

and deeper-living¹ boreal forms that are never met with at Spitsbergen.

Another boreo-arctic area lies in the south-western portion of the Norwegian Sea on the ridge connecting Iceland and the Faroes. The crest of the Wyville Thomson Ridge between the Faroes and Shetland has not been examined by the "Michael Sars," but undoubtedly it may be included. On the broad ridge between the Faroes and Iceland we took up several stations in 1902, at a depth of 450 to 480 metres, the temperature varying between 3.12° C. and 3.98° C.; the greatest depth on the top of this ridge is about 500 metres. Here we came across the same mixed fauna already described as characteristic of the north-eastern boreo-arctic area, the "Michael Sars" securing distinct arctic forms,² together with boreal forms³ which penetrate into the boreo-arctic portion of the Barents Sea. If we remember that the polar and Atlantic currents meet about the middle of the Iceland-Faroe ridge, it will be easy to understand the boreo-arctic character of the bottom fauna. It is remarkable that such distinctly cold-water forms as *Hymenaster* and *Nymphon robustum* were found in water with a temperature of 3° or 4° C.; no doubt the individuals were few (only one specimen of *Nymphon robustum*, for instance, being taken), still their occurrence seems to show that the bottom-water on the ridge has not always the high temperatures we recorded—the temperatures must often be considerably lower, perhaps even below 0° C. at times.⁴ Boreal deep-water forms are furthered in their advance occasionally by warm currents, and yet they can endure low and varying temperatures; the converse probably holds good with various purely arctic forms, which owe their distribution to the cold arctic water, but can endure the higher temperatures when that is displaced by Gulf Stream water. In spite of this *Hymenaster* and *Nymphon robustum* are just as much arctic forms as *Hippasterias*, *Pentagonaster*, and *Pontophilus* are boreal forms.

¹ *Antalis entalis*, *Schizaster fragilis*, *Hippasterias plana*, *Pentagonaster granularis*, *Verruca strömi*, *Hippolyte securifrons*, *Crangon allmanni*, *Nephrops norvegicus* (?), *Pontophilus norvegicus*, *Munida rugosa*, and several others. The hydroids, on the other hand, are very widely distributed, as most of the species met with in these tracts are commonly distributed throughout the boreal region; some species of hydroids seem able to adapt themselves to all temperatures (eurythermal forms).

² *Hymenaster pellucidus*, *Solaster squamatus*, *Antedon eschrichti*, *Rhachotropis aculeata*, *Epimeria loricata*, *Nymphon robustum*, *Lampra purpurea*.

³ *Hippasterias plana*, *Pentagonaster granularis*, *Schizaster fragilis*, *Antedon tenella*, *Gorgonocephalus lincki* and *G. lamarecki*, *Pontophilus norvegicus*, *Sabinea sarsi*, and amongst hydroids *Thujaria thuja* and *Hydrallmannia falcata*, although not in any great quantities.

⁴ The Danish "Ingolf" Expedition recorded a temperature of +0.5° C. at about 510 metres.