

Successful haul with the trawl.

towed it for three hours till 6 P.M., when hauling in began. It came up at 7 P.M. with a catch of 330 large fishes (*Macrurus*, *Mora*, *Lepidion*, *Chimæra*, etc.; see Fig. 39). This haul was a thorough success. Perhaps never before had so large a draught of fish been made at such a depth. The trawl itself worked most satisfactorily, and considering its size hauling in was done rapidly (about 40 metres per minute). During the process of lowering, however, the big drum got jammed on the axle, and in spite of all our efforts we could not move it. There was nothing to be done, therefore, but to make for the nearest port to repair it, so we steamed into Cork and had it put right at the workshop on Wednesday morning (the 13th). We found after finally getting the drum off the axle that a lot of sand from the foundry had been left in by mistake, which accounted for its not working properly. By Friday (15th) the sand had all been scraped off, and the drum was once more in its place. But in the meantime a strong north-easterly gale had set in, and it was not till Saturday (16th) that we were able to steam westwards under the lee of the Irish coast. The wind continued strong and northerly, but for all that we steamed back to Station 4, occupying a couple of small stations (5 and 6) on our way, and recommencing our interrupted section, proceeded out to still greater depths.

On Sunday, 17th April, a sounding at Station 7 gave us 1813 metres. The trawl was shot with 4000 metres of wire and towed for two hours. It came up all twisted and tangled, due to the fact that the swivels for keeping the wire and bridle from twisting had failed to act. The small steel balls in the bearings of the swivels had been crushed by the severe strain or the bend in the blocks. The trawl was got ready for a fresh attempt, but in the meantime the wind and sea rose to such an extent that we decided to give up further work in the deep water. To wait for good weather would have delayed us too long, so we set our course for the north-west point of Spain.

Depth to which plant life extends.

The pelagic life of the upper 150 metres was extremely uniform. Several series of hauls with fine-meshed closing nets revealed the fact that quantities of the same diatoms extended down to a depth of over 150 metres. This was particularly interesting evidence as to the depth at which plant life can exist, even as far north as about lat. 49° 30' N., under special conditions. From this and other experiments made later Gran is of opinion that the same vertical circulation which produces