is a fully equipped drawing office dealing with specifications, designs, drawings and most technical aspects of the department's activities and this is under the control of a chief draughtsman responsible direct to the Manager. The chief draughtsman is, of course, a civilian with wide experience of Admiralty and/or dockyard drawing office work who has been selected on the basis of merit.

There is also a clerical office under the control of a principal clerk who also carries out the duties of personal assistant to the Manager. In addition to normal correspondence, returns, etc., a complete record of all labour employed in the department is maintained in this office, and matters such as the local purchase of machinery and spare parts are also dealt with there.

There are, of course, many different ways of carving up a cake, and it would be foolish to claim pre-eminence for one particular method. The departmental organization described above, has, it is believed, the merits of logic and simplicity, with clear-cut lines of responsibility.