his main purpose—the exploration of the ice-bound coasts of the southern hemisphere and the search for the South Magnetic Pole—Ross carried on astronomical, physical, and zoological work, and achieved results so important and hitherto so overlooked as to justify a somewhat detailed notice.

Sir Joseph Hooker first made known some of the results of Ross's deep-sea dredgings and investigations in 1845,[1] and fuller details were given by Ross himself in the account of the voyage published in 1847.

A number of unsuccessful attempts were made to ascertain the depth of the water in mid-ocean, the failure being due to the want of a proper line. Sir James Ross accordingly had one made on board, 3600 fathoms long, fitted here and there with swivels to prevent it unlaying in its descent, and made strong enough to support a weight of 76 lbs.

On the 3rd January 1840, when in lat. 27° 26′ S. and long. 17° 29′ W., the first abysmal sounding was satisfactorily made with the new line, the depth marked being 2425 fathoms.[2] Such great depths could only be attempted in dead calm weather, and the line was allowed to run out from an enormous reel in one of the ship's boats, the time each 100 fathom mark left the reel being noted in the usual way.

On the 3rd March 1840, a sounding of 2677 fathoms was made in lat. 33° 21′ S. and long. 9° E., 450 miles west of the Cape of Good Hope. Water of equal depth was frequently sounded during the cruise, and on two occasions at least no bottom could be found with over 4000 fathoms of line.

The temperature of the water was observed very frequently at all depths down to 2000 fathoms, and its density at the surface and at various depths was determined almost daily. These observations were very valuable at the time, as giving the first real clue to the distribution of temperature at the bottom of the sea; but both in this expedition and in those of Wilkes and D'Urville, the thermometers were not properly protected against pressure, and consequently it came to be generally believed that in all open seas the water below a certain depth maintained a uniform temperature of 39° F. right down to the bottom.

Ross lays special emphasis on the fact mentioned by earlier observers that the surface temperature of the water falls rapidly as the depth of the sea diminishes; he cites one instance when in a single day the temperature at the surface fell from 70° F. where the depth was 400 fathoms, to 51°·5 where it was only 48 fathoms,[3] a fact now known to be of local but not of universal occurrence.

The dredgings, which were taken occasionally, turned out to be one of the most valuable parts of the scientific work of the expedition. On the 21st April 1840, a haul of the dredge was taken in 95 fathoms of water, and it came up full of coral. On the 18th January 1841, when in lat. 72° 57′ S. and long. 176° 6′ E., a Pycnogonid

[1] *Ann. and Mag. Nat. Hist.*, ser. 1, vol. xvi. p. 238, 1845.

[2] Antarctic Voyage, vol. i. p. 26, 1847.

[3] *Ibid.*, vol. i. p. 34.