

PLANNING AND PROGRESSING OF MACHINERY FOR NEW CONSTRUCTION.

Under peace time conditions, the normal procedure whereby the progress of machinery items at various makers' works was reported monthly on a standard printed form was found adequate to enable the Engineer-in-Chief's Department to be kept informed of the general progress of the work.

When, however, subsequent to the outbreak of hostilities, the production of each firm was being stepped-up to a maximum it became clear that a tighter control was necessary, and that some form of progress-planning would have to be introduced. It was evident that firms with a greater 'pull' in the industrial world would be in a position to obtain deliveries of castings, forgings, auxiliary machinery, etc., at the expense of the smaller concerns, and, further, the larger main machinery contractors would extend this competition even among themselves. Such a state of affairs could not be allowed to prevail and this led to the establishment of a Planning and Progress Section incorporated in the E. in C.'s Department.

In brief, the functions of the Planning and Progress Section have been as follows:—

- (a) To keep the E. in C.'s Department fully informed as to the progress of machinery for all H.M. ships building.
- (b) To assist main machinery contractors and sub-contractors to overcome difficulties in supplies and so to keep their programme dates for completion.
- (c) To keep a check on the capacity of main machinery contractors and sub-contractors.
- (d) To produce and keep up to date orders of priority for supply of auxiliary machinery, etc., to main machinery contractors.
- (e) To allocate to main machinery contractors their suppliers of steel castings for main turbines, welded structures (L.P. casings and gearcases) and (turbines, gearing and shafting) for main machinery.
- (f) To provide all necessary information for the use of the Deputy Engineer-in-Chief at Controller's Monthly Production Meetings.

Staff:—A number of engineer officers, each allocated to cover a definite area, was appointed as progress officers for the following duties:—

- (i) To obtain accurate information as to the capacity of each main machinery contractor expressed in terms of 'lines' of machines, *i.e.*, sets of main engines.
- (ii) To report on the progress of the machinery for each ship, *i.e.*, building of main machinery, supply of auxiliaries, launching and completion dates. Also, by direct contact with the local overseer and firm's officials, to obtain information on outstanding problems which might be holding-up work, *e.g.*, awaiting approval of certain drawings, and initiating action to overcome these difficulties. A report on the work at each shipyard or firm visited was posted immediately to Progress Section in E. in C. Department for action as referred to later.

The 'tours' of these progress officers were arranged so that all contractors whose premises it was desired to visit, were contacted once a month. This

entailed approximately 3 weeks travelling, followed by 1 week in office. This latter was spent in co-ordinating information obtained, following-up outstanding problems and preparing 'briefs' for the following tour.

In addition, during the time in office, the Senior Progress Officer prepared what is termed the 'Black List' for the information of Deputy E. in C. at Controller's meeting. This list represents ships whose scheduled delivery dates may not be kept due to causes connected with supply of machinery.

Cases of delay in completion due to shortage of labour were also discussed with Admiralty regional officers, to enable them to take all possible action.

Headquarters Office Staff:—The duties of this staff were briefly as follows:—

- (1) Scrutinising of reports received from progress officers, and the taking of any action necessary.
- (2) Entering up all information received in card index and chart form and ensuring that it was kept up to date.
- (3) Preparation of priority schedules for the guidance of auxiliary machinery makers.
- (4) Allocation of forgings and scrutiny of progress reports from forgemasters.
- (5) Providing explanations of cause of delay and threats of delay.

Planning.

As soon as a new programme of shipbuilding is approved by the Board and an allocation made, Planning and Progress Section check up on suggested firms' capacity, bearing in mind that few firms will ever refuse an order and that the onus rests with the Admiralty to ensure that the capacity is in fact available to meet the tentative completion date for the ship.

Main items to be planned are:—

Steel castings:—Requirements are drawn up for delivery about 9-12 months before launch, and main machinery contractors allocated to foundries to whom they usually go if possible, *i.e.*, if capacity is available. Main machinery contractors are told of these proposals which are then sent to foundries for confirmation that they can meet them, and, if confirmed, main machinery contractors are told to place orders for the dates agreed. Progress of each item is then followed up in the usual way.

Fabricated L.P. casings and gearcases:—As for steel castings, except that some firms weld their own L.P. casings. Section finds the necessary capacity and follows up.

Turbine and Gearing Forgings:—List of requirements is made up and sent to Director of Forgings, Ministry of Supply, who allocates. Main machinery contractors are informed accordingly. Section follows up progress by visits as well as from scrutiny of forgemasters' progress reports. Shafting forgings are progressed in the same manner.

Auxiliary Machinery:—Ship Section allocate makers. Progress Section follows up, diverting deliveries as necessary. It is the aim that all auxiliary machinery should be delivered to main machinery contractors 2 months before launching date. This is a general rule and must, of course, be varied according to type of ship.

The foregoing arrangements were admirable so far as destroyers and above were concerned as main contractors were quite familiar with Admiralty practice. When, however, orders were placed for the building of a large number of

corvettes and frigates, the machinery had to be supplied by small engineering firms who had, in many cases, little knowledge of building reciprocating marine engines up to 2,750 I.H.P.

It was then decided by the Planning and Progress Section to introduce mass production methods so far as small ships were concerned. By this means a shipbuilder or main machinery contractor had no worries regarding main engines, boilers, auxiliaries and other items, as orders for these were placed by the Admiralty in bulk, delivery being arranged to suit the progress of the vessel.

General.

Various difficulties are encountered in ensuring orderly planning and the following are examples:—

- (i) In order to reduce advance commitments, the placing of firm orders is delayed till the last possible moment, *i.e.*, about 6 months before the first keel of the class is laid down. This often creates difficulties in keeping capacity at sub-contractors without orders to back up our plans.
- (ii) Reduction of work: with the end of the war within sight endeavour is constantly made to reduce commitments. It often happens that production of major items, planned months before, is far ahead of present requirements. Main machinery contractors are obviously anxious to go on with the work, so the problem is to slow down main machinery contractors without throwing labour on the market.

It is interesting to note that thirty shipbuilders, thirty-four engine builders and between sixty and seventy other firms were employed to meet the programme involved in the construction of corvettes, frigates and, later, transport ferries. Apart from the ordering by the Admiralty of boilers, forgings and so on, the planning and progress of small ships follows closely that adopted for larger vessels.
