

encountered in these three spheres of application. The limitations imposed on the various types of instrument by vagaries in the propagation of waves are described in some detail, together with the manner in which these limitations have been overcome or reduced in importance. A chapter on systems of direction-finding which do not yet appear to have earned 'commercial' success includes the instrument giving a visual indication of bearing by the aid of a cathode ray tube. Recent

developments in connexion with this instrument indicate that it may soon be expected to emerge from its experimental shell, in which it has for so many years proved a most invaluable tool for the scientific investigator.

A well-arranged bibliography of selected papers is included in the book, and this will prove very useful to the student or research worker who wishes to delve deeper into the subject.

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Molluscs of the Great Barrier Reef

Great Barrier Reef Expedition, 1928-29
Scientific Reports, Vol. 5, No. 6: Mollusca,
Part 1. By Tom Iredale. Pp. 209-426 + 7 plates.
(London: British Museum (Natural History),
1939.) 15s.

THIS volume deals with the Lamellibranchia, excluding the Eulamellibranchia. The Barrier Reef Collection was augmented by dredgings around the Low Islands, with a few from the Queensland mainland. These regions the author names the Solanderian and Banksian divisions of the Australian fauna. A short history of reef exploration in the area, from Captain Cook to Hedley and his collaborators, is followed by a discussion of the criteria providing a basis for the classification of lamellibranchs. The author's scheme of classification is given, and the remainder of the book is devoted to a description of families, genera and species. More than two hundred species or subspecies are described and of these more than half are new. The six half-tone plates from drawings by Miss Joyce K. Allan and the photographs of oysters by Mr. Clutton are clear and adequate for identification of the shells. No index is provided, not even page references to families—an omission that may be rectified, perhaps, in the next part. A list of literature is also needed.

The study of this large class has been in the hands of three types of specialist, the geologist, the conchologist and the anatomist. Each has attempted to elucidate the evolution and relationships of the members of the Lamellibranchia from his own particular studies and is inclined to believe that the characters of a hinge, a gill or some other structure are sufficient for the purpose. The study of the dead shell, whether fossil or recent, has either tended to over-emphasize features which may be convergent, or, as Morley Davies pointed out (*Proc. Malac. Soc.*, p. 322; 1933) to divide orders and genera *horizontally* instead of *vertically*, so that their polyphyletic origin is masked.

We are, in fact, driven back to two important tenets in scientific philosophy. First, the specialists must pool their knowledge in order that a sound judgment can be made; no one of the three mentioned is competent to do it alone. Secondly, the features indicating affinity are likely to be those deep-seated characters that are little affected by the environment. Thus the conchologist has often been at fault because he has been too insistent on his own infallibility, the anatomist has rarely been also a geologist and conchologist and so has not obtained the full benefit of his anatomical studies. Moreover, the work on fossils and recent shells is far greater than that on the bodies of the animals themselves, and until this disproportion is corrected, the classification of any of the Molluscan classes must be regarded as unsatisfactory.

Mr. Iredale has clarified the issue considerably by attempting to combine the results of the geologists and conchologists with some anatomy. But his dogmatic and scornful attacks on other workers are unwise, since his own classification is not invulnerable, and in any case acerbity is dying out in scientific literature and may well be allowed to perish. He is to be commended for raising the anomalous Trigonias to ordinal rank, a position to which their deep anatomy also entitles them. Family rank for Watson's sub-families among the Pectiniformes is also sound, but the grouping of the Mallettiidæ with the Nuculidæ can be questioned, since anatomically, especially as regards the pericardial complex, their relations are with the Solemyidæ. Unfortunately, no Mallettiids are described, so we do not know why the author arranged them thus.

Iredale is critical of the specialist in Europe who names the Australian fauna, and he stresses the importance of the local worker, who alone can study the variability of a species in its own home. He is quite right and the remedy is in his hands. Let him encourage Australian naturalists to carry on the work he has begun.