

of chemistry, and formulated its theories. He wishes to learn something of their characteristics, where and how they laboured, and what were the conditions and circumstances under which their discoveries were made. This no doubt would have involved search, wide reading, insight, and power of characterisation, but it would have added greatly to the human interest of the work, and have imparted vitality and colour to what we are constrained to say is a rather bald and impassive story of human achievement.

The author attempts in some degree to meet what we suggest by reproducing a copy of a print belonging to the National Germanic Museum at Nuremberg representing an "Alchemist's Laboratory"; by a picture of Berzelius as a rather slim young man in knee-breeches, well-developed calves, court shoes and a tight, cut-away coat, seated in a well-upholstered chair, watching, whilst reading, a highly idealised piece of distillation-apparatus, heated by a Roman lamp—a picture reproduced from No. VII. of Kahlbaum's "Monographien." When one recalls the humble kitchen in the Swedish Academy's apartments which, under the despotic sway of old Anna the cook, served the great chemist as his laboratory, this representation of the well-groomed philosopher in the perfectly-appointed parlour provokes a smile. It is pleasing, but it is not history. More realistic is Prautschold's better-known drawing of the interior of the Giessen Laboratory as it appeared in 1842. It represents a crowded assemblage of workers who resemble the German students of opera-bouffe, but it is probably characteristic. As the names of those figured are known it would have added to the interest of the picture to have given them. Some of them at least are not unknown to fame. The remaining plate is a photographic reproduction of van't Hoff's private laboratory at Amsterdam, taken from Prof. Cohen's memoir. The illustrations are probably given as types of laboratories of their respective periods, but happier selections are available and might have been introduced.

The ideal history of chemistry has yet to be written. There already exist a number of works of the character of the one now noticed, but many of them are not much above the range of ordinary school histories. The subject is worthy of a fuller treatment; its several periods should be dealt with in special monographs and in the manner of professed historians. The story during the last 70 or 80 years—ininitely the most fascinating and the most fruitful period in its history—has not yet been adequately handled. But the man who could handle it most effectively is probably too busy in augmenting it.

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### Antarctic Polychæta.

*Australasian Antarctic Expedition, 1911-14, under the Leadership of Sir Douglas Mawson. Scientific Reports: Series C—Zoology and Botany. Vol. 6, Part 3, Polychæta. By Dr. W. B. Benham. Pp. 128 + plates 6 + Map 1. (Sydney: Government Printing Office, 1921.) 12s.*

THE labours of Kinberg, Grube, Ehlers, Gravier, Pixell, Ramsay, Benham (1909), and others, besides those described in the *Challenger* volume, have rendered us more or less familiar with some of the Antarctic Polychæts. The present memoir of Prof. Benham, an able and experienced observer, adds notably to our knowledge of such forms as have been obtained within the half-circle round the Antarctic land. The materials on which his report is based came chiefly from Commonwealth Bay, Adelie Land (Australian Antarctic), though a few were procured off Macquarie and Maria Islands and Tasmania, the collection containing fifty-eight species, of which eleven are new. In his summary of Antarctic forms hitherto obtained the author shows that the largest number of species belong to the Terebellidæ, followed in diminishing numbers by the Syllidæ, Phyllodocidæ, Aphroditidæ, Maldanidæ, Serpulidæ, and Sabellidæ, the other families having fewer numbers. Moreover, some species occur in large numbers, such as *Thelepus antarcticus*, *Harmothæ spinosa*, and *Potamilla antarctica*, a feature not uncommon in similar species in European waters. Of his new species, perhaps the most interesting is *Amythas membranifera*, from Commonwealth Bay, an Ampharetid which has an introversible frilled membrane instead of the usual oral tentacles.

The author has extended the distribution of various known species, as well as, by the aid of well-preserved examples, added to our knowledge of their structure, sexual variations, and otherwise. Careful investigation had led Prof. Benham occasionally to differ from his predecessors, but he shows fully and fairly the grounds on which his arguments rest; e.g. in the distinctions between *Harmothoë* and *Hermadion*. He does not enter into the structure of the foot in diagrammatic vertical section as Mr. Southern has done in the Indian forms from the Chilka Lake, probably because such is unnecessary in the discrimination of species, though it may be useful in critical cases. The careful methods adopted by Prof. Benham enabled him, for instance, to observe the chitinous supporting rod in the long metastomial cirri of *Pelagobia vigueri* which M. Gravier had overlooked. It may be open to doubt, however, whether his new species *Sphærodorum spissum* is not more closely connected with the European forms than is at present supposed.

This research still further emphasises the fact that no special polychæt fauna characterises the Antarctic seas, and that in all probability in the diatom-ooze of the great depths between Australia and the Antarctic shores even a proportionally greater number of novel types exist than have hitherto been procured. Again, some cosmopolitan forms make their appearance in the Antarctic waters, such as *Phyllodoce madeirensis*, *Glycera capitata*, *Cirratulus cirratus*, and *Serpula vermicularis*. It is curious, however, that *Hauchiella tribullata*, a Zetlandic Terebellid, is not included in the captures, though it was found at Kaiser Wilhelm Land in the American Antarctic region. The author did not meet with examples of the incubatory habit which was thought by Gravier to be a feature of these cold southern regions, e.g. in *Eteone gaini* and *Flabelligera mundata* amongst the polychæts, and in holothurians, actinians, and colonies of tunicates. It is well to remember, however, that the incubatory habit is seen in British seas from fishes to coelenterates.

If criticism may be offered, it is that the author might have made the discrimination of his new and rare species more easily accomplished if he had given at the commencement of each a brief epitome of the specific characters. The accompanying ten plates have their figures fairly represented in lithographic ink, though they lack the fine touch of stone-engraving. The descriptive letters have been omitted from the figures throughout. The entire memoir is a credit to the Australian Government, and to Prof. Benham, whose ability and wide experience enabled him to treat the subject in an effective manner.

W. C. M'INTOSH.

### European Archæology.

*A Text-Book of European Archæology.* By Prof. R. A. S. Macalister. Vol. 1, *The Palæolithic Period*. Pp. xv+610. (Cambridge: At the University Press, 1921.) 50s. net.

SEVENTY years ago the Scandinavian founders of European archæology regarded the shell-heaps or "kitchen-middens" as containing the earliest traces of man's handiwork. Ever since then it has been found necessary to shift man's beginnings further and further into the past, so that now Prof. Macalister is obliged to devote a whole volume, containing nearly 300,000 words, to reach the point at which his Scandinavian predecessors began their narratives. For the type of implement, in stone and in bone, found in the oldest shell-heaps the author adopts the recognised French term "Campignian," although he is of opinion that the culture represented in the shell-heaps was actually evolved in the Baltic Area. By a strange coincidence, if we are to follow our author implicitly,

it is with the introduction of this shell-heap or Campignian culture into Ireland that the history of man commences in our sister-island. "No remains of the Palæolithic period to the end of the Magdalenian stage," writes Prof. Macalister, "have been found in the north of England or else in Scotland or in Ireland, some injudicious publications notwithstanding." The Professor of Celtic Archæology in University College, Dublin, has thus the advantage of surveying the ancient cultures of Europe from a land untrammelled by palæolithic tradition. His first volume covers cultural periods which are unrepresented in Ireland.

Where, when, and how, then, does the modern story of European archæology begin? One may reasonably complain of having to wade through some two hundred preliminary pages before reaching the point at which Prof. Macalister commences his archæological narrative. The first chapter is spent in defining what archæology is and what it is not; the second is devoted to the elements of geology, the third to the evolution and classification of mammals, the fourth to the evolution of man and classification of races, the fifth to eoliths and to *eolithists*, the name which the author gives to those who believe in eoliths as products of human hands. As the following passage shows, Prof. Macalister refuses to begin his archæological narrative with eoliths:—

"The question that these flints present to us is primarily: Are they the work of a conscious agent, fashioning them for a definite purpose, or are they not? The answer to this question appears to be almost wholly subjective, not objective, and is therefore outside the region of scientific study, except perhaps for the psychologist."

We fear that Prof. Macalister understands as little of psychology as of eoliths. For him, true archæology begins with types of flint implement which even a child can perceive have been artificially fashioned.

Archæology is construed in a wide sense by Prof. Macalister. It is made to include not only all things which have been made or used by past generations of mankind, but also skulls, bones, teeth, psychology, and religion. For a writer who warns his readers on almost every page against possible fallacies, it is somewhat daring for him to assert that "Man develops a religious instinct." Then, again, when discussing the "psychology of middle palæolithic man"—men of the Neanderthal type—he not only boldly asserts that they had a religion, but proceeds to draw a picture of this long dead and extinct type of humanity sitting round the fire and discussing momentous problems.

"One would tell of a dream that he had had, in which the dead had appeared to him; another would relate how something, he knew not what, but which surely was not of the common things of nature, had