

standards of rigour for epidemiological arguments, and should generate much fruitful debate. I would, for instance, argue the wrongness of the statement "In the social and biological world, the more general and mathematical a formulation the less it is likely to represent the parochial realities of our concern". Are we really more interested in predicting a local epidemic with precision than with giving insights into the process of its spread? P. D. OLDHAM

Skye is Only the Start

Past and Present Vegetation of the Isle of Skye: a Palaeoecological Study. By H. J. B. Birks. Pp. xi+415. (Cambridge University: London, June 1973.) £13.50; \$39.50.

THIS book is without precedent in the history of plant ecological literature both in its intensive examination of the flora of a relatively small area and in its attempt to marry palaeoecological studies with a survey of modern flora. Although its title might suggest a highly specialised work of limited appeal, the book contains several sections which are of considerable relevance to many ecological fields.

There are two main sections to the work, the first being a detailed survey of the present vegetation of the Isle of Skye and the second dealing with the author's palaeoecological investigations of certain sediments on the island. The first section occupies more than half of the book, mainly as a result of ninety-six pages of phytosociological tables included within it. These tables document an extensive survey of the island's vegetation carried out by recording 551 four-metre-square quadrats, selected subjectively to ensure complete coverage of the island's diverse habitat types. The results are arranged in tables resembling those of the Braun Blanquet continental system of phytosociology, differing only in the absence of sociability indices. The classification and nomenclature of "vegetational units" also follow the continental system.

Many British ecologists will object to the use of subjective techniques and also the application of the continental 'pigeonhole' philosophy in classifying stands. One must, however, acknowledge the efficiency of these methods for primary vegetational survey. Continental phytosociologists may feel that some of their carefully defined association binomials have been applied a little loosely to some of the very distinctive, oceanic plant communities of Skye. The author has declined to erect new associations on the grounds that too little is known of the fidelity of species within the vegetational units he has recognised. Without such a know-

ledge, however, he may have been unwise in assigning some of them to existing associations mainly described from the continent.

The palaeoecological section of the book contains a very valuable chapter on pollen identification. There are also extremely useful data on surface pollen spectra from different vegetational types which aid the interpretation of the fossil pollen assemblages. Pollen analyses are given for sediments from five sites on Skye which were chosen to provide representative examples of vegetational history in a region of diverse topography and geology. The diagrams are zoned on a local assemblage zone basis, but are interpreted as representing the classical late Devensian sequence, including the interstadial phase (Allerød). Undoubtedly some people will question this interpretation. *Betula* pollen is present in very low quantities in the basal sediments and does not provide clear evidence upon which zonation can be based, except possibly at Loch Meodal. *Juniperus*, on the other hand, does exhibit the expected double peak associated with the complete late Devensian sequence. My feeling is that Birks is probably correct in his interpretation; however, it is regrettable that he does not possess more radiocarbon dates from lower (interstadial) levels. At present the temporal correlation chart (Fig. 27, page 352), which summarises Birks's conclusions, must be regarded as speculative.

This is a remarkable book describing the results of a great deal of painstaking and accurate work. It is a volume which will undoubtedly have a profound influence upon the future development of Quaternary plant ecology in the British Isles. PETER D. MOORE

Urchins and Cucumbers

Experimental Embryology of Echinoderms. By Sven Hörstadius. Pp. 192. (Oxford University: London; Clarendon: Oxford, September 1973.) £5.

FOR more than forty years experimental embryologists have recognised Sven Hörstadius as a master. From time to time he has displayed his outstanding skills on other material, but the analysis of sea urchin development has been his major and continuing interest. He now offers a historical review, informed by a lifetime's familiarity, and ruthlessly down to earth in its approach. Starfish, sea lilies and sea cucumbers have been less conspicuous in experimental work, but are appropriately mentioned.

Hörstadius deliberately avoids any detailed consideration of a number of important fields—fertilisation and the molecular biology of eggs and embryos, for example—in order to concentrate upon his main theme. This is experi-

mental morphology as investigated by the classical manipulative techniques of isolation and transplantation, and 'simple' chemical treatments. The story is well known in outline, and is very impressive. It is useful to have it brought up to date in so authoritative a way.

The example of Driesch may have discouraged later echinoderm embryologists from grandiose speculation, but it is a pity that Hörstadius is so very self controlled. It would have been of interest to know more of his views, however tentative, on the general issues that this work raises. Even the double gradient which has been so helpful in interpreting experimental results must arise, must be maintained, and must influence the expression of genetic information. To understand how would be of universal value for developmental biology. Hörstadius's questions are usually less general. It is wholly characteristic that his book should end with one that smacks more of the laboratory than the seminar. An experiment is briefly described. The expected result is not obtained. "Instead, the upper half moved down along the lower partner until the endodermal regions fused. What kind of reaction and what forces caused this strange migration?"

D. R. NEWTH

More Quanta

Theoretical Physics: an Advanced Text. Volume 3: Quantum Mechanics. By Benjamin G. Levich, V. A. Myamlin, and Yu A. Vdovin. Translated. Pp. xx+621. (North-Holland: Amsterdam and London, 1973.) Dfl. 120; \$37.50.

THE writing of a book on Quantum Mechanics, at the present time, requires a certain temerity on the part of the author. Only a messianic belief in the originality and individuality of one's approach could justify the adding of yet another volume to the already overcrowded shelves.

The present volume is neither original nor particularly individual, and its sole *raison d'être* seems to lie in the unwarranted conviction that every course on Theoretical Physics should possess its own volume on Quantum Mechanics.

One of the basic problems is to try to identify the audience it might serve. It is much too advanced to be used as an introductory text for undergraduates, even for those specialising in theoretical physics, and it does not match, say, Landau and Lifshitz for excitement and power, as an advanced treatment.

The subject matter is rather standard, with the exception of the last chapter entitled "Fundamentals of the Theory of Elementary Particles", where an interesting attempt is made to introduce the reader to quite advanced ideas which are right in the forefront of present day