reviews

THE Mollusca are surely the most interesting of the invertebrate phyla. They are unique in producing a shell which may be considered independently of the animal which formed it, so that their study has been divided between conchologists and malacologists. True, the acumen of Aristotle enabled him to view the molluscs as a whole, apart from a not unnatural assignment of the cephalopods to a higher rung in his ladder of life, but this unity disappears among his successors.

Enlargement of the world at the renaissance led to the accumulation of shells from all oceans and it was these, beautiful in themselves, indestructible and eminently suitable for cabinet display, which occupied the attention of Martin Lister in the 17th century. Such names as he and others bestowed became incorporated into the binomial nomenclature of the *Systema Naturae*. But Linnaeus was content to group the animals into ten 'genera' and his followers, after describing the shell, merely referred "its animal" to one of these. All shelled species became included in the Testacea; only the shell-less slugs were classed as Mollusca which embraced a vast disorder of worms, zoophytes and echinoderms.

Malacology as such emerged from the comparative anatomical studies of Cuvier, which revealed the basic molluscan plan that is often ingeniously disguised because of the unique plasticity of the phylum. During the last century, as knowledge about the molluscan animal increased it was alongside a world wide search for shells described in numerous, often magnificently illustrated, shell iconographies.

This century has seen impressive progress in molluscan studies covering every aspect from population dynamics to the finest structural details revealed by the electron microscope. Of recent years there has been a revival of popular interest in shells, which has led to, and been further stimulated by, the publication of a series of impressive volumes, often with magnificent coloured plates, coming largely from the United States and Japan. Only rarely, however, as in Wilson and Gillett's *Australian Shells*, do animals themselves receive adequate attention. And

Suitable for cabinet display

it is with the laudable hope of remedying this lack of general knowledge about the living animal that Dr Alan Solem, one of the most rigorous contemporary malacologists whose activities are centred on, but far from confined to, the Field Museum of Natural History at Chicago, has written this appropriately named book*.

He should certainly succeed in his object. This is a very attractively produced and most excellently illustrated book which cannot but increase the knowledge and molluscan interests of readers ranging from the amateur conchologist to the professional zoologist. Naturally, there are inequalities in knowledge and presentation. The extraordinary plasticity of molluscs has been responsible for their unrivalled diversity of form and of habit. No one is likely to be equally conversant with limpets and squids and be as knowledgeable about the environment of abyssal seas as about that of deserts. Moreover, those who study marine molluscs seldom have time to concern themselves with terrestrial species, and the reverse is no less true.

Dr Solem is a member of the latter fraternity and in his chapters dealing with land molluscs, a preoccupying abundance of some 24,000 species, he writes with impressive authority. We encounter the fascinating devices for reproduction such as those in *Limax cinerioniger* which is five to eight inches long but in which the genitalia, protruded by the intertwining pair, reach

lengths of up to 32.5 inches; he also covers adaptations for survival in desert climates or over long dry periods, and the course of evolution, as usual in molluscs from many converging origins, of the land slugs which have largely ceased to be 'shell makers'. There is an altogether admirable chapter dealing with how "To scrape a Living", concerned with the radula and illustrated with 21 plates including scanning electron microscope photographs that reveal the structural diversity of this wonderfully adaptable tool which has been so very significant in the success of the phylum.

Dr Solem has been too deeply preoccupied with land molluscs and snails to have the same commanding knowledge of marine species. He does not attempt to describe the ctenidial gills, organs as supremely successful as the radulae which, indeed, they supercede as organs of feeding throughout the Bivalvia in which group, it must be noted, the palps do not (as is claimed in the book) push food into the mouth. Nor can I follow Dr Solem in his treatment of the vexed problem of torsion.

But this is a revealing book for all readers, enriched by appendices covering classification, references for further reading, a glossary, and some excellent advice about the care and feeding of both marine and freshwater molluscs, and of land snails and slugs. In all, a most welcome addition to molluscan literature.

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**The Shell Makers*. By G. A. Solem. Pp. 280. (Wiley: London and New York, June 1974.) £5.05.