

have grown up, that they continue growing, that their growth has had instructive vicissitudes, that their development depends on social as well as on personal factors, that they are democratic and international, and that they develop inter-linked with one another.

The scope of the book may be briefly indicated. The banks of the Nile, the Tigris, and the Euphrates saw many interesting beginnings, *e.g.* in astronomy and medicine, for the most part oriented to practical needs. The deepening influence of abstract thought, often linked to observation and experiment, is illustrated by Thales, Pythagoras, Plato, Euclid, Aristotle, and Archimedes. The Roman practical and regulative genius is illustrated by Vitruvius, with his fine conception of the synoptic dignity of architecture, and we are led on to Pliny the Elder and to Galen. An instructive chapter on the continuity of science through the Middle Ages is followed by a discussion of the classification of the sciences, Bacon's in particular. The development of scientific method is illustrated by the work of Gilbert, Galileo, Harvey, and Descartes; and the fundamental importance of measurement by the achievements of Tycho Brahe, Kepler, and Robert Boyle.

The story of the Royal Society is the diagram of co-operation in science; the early development of geology illustrates the value of interaction; in a vivid chapter Benjamin Franklin is taken as representing the eighteenth century in its struggle for intellectual, social, and political emancipation; the relation of science and religion is discussed in connection with Kant and the astronomers; Dalton and Joule illustrate the reign of law; Sir Humphry Davy is pictured as an ideal man of science; scientific prediction finds its classic illustration in the discovery of Neptune; the stimulus that travel gives to science is typified by Darwin's Columbus-voyage; the relief of man's estate by scientific discovery has its fine examples in the work of Pasteur and Lister; science as the mother of inventions is exemplified by the Langley aeroplane. Such are the subjects of successive chapters of a fascinating story, which ends with discussions of scientific hypotheses, scientific imagination, and the relation of science to democratic culture. Our only serious criticism is that the book takes relatively little account of biological science.

#### WHALE-FISHING.

*Modern Whaling and Bear-hunting. A Record of Present-day Whaling with Up-to-date Appliances in Many Parts of the World, and of Bear- and Seal-hunting in the Arctic Regions.* By W. G. Burn Murdoch. Pp. 320. (London: Seeley, Service, and Co., Ltd., 1917.) Price 21s. net.

THE literature of the whale-fishery is large, and there is much delightful reading to be found in it. Scoresby still stands first and fore-

most; he had the true scientific eye, he told us just what he saw, and we go to his books to read not only of whales, but also of snow-crystals, and the heights of waves, and a multitude of other things that many have seen and few recorded. But Scoresby was a little apt to be incredulous of the things he had not seen, and so it happened (for instance) that he led naturalists astray for half a century by declaring that there was no such thing as a "Basque whale." We have also the old books of Martens and of Zörgdrager, and many older accounts than these, from the days of Baffin and of Edge and his Muscovy Company. And, besides all these, we have a long series of narratives, more or less exciting, of whaling voyages for the last hundred years and more, Colnett and Bennett and H. J. Bull, and many others, not forgetting among the older ones the Commandeur Frederik Pietersz's voyage to Greenland "op het Schif De Vrouw Maria," nor among the latest the romantic story of the "Cruise of the *Cachalot*."

To all these Mr. Burn Murdoch has now added another, to tell of "modern whaling" in many seas, north and south and round the world; and he weaves into the story of his own adventurous voyages a lively account of the growth and recent origin of this extensive and prosperous industry. The reader may learn here, for instance, how old Svend Foyn spent years and years on the perfecting of his "harpoon-gun," and the planning of the little swift ships from which it was to be used; how, when all was complete, the great Finner whales and humpbacks, which had lived an innocent and unmolested life since the world began, were harried from sea to sea, and boiled down into oil and ground up into bone-meal and cattle-food; how the whale-oil is "hardened" into "white, tasteless, edible fat excellent for cooking purposes," and how sensible men eat the whale-beef and find it excellent; and how Svend Foyn became rich thereby beyond the dreams of avarice, and his little town of Tonsberg, where his statue stands, became an important place and a busy centre of commerce and industry.

The book is a gossipy one; it roves from one theme to another; it is full of stories, and some few of them (perhaps the usual small proportion) are good; and, better than the stories, it brings to our ears, for once in a way, the tune of some fine old lively chantey, like "Blow, ye winds, hey ho, to California." Every now and then, among the lighter stuff, Mr. Burn Murdoch lets us see that he is a shrewd observer, and better still, that he can, when he pleases, write very admirable English. Best of all, to our thinking, are some of his descriptive bits of really fine word-painting: as, for example, of the "rich, colourful light of the Gulf Stream, that seems to increase south and westerly as you follow it, say, from the west of Kirkcudbright to Spain, and westwards till you come to the Sargasso Sea"; or, again, of "that jewel of a Sea-town," Ponte Delgado, San Miguel in the Azores. D. W. T.