

COMBINED NORTH SEA AND EASTERN CHANNEL COMMITTEE

1938.

By

G. GILSON.

The scientific survey of the intermediate region between the English Channel and the North Sea was entrusted to a special committee, in consideration of the intricacy and variability of the hydrographical and biological conditions exhibited in the contact zone of two very different sets of water joined by the narrow passage of Dover Straits.

It is a most interesting region for the study of correlations in the fields of hydrography, meteorology and biology, but the causes of error which oppose the efforts of the pioneer intent on the detection of relations between phenomena of various orders are manifold and difficult to deal with.

In spite of obstacles, however, many facts and much material have been collected and made use of to a certain degree in the search for possible connexions of hydrographical and meteorological influences with certain biological phenomena such as the development or disappearance of plankton, migration of fishes, growth and displacement of year-classes, formation of feeding or spawning shoals, variations in the yield of fishery, etc. But it is still to be deplored that enormous masses of well-tabulated figures, and of material well preserved in formalin, are held close (for the benefit of the historians of biology in future centuries) in the archives and laboratories of the centres of research that are exploring the sea, continuously or occasionally, between the coast of England and those of France, Belgium, Holland and Germany.

Fortunately, it is expected that the establishment of the proposed *Annales Biologiques* may have a favourable effect in making these data more accessible, and also that it will give a new impulse, not only

to the synthetic work needed by an entirely new kind of scientific publication, but also to the co-operative search for decisive facts through the adoption of more modern ordering of marine investigation.

In conformity with the views of President HJORT, the general scheme of a regional investigation must, of necessity, include periodical series of simultaneous observations on certain fixed lines, and the *Annales Biologiques* should contain charts, diagrams and sections, in order to add visual impressions to the mere computation of figures in tables (see as example, the appended chart and figure).

Meanwhile, it remains scarcely possible to extract out of generally unfinished reports the exact extent of the work performed at various centres of research within the vaguely determined limits of the intermediate region¹).

Biology.

Herring. The southern populations have been investigated, as usual, by the laboratories interested in the region, in France (Boulogne), England (Lowestoft), Belgium (Ostende), Holland (Helder), and Germany (Helgoland). A peculiar feature of the last herring season is that the youngest class, that of 3 years, born in 1935, appears in all records with a very low percentage; in fact it is the lowest observed in the course of the last ten years, except the very bad class of 1930, recorded in 1933.

The class of four-year-old herrings, on the contrary,

¹ For details of each particular investigation see below the report of the Southern North Sea Committee and Appendices 14—16, this volume, part III.

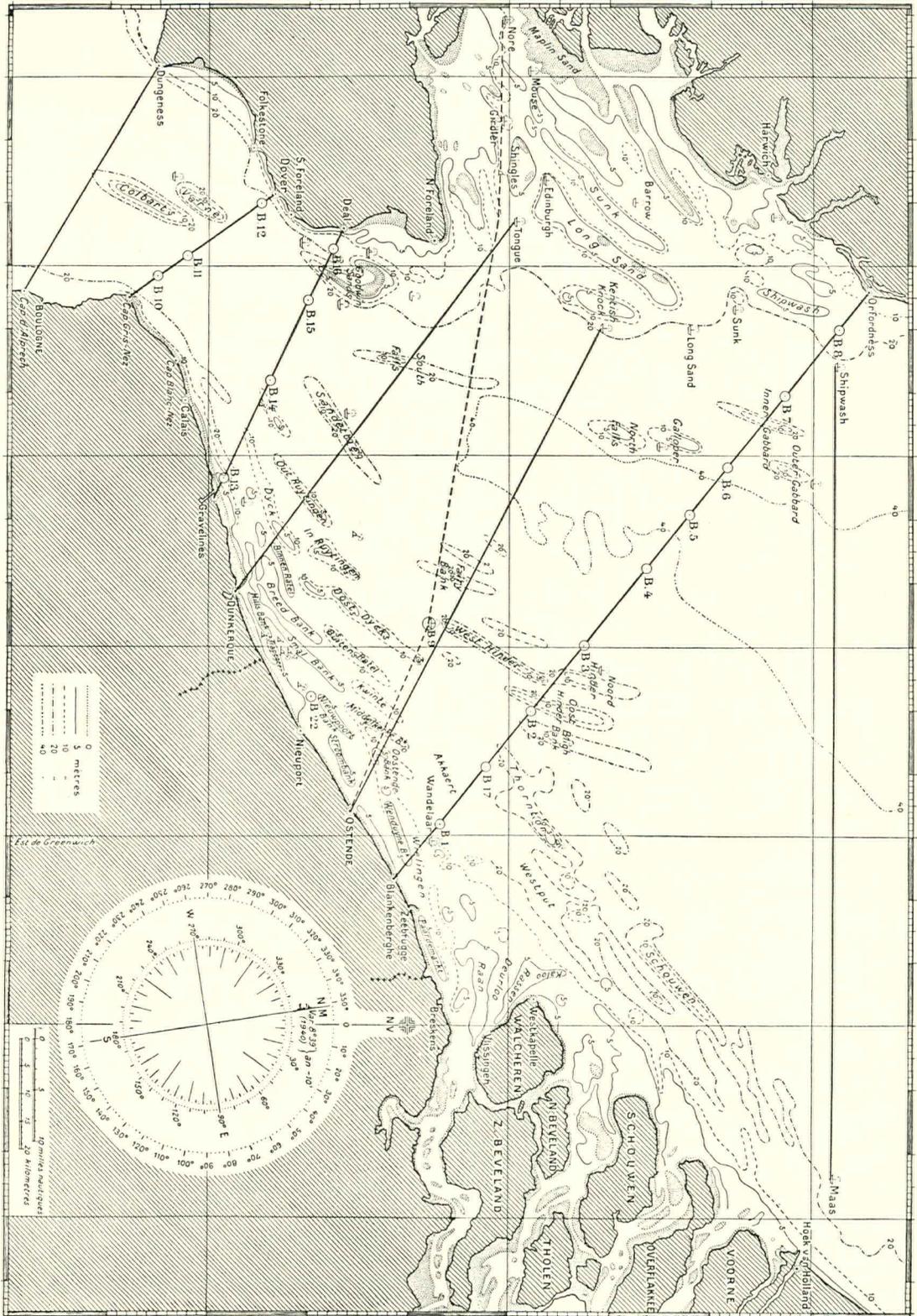


Fig. 1. Example of charts for plotting observations made during voyages.

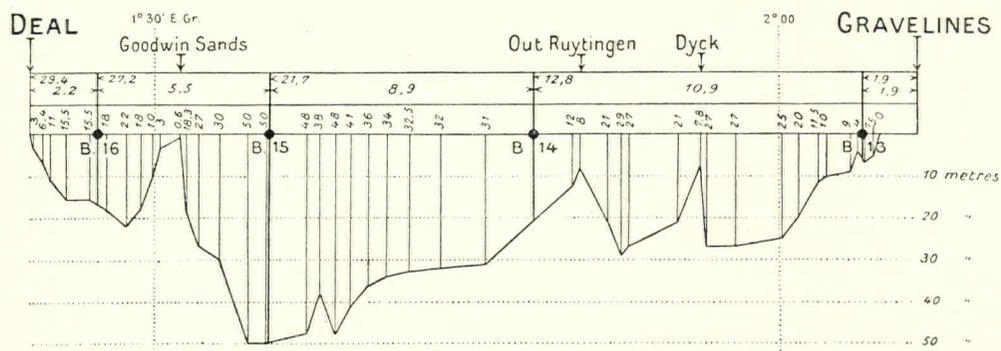


Fig. 2. Example of empty sections for use in the course of observations.

is recorded with a very high percentage in the intermediate region and also from the north.

The results of the work carried out in the region by each of the countries will be found included in some of the reports of the Council or in other publications. It is, however, desirable that some day the bulk of the data collected be concentrated and made use of for the drawing up of a general statement on the composition and condition of the herring populations in the region and so establish a starting point for a continuous investigation of their displacements and variation in the future. In view of that, it is more than ever to be recommended that the greatest possible accuracy be required in recording localities and times, especially when use is made of fishermen's catches.

Sprat. This fish is very abundant this season along the continental coast and of good quality. It is mentioned (from Belgium) that the percentage of young herrings of the 0—I-group is very high. This constant association of herring with sprats is an interesting feature for the study of the biology of both fishes.

Pleuronectids.—Plaice. General work with research ships and on markets. Measurements. Distribution and frequency of age-classes. Growth.

Age and Size. On the suggestion of President HJORT, an extensive investigation has been undertaken on the relation between size and age of the flatfishes in the southern part of the North Sea. Work has been started in all five countries bordering the Southern North Sea; England has supplied data from previous years, France and Belgium working in co-operation¹).

Fish eggs and larvae. Material collected from the lightships "Varne", "Sandettié", "Gallop", "West-Hinder", "Noord-Hinder", "Maas". Eggs and clupeid larvae picked out of surface plankton samples taken from research ships; bottom plankton samples on the line Deal—Gravelines with a special net by the Belgian survey ship "Zinnia".

¹) See: G. GILSON, Preliminary Observations on Variations of Relation between Age and Size of Pleuronectids in the Southern North Sea. This volume, part III, App. 14.

Special investigation on sardine eggs in the eastern English Channel and of *Ammodytes* in the Southern North Sea by J. LE GALL.

Plankton.

The existence of a determining correlation between plankton development and variations in the milieu is evident and undeniable in many cases. There remains however, a great deal to learn about the circumstances and mechanism of the action of external causes producing the sudden occurrence of shoals and their subsequent extinction. Moreover, internal causes may arise also in the organism of all species of phyto- as well as of zooplankton. On the other hand, planktonic peculiarities appearing in the sea may reveal to the hydrographer the interference of certain physical or chemical factors claiming special attention and analysis. Consequently, all collection of plankton samples should always be supplemented by hydrographical and meteorological observations. In fact, hydrographical observations are generally made in connexion with plankton work, as was done on all research ships mentioned above having visited the intermediate region in the course of the year. On lightships, samples of plankton are generally taken only in the surface water. On some of them, "Varne", "Sandettié", "West-Hinder", "Haaks", samples of plankton and of water are taken from the bottom also. This is also the case in the "Zinnia" at all stations of the cross-section Deal—Gravelines and at all stations occupied during the cruises.

Hydrography.

Various research ships have traversed the intermediate region in the course of their cruises and made hydrographical as well as biological observations: "George Bligh" and "Onaway", of England; "Président Théodore Tissier", "Ailette", and "Quentin Roosevelt", of France; "Nautilus", of Holland; "Makrele", of Germany; "Zinnia", of Belgium. The several lines of steamers running between the Continent and the English coast have also contributed useful observations: surface temperatures, samples of water for salinity, liberation of drift-bottles.

The most important data, however, are those collected by the lightships anchored within the limits of the region: "Varne", "Sandettié", "Galloper", "West-Hinder", "Noord-Hinder", "Maas", "Haaks". Besides routine work, these carry out special observations with new registering instruments; drift indicator, Carruthers' vertical log, Hardy's plankton indicator. Some other lightships further north, must also be included in the great circuit of observation posts contemplated in the future. To this system, however, must of necessity be added certain fixed lines running across the general direction of the tidal or residual

currents, and periodically visited by research ships doing simultaneous observations. One of these lines, crossing the Straits from Gravelines to Deal, is already made monthly by the "Zinnia".

The principal want in the hydrographical and biological exploration of the southern part of the North Sea is that of a central organization for collecting data and material from all sources and the timely publication of synthetic statement, with charts and sections, of the hydrographical and biological condition of the North Sea. The fishing industry is greatly interested in the scheme.

NORTHERN NORTH SEA COMMITTEE

1938.

By

ROBERT S. CLARK.

Introduction.

- I. Work at Sea.
- II. Hydrography.
- III. Plankton.
- IV. Fisheries (a) Ichthyometries.
- V. Fish (a) Herring.
(b) Haddock.
(c) Plaice.
(d) Lemon Sole.
(e) Mackerel.
- VI. Shellfish (a) Lobsters.
- VII. Bottom Fauna.
- VIII. List of Papers issued during the year on work carried out within the area.

INTRODUCTION

The programmes of work at sea within the area by the various research and protection vessels as proposed at last year's meeting of the Committee were carried out except in the case of the "Skagerak" which unfortunately was unable to implement the proposals, and the more important results of the investigations are incorporated in the following pages. Further progress was made in the study of the more important food fishes. The present positions of the various stocks have been defined largely from age analyses and predictions made as to future yield. Mortality rates in the stocks have been receiving closer attention and strenuous attempts are being made to define the optimum catch.

The present position of the **haddock** stock is not very illuminating. The commercial catches in 1938 were maintained largely by the prolific brood of 1935. This brood, now four years of age, will most likely dwindle rapidly after another spawning concentration in the spring of 1939. It was preceded by three consecutive years of poor recruitment and apparently has been followed by three other equally unsuccessful broods, so that the immediate prospects of the commercial catches being maintained at the same level as in 1938 are far from promising. A repetition of the poverty in catches experienced in 1935—1936 seems inevitable.

The year 1935 was also singularly fruitful as regards production and survival of **herring** broods. Three-year-old herring were abundant in the Forth, Clyde and west coast shoals and as more individuals from this year-class will almost certainly join the spawning shoals in 1939, better prospects for the spring fisheries are expected. The outstanding features of the summer-autumn fisheries were (1) the predominance of three-ringers (i. e. year-class autumn 1934) in the shoals off the north-east of Scotland, (2) the great scarcity of larger adult autumn spawners throughout the east Scottish coast and (3) an unusual immigration of spring spawning herring into Shetland waters in August month. The 1928 year-class predominated in the autumn spawning shoals for the seventh year in succession, but samples of spent herring from the