and at the end of November only small amounts were found. In the period January to March they increased again.

There are two criticisms which may be suggested with regard to Dr. ATKINS' paper. One is that some chemists still hold that nitrites may be formed by the degradation of nitrates. The other is that it may be doubted whether it is altogether allowable to treat variations occuring at any one place over long periods as if they were due to changes occuring there: the water at E1 could move a considerable distance in a month. A more detailed discussion of this point would be welcome. D. J. M.

G. BÖHNECKE, E. HENTSCHEL und H. WATTENBERG. Über die hydrographischen und biologischen Verhältnisse an der Meeresoberfläche zwischen Island und Grönland. Ann. d. Hydr. u. mar. Met., LVIII Jahrg., H. VII. Berlin, 1930.

This is a preliminary account of a cruise in the survey ship "Meteor" in August 1929 in the Denmark Strait and Irminger Sea. This ship is now commissioned every year for fishery supervision work, but as it is fully equipped for oceanographic work, it is only natural that advantage is taken of its presence in waters where interesting observations are to be expected, — as in the area chosen where the meeting of Atlantic and polar water gives rise to a well-defined polar front. The article under review deals almost exclusively with the surface conditions, reserving the sub-surface observations for treatment in connection with those from the second year of the investigation planned (1930). The scope of the work covers similar investigations as on the S. Atlantic expedition, and in addition further chemical properties of the sea water were determined (ammonia, nitrates, plankton-poisons), the workers (and authors of the article) being mostly those who so successfully carried through the 2 years work which has made the "Meteor" famous.

The surface observations show very clearly the complicated nature of the water movements in this polar front area, — much more complicated than was anticipated by earlier oceanographers. Along the "front", which runs roughly in a direction E by N to W by S, the existence of four stationary cyclonic whorls was demonstrated, each characterised by a central area of maximal density.

As to phosphates and nitrates, which everywhere showed the familiar increase with depth for the first 100 m or so, the surface quantities were greatest in the SW corner of the area, probably owing to a more thorough mixing of the two main water masses. The Greenland coastal water showed conspicuously low values, in direct opposition to the view recently held by some workers (that the water resulting from mixture of snow and ice was the main source of the nutrient salts). It may be mentioned that WATTENBERG here introduces a new way of denoting the phosphate content of the water, namely, as mg of P instead of P_2O_5 per cub/m, which seems rational and practical, and might be adopted by other observers. (Values given in the old way may be converted by dividing by 4.6).

The ammonia content was found to run directly opposite to the nitrate content, with increasing depth, thus supporting HARVEY's finding, that

nitrification goes on in the depths. Another of HARVEY's conclusions is also upheld by WATTENBERG's work, namely, that the plankton life of the upper layers produces "poisons", which tend to limit further growth. The effect of such "poisons" was studied by a purely chemical method devised by HARVEY (rate of decomposition of hydrogen peroxide added to the water sample).

Prof. HENTSCHEL carried through the laborious work of counting the different constituents of the plankton, collected by centrifuging 30 c.c. of water. A most striking coincidence with the surface isohalines was exhibited by the density of the peridinians, which were most plentiful in the Atlantic water, rapidly decreasing through the polar front zone towards the Greenland coast. The coccolithophorid *Pontosphaera huxleyi* (which sometimes occurs in such density on the Norwegian coast that the water resembles milk) shows a curious distribution, a tongue of comparatively high values extending east from a centre of maximum near the Greenland coast in about 63° N. Lat. Otherwise it must be assumed that the season of investigation, late summer, was scarcely propitious for an insight into this undoubtedly highly important area of plankton production, which is probably the main source of the food-stuff which eventually nourishes the enormous fish shoals found in the Icelandic waters.

The authors and their co-workers are to be congratulated on this singularly well rounded-off piece of work, and their full account will certainly be received with interest. OSCAR SUND.

BAGGESGAARD-RASMUSSEN and J. P. JACOBSEN. Contribution to the Hydrography of the Waters round Greenland in the Year 1925. Meddelelser fra Kommissionen for Havundersøgelser, Serie, Hydrografi, Bind II, Nr. 10. København, 1930.

Hydrological exchange or interplay between Arctic and sub-Arctic regions and the North Atlantic Ocean is a matter of importance no less to navigators — especially to deep-sea fishermen — than to scientists, interested for the most part from a biological or physical standpoint. Between Canada and north-west Europe there are three main sea passages connecting in greater or less degree the temperate Atlantic regions with those where permanent ice conditions prevail. It is in these passages where transitional hydrographic phenomena are likely to be met with that interactions between the physical peculiarities of each region are to be observed.

Since the inception of modern hydrographic methods the waters between Iceland and north-west Europe have received a fair amount of attention, but west of Iceland, — that is, in Denmark Strait and in Davis Strait and Baffin Bay, — very little systematic work has been done with regard to the subsurface and deeper water layers. A contribution to the hydrography of these latter waters is then opportune.

In 1925, during the months of June and July, the Danish research steamer "Dana" carried out a programme of hydrographical investigation in the southern part of Denmark Strait, between Iceland and Greenland, and in the waters off the south-west coast of Greenland, between latitudes