

chemistry. When this book becomes generally known and studied by English chemists, it seems to me it will be impossible for any of them to refuse to acknowledge the marvellous advances which have been made in the science by the introduction of the conception of electrolytic dissociation.

I would recommend every student of advanced chemistry to study this work. Merely to glance through it is little use: it must be studied laboriously; and it will well repay the labour. Of course there are weak parts in the book. I think the treatment of the *constitution of the molecule* is too sketchy; and chapter vi. of Book iv., on *electrochemistry*, should, in my opinion, have been either expanded or omitted.

Of the translation it is difficult to speak advisedly. I think the translator has attempted an impossible task, the task, namely, of literally changing German into English. If the meaning of sentences in one language is to be conveyed in another language, it seems to me that a paraphrase, not a so-called literal translation, is needed. The task of translation must have been extremely difficult; the subject-matter is complicated, and German is not a language distinguished by its lucidity. The meaning of the original is conveyed on the whole; but the sentences read strangely. See, for instance, the most peculiar sentence near the bottom of page 591. There is an extraordinary sentence about plucking fruit from stepping-stones, on p. 354. Several cases of absolute mistranslation are to be found; for instance, the sentence in italics in the ninth and tenth lines from the bottom of p. 254, and the sentence at the beginning of Book iii., p. 353. *Beliebig* is sometimes translated "casual," sometimes "selected."

I admit the great difficulty of the task undertaken by the translator: as I have said, he has generally succeeded in conveying the meaning of the original; but I think the rendering into English might have been at once more accurate, more elegant, and more readable.

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#### OUR BOOK SHELF.

*Bird Notes.* By the late Jane Mary Hayward. Edited by Emma Hubbard. Pp. 181. (London: Longmans, Green, and Co. 1895.)

*Catalogue of the Birds of Prey (Accipitres and Striges).* By J. H. Gurney, F.Z.S. Pp. 56. (London: R. H. Porter, 1894.)

A Dainty book is Miss Hayward's, the pretty little process-blocks, representing a number of our common birds, matching the short sketches of avian habits. The lamented author had a "deep-rooted love of the beauty of the world." She was a close and unwearied watcher of bird traits, and her notes possess the charm of all original observations. From a scientific point of view, the chief failing of many of the notes is that they endow the birds too largely with human consciousness. Mrs. Hubbard recognises the objection, and says something in favour of this "anthropomorphism"; but while such fancies are poetically attractive, and may be psychologically justifiable, they must always be of less value than the facts which give them birth.

The ornithological papers of the late Mr. J. H. Gurney were both numerous and important, and in the volume

under notice we have further evidence that the son worthily carries on his father's interest in the collection at Norwich Museum. All the birds of prey (hawks and owls) in the Museum were catalogued by Mr. J. Reeve, the veteran custodian, and from this MS. catalogue, and his father's "List of Diurnal Birds of Prey," Mr. Gurney has compiled the list of Accipitres and Striges. According to the list of the former order, the total number of existing species of diurnal birds of prey is now 470, of which at least 89 are only sub-species. The total number of existing species of owls is placed at 268, of which 87 appear to be only sub-species.

Before each bird's name, in the two lists, a letter is placed to mark the zoological region to which it belongs, on Mr. Sclater's classification. A striking testimony to the efficiency of this system is given by Mr. Gurney, in the following words: "The way in which these several divisions [Mr. Sclater's] are justified by the Birds of Prey, and especially by the Diurnal Birds of Prey, is remarkable, and if they were to be decided afresh by that class of birds alone they could not very well be improved upon. Seven-eighths of the Raptores are found in one region only—*i.e.* not in more than one; and the region which has the greatest number is the Neotropical or South-American region, which contains 181 Hawks and Owls."

The whole of the Raptorial collection of Norwich Museum is now being transferred to Norwich Castle; and the completeness of the collection can be judged from the fact that it comprises 403 out of the total of 470 accepted species and sub-species of Accipitres, and 195 out of 268 known species and sub-species of the order of Striges. Mr. Gurney may well be proud of the collection, and of the fine Castle Museum in which it is housed.

*Prince Henry the Navigator.* By C. Raymond Beazley, M.A., F.R.G.S. (Heroes of the Nations Series.) (Putnam's Sons.)

IN this most interesting and valuable book, Mr. Beazley shows us clearly the growth of geographical knowledge, carrying his researches back earlier even than 130 A.D., he tells us that the first maps and charts of the old world are due to Eratosthenes and Strabo. Ptolemy succeeded them, improved their work, and, where knowledge failed him, made errors himself; the author writes thus of his great chart: "Never was there a clearer outrunning of knowledge by theory, science by conjecture, than in Ptolemy's scheme of the world (*c.* A.D. 130)."

We gather much information concerning Greek and Arabic geographers, of the early Christian pilgrims, and of the discoveries of the Norsemen. Throughout the book, we watch, as it were, the growth and improvements of the maps and charts. We see the expansion of geography due to the crusades and land travel. Finally we are brought to Prince Henry the Navigator himself. From youth upwards, retired and studious, he withdrew himself at the age of twenty-one to his Naval Arsenal at Sagres, and devoted the rest of his life to the accomplishment of his three chief objects—"to discover, to add to the greatness and wealth of Portugal, and to spread the Christian faith." We can but marvel at this great man, at the untiring energy with which he worked, but still more at the greatness of that work.

Mr. Beazley has treated the subject in a very thorough and interesting manner, and the numerous maps form a most important part of the book; they date from 130 A.D.-1492. No pains have been spared to make the subject quite clear to the student. All through the book we see how the dominion of the sea has been continuously enlarged by the perpetual application of science to the art of navigation. W.