

The only corrective of immoral publications of this description is to be found in reproducing them before public opinion of another kind from that of the unfortunates whose eyes alone they are intended to meet; and it is partly this consideration that has led us to review Mr. Yorke's essay, which, although excellent in itself, is hardly in close enough contact with natural science to demand notice in these pages.

GEORGE J. ROMANES

OUR BOOK SHELF

Iconographie der schalentragenden europäischen Meeves-conchylien. Von Dr. W. Kobelt. 4to. Heft 1. (Cassel: Theodor Fischer, 1883.)

THE object of this work is to supply a want which is continually felt by conchologists, and it deserves the greatest success. Dr. Kobelt is well known to science as the editor of the *Jahrbuch* and *Nachrichtsblatt der deutschen Malakozoologischen Gesellschaft*, which has now been published for between fifteen and sixteen years, and as one of the editors of the new *Conchylien-Cabinet* of Martini and Chemnitz; and he is also the author of several works and papers on conchological subjects. It appears from the prospectus of the present work that its scope will be confined to the coasts of Europe, including the English Isles, the Faroes, and Scotland, and bounded by the north coast of Africa, but excluding not only tropical and subtropical species of Mollusca, but those Arctic species from Spitzbergen and the north of Iceland which are not found on the coasts of Upper Norway. This scope, although extensive, is not very definite; and it scarcely accords with our usual notion of the European seas. We do not know what may be the author's limit of depth, whether it is the line of soundings or 100 fathoms; nor whether he will even take the Mollusca now about to be published from the *Triton* cruise between the Faroes and Scotland. The expeditions of the *Josephine*, *Lightning*, *Porcupine*, *Challenger*, *Vöringen*, *Travailleur*, *Washington*, *Knight Errant*, and several others, have of late years done much to aid in the exploration of the European seas at various depths; and the number of species thereby added to the Mollusca has been very considerable and is still increasing. Some additions have likewise been made from time to time to the Mediterranean Mollusca, especially by myself during the present month. Taking into account all these discoveries, I am inclined to reckon the number of species hitherto described as inhabiting the littoral zone and moderate depths in the European seas as not less than 1000; probably 1200 would be nearer the mark.

The first part of the present work, which has now appeared, gives figures of four species only and their varieties, one of which species (*Murex gibbosus*) is Senegalese, and has never (to the best of my knowledge and belief) been found in any part of the European seas. This reduces the number of figured species to 3. Perhaps the species will not be so profusely illustrated in the next and following parts. The published prospectus does not give any idea of the extent of the work. But assuming even that twenty species (large and small) may on an average be figured in each part, the entire work would take not less than from fifty to sixty parts, and would cost for an uncoloured copy 10% to 12%, and for a coloured copy 15% to 18%. If all the species known to inhabit the European seas, including the abyssal and benthal zones, are to be figured—and I think this ought to be done—the extent and cost of the publication must be increased by probably a fourth more.

However, such calculations have doubtless been considered by the author or his publisher. The work will assuredly be far more scientific and valuable than the

very irregular but expensive *Conchologia Iconica* of the late Mr. Reeve, and be not merely an "ouvrage de luxe."

The family *Muricidae*, which is the first selected for publication, does not seem to be placed in the usual order of classification. All the figures are admirable. The descriptions are in Latin, the text in German. The geographical, hydrographical, and geological distribution, as well as the odontophore and synonymy, are carefully worked out.

J. GWYN JEFFREYS

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. No notice is taken of anonymous communications.]

[The Editor urgently requests correspondents to keep their letters as short as possible. The pressure on his space is so great that it is impossible otherwise to insure the appearance even of communications containing interesting and novel facts.]

Sand

I HAVE recently been favoured with a reprint of Mr. J. G. Waller's paper upon sand, read before the Quekett Microscopical Society. The subject is so full of interest that I trust I may be allowed to give it a wider publicity in your columns. To render the study of practical use to geologists and physicists, the first step appears to me to ascertain whether it is possible to distinguish with certainty, by aid of the microscope, sand that has been worn by action of wind from sand that has been for long exposed to surf, and this again from sand brought down by torrents. The degree of rounding and the average size of the grains would be, I presume, among the chief characteristics, and it is to be hoped that naturalists abroad will kindly forward examples of undoubted blown and torrential sand, so that this point at least may be settled.

If it should prove that the origin of sand can be pronounced upon with any degree of certainty, from a microscopical examination, we should come into possession of a most valuable aid to the study of at least Tertiary geology. It is well known that marine and freshwater deposits succeed each other repeatedly throughout our Eocene formations, and where deposits of sand are in juxtaposition, it is at present impossible to draw any line between them. It is only possible to surmise that they are of different origin and therefore age, when pebble or oyster beds on the one hand, or films of clay with plant impressions on the other, are accidentally included in them. So far as our own Eocenes go, it appears from Mr. Waller's results that their sands, when of marine origin, possess a percentage of flint grains, but that purely fluviatile sands do not possess any. Marine and freshwater sands are in direct contact in very many of our Eocene sections, and I hope Mr. Waller's researches will enable us to distinguish them and apportion the proper thickness to each.

With regard to the relative rarity of flint-grains and preponderance of quartz, in all the Tertiary and recent sands hitherto examined, it appears just possible that the concussion the flint grains must undergo when beaten for ages in the surf, might induce a molecular change from the colloid to crystalline state, but in the absence of any fact or argument to support such a theory it cannot be seriously entertained. It is however possible that quartz grains reach a final state of subdivision, and then suffer relatively little by attrition, and are therefore almost indestructible, while flint grains become rapidly degraded into mud. This appears to be very much the opinion Mr. Waller has formed. It does seem at first sight matter for surprise that the grinding of flint should not more largely affect the composition of our sea sand; but we must on the other hand reflect on the indestructible nature of the quartz grains that chiefly compose it, that it may have been accumulating since palæozoic times, and the enormous bulk of the quartzose rocks that must have been ground down to supply it during such vast ages, and then compare the sources with flints which in comparison only appeared yesterday, and then but as scattered segregations in a limited portion of a single formation. Flints and flint beaches, recent and ancient, are at our gates, and are continuously renewed by the wearing away of the chalk of which so much of our part of England is composed, and their aggregate mass therefore astounds us; but they after all occur over only a