

spatangid *Schizaster fragilis*, which is plentiful in the North Sea, but not found in the Skagerrack.<sup>1</sup>

We propose now to discuss the fauna of the continental plateaus within the boreal region, dealing firstly with depths less than 100 metres,<sup>2</sup> and secondly with depths greater than 100 metres.

1. *Continental Plateaus covered by less than 100 Metres of Water.*—In the portion of the North Sea to the south of the Dogger Bank, where the waters are shallow and the summer temperature is high, there are southern forms unknown farther north, though this exclusively southern element in the fauna is very inconsiderable compared with the remaining boreal forms, some of which are more abundantly developed than in more northerly latitudes. During the cruise of the "Michael Sars" in 1904, I was able to carry out investigations with the dredge at a series of stations from the Danish coast to Scotland, in lat. 56° to 58° N. in depths between 14 and 100 metres, an area not previously systematically examined.

The southern and central areas of the North Sea.

The floor of the North Sea is for the most part covered with soft materials (sand, sandy mud, and clay), with areas of stony bottom in places, though even here the rocks and stones are nearly always mixed with softer materials. In some localities the soft materials contain masses of empty shells, which are invaluable to the animal life, acting as a foundation for the hydroids, bryozoans, and other attached forms. This mixed bottom supports a greater variety of forms than the soft bottom, offering suitable conditions to unattached forms, whether they burrow or not, as well as to attached forms.

The abundance of echinoderms characterises to a great extent the fauna of the North Sea. Among the star-fishes *Asterias rubens* occurs at all depths and upon every kind of bottom, though it seems less partial to soft clay bottom at considerable depths. *Astropecten irregularis* is met with everywhere, and the sea-mice *Echinocardium* and *Spatangus purpureus*<sup>3</sup> are equally common. *Ophiura ciliaris* (see Fig. 347) may be described as the brittle-star of the North Sea, for we found well-developed specimens everywhere on mixed bottom down to a depth of about 100 metres, and at temperatures varying from 7° to 12° C., but

<sup>1</sup> The continental deep-sea zone not being represented, or only in very limited tracts, in the coastal areas of the Skagerrack, Kattegat, western and southern North Sea, a good many forms characteristic of that zone are absent here.

<sup>2</sup> As the type for this area we take the southern and central parts of the North Sea, those parts being the best explored.

<sup>3</sup> In a trawling at 96 metres we found 500 specimens of the last named.