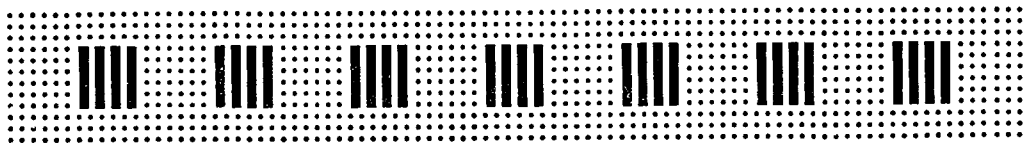


NORGES SJÖKARTVERK
occupies the right hand part of this building

NORGES SJÖKARTVERK
occupe l'aile droite de ce bâtiment



NORGES SJÖKARTVERK

(THE NORWEGIAN HYDROGRAPHIC OFFICE)

BY REAR ADMIRAL A. P. NIBLACK, U.S.N., *Director*

The Norwegian Ministry of War comprises the administration of the Navy and Army, and it controls the Geographical Survey. This Survey includes the Geodetic, the Topographic and the Hydrographic Services. The last is called *Norges Sjøkartverk (Norwegian Hydrographic Office)*, and is included in the Department of Marine which controls the Lighthouse Section, and the Buoys and Beacons Section also.

The Hydrographic Office is completely independent in all matters concerning hydrographic surveys, charts and publications, their design and execution, but in all which concerns the reproduction, correction of charts plates, printing and selling of charts the Hydrographic Office is combined, for the sake of economy, with the Geodetic and the Topographic Services (*i.e.* the Ordnance Survey). It, however, draws up its own estimates and is alone responsible for the employment of the credits voted to it.

The Technical Section of the Geographical Survey sends all proofs of reproductions and corrections to the Hydrographic Office for inspection and verification, but the printing plates remain in the possession of the former. The Hydrographic Office is situated in the building of the Geographical Survey 32 St. Olafsgate, Oslo, which adjoins the park of the Royal Palace.

The permanent personnel consists, at present, of :

The Chief Hydrographer
8 Hydrographic Surveyors
2 Expert Draughtsmen
2 Assistants.

Not more than 12 temporary Employees may be engaged for chart correction and colouring of light sectors. With the exception of the Draughtsmen, the Assistants, and some of the temporary Employees, all are Naval or ex-Naval Officers.

During the summer months (May to October) six of the permanent Hydrographic Surveyors, supplemented by the necessary number of other Naval

Officers who have been trained in hydrographic surveying, are employed on field work along the coasts of Norway.

The Chief Hydrographer spends a couple of months every summer in inspecting the surveyors, revising charts, examining reported shoals or errors on charts, and observing the magnetic variation at different places. Thus the Chief Hydrographer is continually in close contact with all branches of the practical hydrographic survey.

The surveying fleet consists at present of :

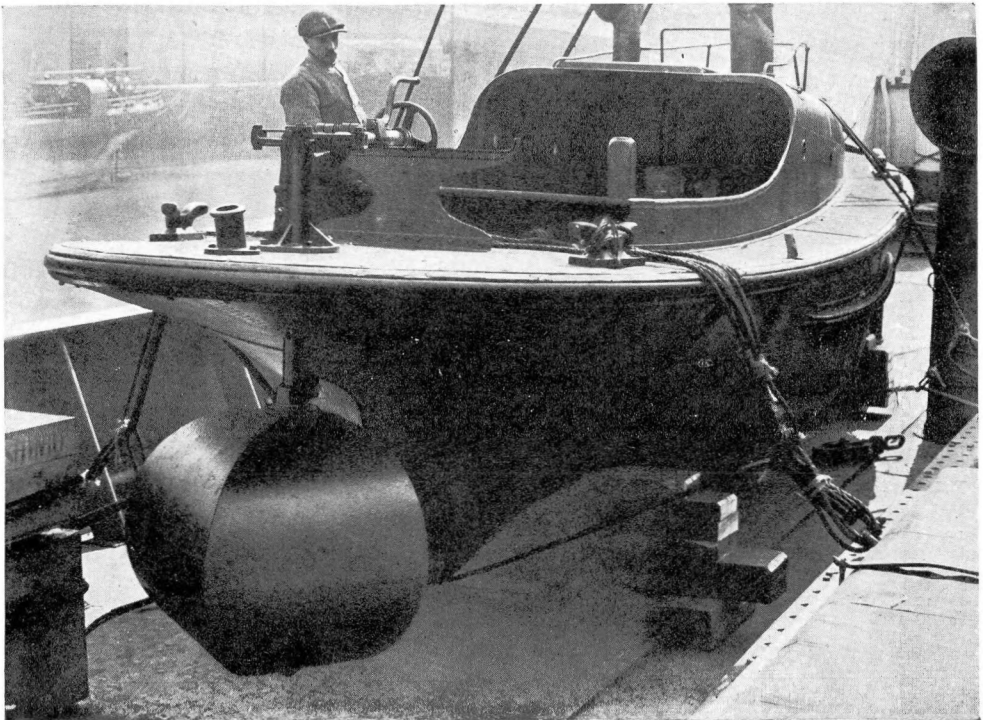
- 2 seagoing steamers
- 1 seagoing motor vessel
- 3 steam launches
- 4 motor launches and
- 8 ketches (sailing vessels) as quarters for the surveying parties.

The crew of each of the surveying vessels consists of from 4 to 5 men, making a total of about 45 men employed, all of whom are sailors or fishermen engaged for the surveying season.

The steam launches are fitted with Kitchen's reversing rudder, which is an interesting device and very well adapted for keeping a launch in position for sounding or suddenly checking its headway when going ahead. There are two rudders, which are practically two half cones, and which, in going-ahead position, form a cylinder with its axis coinciding with the line of the propeller shaft of the single screw boat. When these rudders are put over they shoot the column of water from the propeller to one side, making a jet, which pushes the stern in the opposite direction thereby turning the boat. To stop the boat, or to go astern, the hand wheel is turned which closes the two parts of the rudder into a hollow cone so as to form a drag, against which the water from the propeller strikes, and, being shot forward, stops the boat and then makes it go astern, while the engine and screw are actually going ahead. The position of the rudder in going ahead, and stopping and backing is shown in the two accompanying illustrations. For sounding in rather deep water with piano wire, it is easy to keep the wire in a vertical position in relation to the launch by manipulating the rudder with the engine going ahead all the time.

The Hydrographic Surveyor surveys not only the sea but also the coast line and neighbouring topographic details. He navigates his vessel, takes all angles to plot soundings and also records his work, as he goes along. He plots his work in pencil on his plane table on a scale of 1/10000, 1/25000 or 1/50000 and in the evening or on "dead" days he redraws his work on a "fair sheet" in waterproof Chinese ink. Great care has to be taken in doing this when it is intended to use the work for direct reproduction of *temporary editions*.

As the merchant tonnage of Norway is nearly equal to that of Sweden, Denmark and Finland combined and as Norway has about 16,000 seagoing fishing vessels using charts, it is easy to appreciate that there is a large demand for hydrographic charts. The Norwegian coast, which is about 11,000 nautical miles in length, is now entirely covered by charts, among which however, several are becoming out of date and the areas covered by them



KITCHEN RUDDER

are due for re-survey. The Hydrographic Office now has 162 different charts and the demand amounts to about 60,000 copies annually (in 1921 it was 97,000). On account of the season-fisheries, large numbers of the different charts must be kept in stock (often as many as 300 of each) as it occurs that, when the fisheries turn out to be good in certain localities off the coast, the demand for charts covering the areas will suddenly rise to several hundreds in a couple of days, the orders being received by telegram. This fact makes great claims on the work of keeping the charts in stock up to date.

During the winter the permanent personnel is employed in the four divisions of the Hydrographic Office :

Division I has charge of the calculation, construction, arrangement, drafting and proof reading of all new charts and new editions of charts. The care and inspection of all instruments fall to this division also.

Division II has charge of the keeping up to date of the chart plates, both copper and aluminium, by furnishing data to the Technical Section of the Geographical Survey, of the correction by hand of the charts in stock, of ordering the necessary printing to complete the stock and, in addition, it is charged with the colouring of light sectors on charts. The hand corrections and the colouring are done largely during overtime by the permanent personnel and the necessary temporary personnel, the number of which varies in accordance with the demands of the work. When the Division is busy, as many as 20 employees may be engaged in colouring light sectors and the annual cost amounts to about 25,000 kr.

Division III has charge of Notices to Mariners, the compilation and correction of Sailing Directions and the issue of supplements to the latter. The library and the archives of foreign charts come also within the care of this division.

Division IV, the Secretariat, has charge of the correspondence, the archives of original charts, the catalogues and general maps, the surveying vessels, their repair and upkeep, the engagement of the crew and all accountant work.

All drafting, computing and plotting of field work is done in the Hydrographic Office after the season by some of the Officers and all of the Assistants who took part in the season's surveying. The engraving of the charts is carried out by the Ordnance Survey Department, which has the custody of the copper plates. About 150 charts are printed direct from these copper plates for exchange distribution with other Hydrographic Offices, and they are then transferred to aluminium plates and lithographed for issue and sale. So far only two charts have been made of the coast of Spitzbergen, but more of such work is contemplated in the near future. There is a great amount of deep-sea sounding in the North Sea and Arctic to meet the particular needs of the fishing industry. The Sjøkartverk rather specialises in charts for fishing on the continental shelf and talus of the coast of Norway, and especially of all well known fishing banks, where the soundings are given in much detail, and range marks on shore are given in connection with special buoys to mark their positions.

There is a growing tendency in many countries to subordinate the mili-

tary branches more and more to civil control, and, for the sake of economy in administration, to consolidate similar work of various Departments of the Government in order to avoid duplication and overlapping. This requires a considerable re-adjustment of ideas and of methods and an amount of tact and goodwill to make it seem as successful as under a system where each Department is a law unto itself. The smooth working of this system in Norway in the particular case in point seems to justify the policy which has been put into force.

The thanks of the Bureau are due to Captain E. BJØRSET, the present Chief Hydrographer, and to the Officers of the Sjøkartverk for the information so liberally given to the writer and for the kind reception extended to him.

