SCHIZOPODA OF THE NORTHERN AND SOUTHERN HEMISPHERES.

SARS says: "Concerning the geographical distribution of this species [*Lophogaster typicus*], the occurrence of this form in the southern hemisphere, as shown by the Challenger collection, is remarkable, and might induce the belief that it ranges from the Norwegian Sea along the whole western coast of Europe and Africa, or throughout the boreal, lusitanic, tropic, and antiboreal regions. It may, however, be considered as a highly remarkable fact, that this very striking form has never been recorded either from the coasts of England and France, or from the Mediterranean, although each of these tracts has been carefully investigated by numerous zoologists. We may therefore entertain the assumption that this form in reality does not occur throughout the intermediate tracts of the ocean, but is met with independently in both hemispheres in the corresponding region. Should this be the case, we may infer that the distribution of the species must at an earlier date have been continuous, but considerable changes afterwards occurring in the physical conditions led to a separation of the species into two independent stocks. In the sequel we shall meet with another still more striking example of a similar kind, in treating of the Mysidan *Boreomysis scyphops*, a form stated to occur in the Arctic and Subantarctic regions only, having never yet been found in any intervening tract. . . . The typical species [of *Boreomysis*] is *Boreomysis arctica*, first met with in the Arctic Sea, off Greenland, and also occurring along the coasts of Norway, where two other species, *Boreomysis tridens* and *Boreomysis megalops*, have been also observed. Moreover, on the Norwegian North Atlantic Expedition two large species were taken, *Boreomysis nobilis* and *Boreomysis scyphops*, the latter of which is also represented in the Challenger collection [from the Southern Ocean]. Finally, there are two additional species from the Challenger Expedition [one from the North Pacific and one from the North Atlantic]. . . . The total number of species thus amounts to seven. All are true deep-sea forms, the animals descending to very considerable depths, and having never been met with in shallow water. . . . The geographical distribution of this form [*Boreomysis scyphops*] is very remarkable, ranging, as it does, within the limits of well-nigh the same region in both hemispheres, and not occurring in the intermediate tracts of the ocean. As it cannot be reasonably assumed that the species has originated independently in both hemispheres, the physical condition of the sea-bottom must at some time or other have been more uniform than at present, to have admitted of the species spreading over a much more extensive area, whereas at a later period essential changes in the climatological conditions must be assumed to have caused this form to withdraw successively from the equatorial region towards the two poles, thus dividing the species into two widely separated stocks, inhabiting corresponding regions in both hemispheres. Another fact, too, viz., the remarkable occurrence . . . of the northern form, *Lophogaster typicus*, in the Southern Ocean, without its being ever met with in the intermediate tracts, may also warrant the assumption of essential changes in the physical conditions of the sea-bed having taken place at some former period, thus causing the occurrence of certain species to appear discontinuous."[1]

SARS further writes: "The development of most Schizopoda exhibits a very striking resemblance to that of the Isopoda, the young passing within the marsupium of the female through one or more so-called pupa-stages before being hatched. In the Euphausiidæ, however, a totally different mode of development has been discovered, the young of these animals being hatched in a very immature condition, and not attaining, till after an exceedingly complicated free metamorphosis, the form characteristic of the adults."[2]

SARS writes: "The genus [*Leucon*] at present comprises, besides the two new forms described below [one from Kerguelen and one from the North Pacific], nine species, seven of which are from the Northern Ocean, one from the Mediterranean, and one from the Atlantic. . . . The genus [*Diastylis*] is very abundantly represented, especially in the Northern Ocean, no less than twenty-seven distinct species having been hitherto recorded. The Challenger collection contains four species, one of which [from the North Atlantic] has been formerly described, whereas the three others [two from the North Atlantic and one from Kerguelen] are now added, increasing the number to thirty-one."[3]

BEDDARD, speaking of the development of spines in Isopods, writes: "This modification of structure is not, however, confined to the deep-sea species; it is found in quite as marked a degree in *Arcturus furcatus* and *Arcturus studeri* and other species of *Arcturus*; it will be noticed, however, that these species are inhabitants of the colder regions, and indeed it would appear that there is some connection between temperature and the

[1] Zool. Chall. Exp., pt. xxxvii. pp. 16, 177, 178, 182.
[2] Zool. Chall. Exp., pt. xxxvii. p. 8.
[3] Zool. Chall. Exp., pt. lv. pp. 33, 44.