

Dr. Paul-Boncour's task is limited to a systematic study of the cranium, the facial part of the cranium, and the head of the living; his volume gives an accurate reflection of the methods and conclusions of the French school of anthropologists. The nature of his book is best indicated by a bare recitation of the subject-matter of its chapters.

The volume commences with a discussion on the growth and evolution of the skull, and then passes on to a description of its various parts. The succeeding chapters are devoted to the formation of the cranial cavity, to the methods of measurement and estimation of indices and of angles. The mandible and brain cavity are the subject-matter of special chapters. The second part—the more valuable—is devoted to the methods employed in registering the racial and individual characters as seen in living people—the form of the head, the development of muscles, the colour of the skin, the shape of the eyes, contour of the nose, form of ear, mouth, hair, and chin.

Dr. Paul-Boncour's volume is a simple, explicit, and methodical presentment of methods and opinions which have been perfected by the three generations of men who have made Paris the Mecca of anthropologists.

*Science of the Sea.* Edited by Dr. G. Herbert Fowler. Pp. xviii + 452. (London: John Murray, 1912.) Price 6s. net.

THERE is a large though scattered body of people interested in oceanography or fascinated by marine biology, but prevented from making any advance by the want of practical direction and assistance: not only explorers and yachtsmen, but officers in the Navy with time on their hands in port or in foreign stations, medical officers on board ship or on coastal stations, and gentlemen who have retired from active service. To all such who wish to learn the methods of oceanographic inquiry, this book will be gladly welcomed, for it brings together instructions that otherwise are hard to find, given with the greatest care, and tested by the practical experience of many lives. The handbook is, in fact, the collective wisdom of the most active members of the Challenger Society, a body that has met quarterly in an unobtrusive fashion in London for some years, and now expresses its interest in oceanographic research by this publication.

The book begins with a chapter on meteorology by Dr. Mill and Capt. Wilson Barker, whose names, like those of the succeeding contributors, are guarantees of soundness and fulness of knowledge, and then proceeds to a well-illustrated account of hydrography, the joint work of Prof. H. N. Dickson and Mr. D. J. Matthews, of Plymouth. A very interesting and practically helpful account of tropical shore-collecting and outfit is given by Prof. Stanley Gardiner, whose methods, with a little adaptation, are applicable to similar work in temperate seas. Then follow four chapters on marine biology, including one by Sir John Murray

on oceanic deposits and the organisms of the sea-floor. Fishing, whaling, and sealing are referred to in a rather summary fashion. Finally, the editor gives valuable counsel on methods of note-taking, whilst yacht-equipment, dredging, trawling, and the preservation of specimens are dealt with in a most helpful manner by the Director of the Marine Biological Association and others.

We congratulate the editor, Dr. Fowler, on the manner in which he has correlated and brought together such a valuable elementary compendium, and we can recommend this handbook as a trustworthy and practical guide to travellers, and not less a book of great interest to all biologists.

F. W. G.

#### LETTERS TO THE EDITOR.

[The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts intended for this or any other part of NATURE. No notice is taken of anonymous communications.]

#### Practical Mathematics.

I WAS particularly sorry to be absent from the meetings of the International Mathematical Congress at Cambridge, because an address was expected from me upon the teaching of practical mathematics, and because Sir Wm. White, in his address on the relation of mathematics to engineering practice, referred to practical mathematics in a most contemptuous way.

Twenty years ago mathematics continued to be taught in what may be called the orthodox way, a way that succeeded fairly well with students who were fond of abstract reasoning, 3 per cent. of all students, and quite failed with the other 97 per cent. At the British Association discussion of 1901 (verbatim report published by Messrs. Macmillan), most of the great mathematicians and teachers of mathematics spoke or sent remarks in writing. In opening that discussion, I published my proposed Science and Art Department syllabus on practical mathematics. There was essential agreement with my views; there was scarcely one dissentient remark. A committee was formed, and recommended methods of teaching which are now extensively adopted. It is perhaps a pity that I gave such a misleading name as practical mathematics to the reformed methods, but I wanted to differentiate them from the orthodox methods of twenty years ago, and I did not dream that the new methods would be adopted so quickly. They are in use now in all the public schools where natural science is taught; they are in use in all science colleges and in all engineering colleges.

In evening schools it used to be that when a class of thirty apprentices was started in elementary mathematics, the attendance dwindled to ten in November, and in May it was usual to find only one or two faithful students. Now, in such schools, there is almost no teaching of the kind we used to call orthodox, but some hundred thousand apprentices study practical mathematics. The class of thirty formed in September remains in good attendance all the winter, and remains an excited and interested class of thirty in May. The new method suits the boy of great mathematical promise, but it is really arranged to give the average boy a love for computation and the power to use mathematical reasoning with pleasure and certainty. It recognises that every boy, every man, already possesses the fundamental notion of the infinitesimal calculus, and that it is quite easy