

Hæckel has, we know, spoken disparagingly enough of mere systematism, and compared it to "postage-stampology" (the word "philately" had not then been invented). But we read in the dedication of the "Generelle Morphologie" to Gegenbauer how, as a boy of twelve, he had collected a herbarium of local plants with a set of intermediate forms between the "critical species," and already had been led thereby to doubt the orthodox view of the constancy of species; we know his masterly unravelling and grouping of the appalling wealth of forms in the Radiolaria. De Bary once said to the writer: "Without a good systematic knowledge to begin with, no botanist can tell where he is, nor what he is dealing with." Charles Darwin began as a collector, and monographed the Cirrhipedia, and Alfred Russel Wallace was a collecting naturalist. If we want to place ourselves on a par with Austrian and German biologists we must reform our teaching of botany on the common-sense lines followed so successfully abroad, and once introduced by Henslow into the primary teaching of his village school in East-Anglia. As a preliminary to the morphology and bionomics of our academic programmes, there must be laid a sound foundation in the knowledge of organic external form and variety. And so the scientific training of the individual will be pursued on lines corresponding to the acquirement of scientific knowledge by the race, a course which should, at least in this case, commend itself to all educational reformers.

M. H.

#### GEOGRAPHICAL DISCOVERY.

*L'Epoca delle grandi Scoperte geografiche.* Di Carlo Errera. Con 21 carte, &c. Pp. xvi + 432 (text, 357). (Milano: Hoepli, 1901.) Price L.6.50.

THIS useful, brightly-written and well-illustrated summary of the geographical progress of Christendom, from the beginning of the Middle Ages, is divided into twelve parts, of which the first eight deal with the pre-Columbian time and the last four with the great age of discovery, from Columbus to Magellan. Among the twenty illustrations are four reproductions of early mediæval maps, from Miller and Beazley, one of Carignano's Portolano of 1300, one of Fra Mauro's map of 1459, one of a section of Juan de la Cosa's chart of 1500, one of the Strassburg Ptolemy of 1513, and one of the 1529 *mappe-monde* of Diego Ribero. Most of the latter are reproduced from Ruge's "Geschichte des Zeitalters der Entdeckungen." In its text the present work is also mainly based, for its later chapters, upon the same and other works of Ruge's, as well as upon Kretschmer's "Entdeckung Amerikas," Nordenskjöld's "Facsimile Atlas," HARRISSE'S "Christophe Colomb" and other studies, and Günther's "Zeitalter der Entdeckungen"; for its earlier upon Nordenskjöld's "Periplus," Hughes' "Storia della Geografia," Heyd's "Commerce du Levant," Uzielli and Amat's "Studi biografici . . . sulla Storia della Geografia," K. Miller's "Mappæmundi," Beazley's "Dawn of Modern Geography," Avezac's edition of, and introduction to, Carpini, Yule's Marco Polo, &c.

But although essentially a compilation from more extensive and specialised studies on the history of exploration, Prof. Errera's contribution to the "Collezione Storica Villari" has great merits. It describes with excellent

lucidity, compression, and good sense the chief epochs in the great drama of European awakening to a fuller knowledge of the world. No attempt, indeed, is made to treat (except allusively) of Arab or Chinese exploration and geographical study; and it might be said that a somewhat fuller appreciation of the latter is almost indispensable for a complete understanding of the European advance to which Prof. Errera restricts himself. It might also be objected that a chapter on the exploration of the north (No. vii. "La Conoscenza del Settentrione"), including the description of the Scandinavian voyages to Iceland, Greenland and Vinland, should precede, and not follow, chapters (iv.-vi.) on the growing knowledge of Asia among Europeans during the thirteenth, fourteenth, and fifteenth centuries.

Once again, more attention might have been given to the career and first voyage (1497) of Giovanni Caboto; and, to instance a very small point, Konrad Miller's "Ebstorfkarte" is not separate from his "Mappæmundi: Die ältesten Weltkarten," but heft v. of the same. But little fault, as a whole, can be found with the way in which the author brings out, section by section, his epitome of what he defines, in his preface, as the "progressive extension of the knowledge of the superficies of our planet," down to the era of the first voyage round the world.

A special word of thanks is due to the excellent critical judgment with which the difficult voyages of the Zeni are handled—a subject hard enough in itself and doubly hard for a fellow-countryman of Nicolo and Antonio Zeno. Italians, perhaps, did more than any other people—more even than Scandinavians and Portuguese—for the advance of European trade and exploration, as well as for the perfecting of geographical science; from Antoninus of Placentia to Marco Polo and Ludovico Vartema, from Malocello and the Vivaldi to Columbus, Verrazano and the Cabots, from Flavio Gioja to Fra Mauro and Toscanelli, Italian travellers, merchants, and men of science bore a foremost share in the work of opening up the world. Among the early Portolani, the first true maps ever set forth, an overwhelming preponderance (413 out of 498) are Italian; and the whole of modern trade, with all the possibilities of civilising progress which it contains, might almost be called a discovery of Italian genius. Italian scholars of the present day may, therefore, be said to have a special claim upon the subject here discussed, as the subject has a special claim upon them; and although this *breve storia* has not the original value of Marinelli's remarkable study on the geography of the Dark Ages, it deserves a most cordial welcome.

#### OUR BOOK SHELF.

*Die Tierwelt der Schweiz in ihren Beziehungen zur Eiszeit.* Von Prof. Dr. F. Zschokke. Pp. 71. (Basel: B. Schwabe, 1901.) Price Mk. 1.20.

HERE in short compass we have set forth the relation of the flora and especially of the fauna of Switzerland to the Glacial period. Geologists have been wont to cite the occurrence of Arctic plants in the Alps and the mountains of middle Europe as strongly confirming their belief in the former prevalence of a glacial climate in what are now temperate latitudes. In his present work the author shows that, however cogent that evidence may be, it is in no degree stronger than that derived from a