

## Reviews.

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**Johs. Schmidt.** *Dana's Tøgt omkring Jorden, 1928—1930.* Gyldendal. København, 1932.

*Non cuivis homini contingit adire Corinthum* — so we may think of the well-known leader of this expedition and his small band of happy collaborators, to whom fell the grateful task of circumnavigating the globe with a scientific aim in mind — above all, the completion of the world-embracing eel researches. The famous Carlsberg Fund for Scientific Research provided the financial means, and the Danish Government put the "Dana" at the disposal of this expedition, of which men in the foremost scientific rank in Denmark (including the late lamented Prof. Ostenfeld) were the promoters, and to which H. R. H. Prince Valdemar acted as protector. Along with scientific researches, the expedition fulfilled another task, that of re-establishing a link between Danes scattered all over the world with the mother country by personal intercourse and by the occasional showing of a film of Danish enterprise and industry. This national purpose prompted the head of the expedition to publish an account of the voyage in the Danish language.

The "Dana", a former English mine-sweeper of only 360 tons, with such a voyage before her, presented special difficulties in the matter of coaling and stores. She left Copenhagen in June 1928, visited the Mediterranean, crossed the Atlantic and passed through the Panama Canal to the Pacific and Indian Oceans, where her main field of operation lay. All through the voyage plankton catches were made, serial hydrographic observations taken and echo-soundings which revealed a much more variable relief of the ocean bottom than was hitherto assumed; as, e.g., between the Maldives and the Seychelles (fig. 198, p. 255), where not less than 181 soundings were taken as compared with only 12 earlier ones.

Interesting reading as the various chapters written by the members of the staff may provide to the general reader, the student of nature will find additional enjoyment in the wealth of information about oceanography, meteorology and, above all, aspects of marine life. Eel investigations, of course, are constantly referred to and there is a special chapter about such investigations during the period 1905—1930, written by the leader of the expedition himself, in which the life histories of Atlantic and Indian eels are compared. It had previously been stated, as a result of a world tour by Prof. Schmidt in 1926, that the various freshwater eels of the Pacific and Indian Oceans are only to be found in those rivers which face the oceanic depths, and not in those terminating in shallow seas (the most notable example is the island of Java); this fundamental fact has been amply proved during the expedition (see the chapter "Omkring Sumatra"). After leaving the East Indies eel larvae were not found over a large tract, and it was only near the northern point of Madagascar that the larvae of East African species were caught (three of the four species living here). After

visiting the East African coast the "Dana" rounded the Cape of Good Hope and, on her return voyage across the Atlantic, penetrated again into the Mediterranean, where catches of eel larvae corroborated the fact, established by Schmidt before the war, that these larvae in the Leptocephalic stage are older, the more eastwards they are found — a fact explained by these Mediterranean larvae all entering through the Gibraltar passage (their average length being nearly 67 mm. near Gibraltar and 71.5 mm. off Messina). An interesting chart (fig. 262, p. 345) shows that the amounts of nitrate and phosphate at 150 m. depth are much larger out in the Atlantic than in the Mediterranean basin, and in the eastern part of the latter sea they diminish greatly, phosphates even disappearing completely.

The book is fully illustrated by hundreds of fine photographs, mostly taken by members of the expedition. Among these photographs a remarkably fine snapshot of a flying fish in action may be especially mentioned (fig. 114, p. 161, taken by T. C. Roughley). Outstanding representations of the remarkable land animals of New Zealand and Australia are also interesting. The foreign reader may somewhat regret that this book, full of original and fascinating observation, has been written in a language which requires so much exertion of the mind, but this hampering character is explained by the national purpose of furnishing a description of a Danish undertaking for the benefit and understanding of the general Danish public, both at home and abroad.

J. J. T.

**G. Wüst, G. Böhnecke und H. H. F. Meyer.** *Ozeanographische Methoden und Instrumente.* Wiss. Ergebnisse der Deutschen Atlantischen Expedition 1925—1927, herausgeg. von A. Defant. Band IV, I. Teil. Berlin und Leipzig, 1932.

The standard of accuracy that has for some 30 years distinguished the field work of physical oceanography, was essentially due to Fridtjof Nansen. Thanks to the ingenuity and efforts of Alfred Merz and his fellow workers the German Atlantic Expedition with the "Meteor" represents in this respect further substantial progress. The information and suggestions given in the important volume under review will accordingly have to be duly considered in the preparation of future deep-sea expeditions.

It would be impossible to refer here so all the interesting points, such as the printed forms for recording the work on deck and other matters of organization; description of and experience with new or improved instruments; comprehensive investigations of the Mohr method of chlorine titration, as well as of different materials for the hydrographer's wire rope. (Both steel and aluminium bronze were found to be decidedly preferable to phosphor bronze).

The design of the hydrographer's winch (called in the report *Serienmaschine*) is an important improvement in oceanographical gear. It is driven electrically and seems to have answered every demand as to exact and rapid control over speed in hoisting and lowering. It is a merit of the report that it gives a fairly complete description of the machine, including suggestions for further amendment. Among important improvements in oceanographical apparatus the writer also wishes to bring to notice a type of reversing thermometer of high precision. In order to reduce the parallax errors and with the further purpose of allowing very fine and exact lines of division to be drawn, the fronts of the capillary stems of these thermometers (divided into twentieths of a degree) are ground flat. By these