

Dupin's prediction to the mechanics of Paris that in the next twenty years "the conquests of science and industry in Great Britain [would] surpass those of all the generations which had given so much prosperity to her people" was, as we know, fulfilled. What we did not know, and do now, thanks to these meticulously careful and patient studies of Dr. Kelly and Dr. Tylecote, is the way in which the mechanics of those days took their instruction and their fun. For the Yorkshire Union was a regular Channel 9; Dickens and Emerson trod their lecture platforms as well as the local cognoscenti. They were the Royal Institutions of the plobs, as virile as those for whom they catered.

W. H. G. ARMYTAGE

AN ECOLOGICAL PERSPECTIVE

Biogeography

An Ecological Perspective. By Pierre Dansereau. Pp. xiii+394. (New York: The Ronald Press Company, 1957.) 7.50 dollars.

THE sub-title of this volume is more appropriate to its contents than the main title, for it is essentially a text-book of general ecology, containing but little of the traditional material of plant and animal geography. The principal sub-divisions indicate the scope of the work: history of biota; bioclimatology; synecology; autecology; and man's impact on the landscape. These form the five 'levels' of Prof. P. Dansereau's perspective, and within this framework he deals with all the more important aspects of the environmental relationships of living organisms. As he states, much of his ecological philosophy is derived from the Zurich-Montpellier school; it is not surprising that this should be so, for his mind is evidently given strongly to systematization.

In fact, Prof. Dansereau adopts a taxonomic approach to all aspects of ecology, descriptive and otherwise, for while he stresses that the crux of ecological thinking is in the holocoenotic point of view, his method of treating phenomena both static and dynamic is to dissect, define and classify. As a result his text is copiously subdivided, and studded with tabulations. This is undoubtedly a treatment admirably suited for the student seeking to gain some sort of grasp of this huge and inherently somewhat amorphous field; for him it has the all-important merits of clarity, apparent unambiguity and memorative value.

The demerits of this sort of treatment should not be overlooked, however; many issues are not to be resolved merely by classification and definition, and indeed such a process may create a mask for ignorance and obscurity. It is questionable, for example, whether even for an elementary student it is justifiable to present so cut-and-dried a view of the climax hypothesis as Prof. Dansereau does in his synecological section.

Be this as it may, bringing order to so wide a field in so compact a volume represents a fine achievement, even if the treatment involved in doing so is occasionally procrustean. Although as is to be expected the illustrative material is predominantly botanical, the width of example quoted is impressive, based as it is upon Prof. Dansereau's acquaintance with American ecology from tropics to arctic. The bibliography of more than 400 references supplies an excel-

lent entry to ecological literature, notwithstanding its marked bias towards that of the New World.

A word must be said, also, about the illustrations. Like many recent North American text-books, this one makes frequent use of a cartoon-style of diagram which, at its best, is capable of lending an immediate force to a point and of registering it upon a reader more securely than many pages of text. The bulk of the diagrams are outstandingly successful, but one or two have reached a degree of over-elaboration which reduces them to a form of puzzle or intelligence test—sometimes, like those concerning the structural description of vegetation, merely to an exercise in memory.

A similar charge of over-elaboration may be levelled at some of the technical vocabulary. True, precise expression demands an adequate terminology, but it does little service to a subject to snow it under with polysyllables. In the introduction to his glossary, Prof. Dansereau notes the need to avoid calling a spade a geotome, but a sneaking sympathy with those who do so is surely shown when he himself refers to a long-day plant as a longidiurn and a short-day plant as a brevidium.

In summary, it may be said that this is a treatment of a wide and difficult subject which, by careful planning and avoidance of controversy, manages to be both comprehensive and concise. To the good teacher and the thoughtful student it should supply an excellent basis for a course in general ecology; but there is at least a risk that the very efficiency of the author's rationalizations of the subject-matter could tempt the mediocre to an under-estimation of its complexities.

J. HESLOP-HARRISON

SIXTH-FORM PHYSICS

New Intermediate Physics

By G. R. Noakes. Pp. viii+962. (London: Macmillan and Co., Ltd.; New York: St. Martin's Press, Inc., 1957.) 30s. net.

MR. G. R. NOAKES has a very high reputation as a writer of physics text-books for use in the sixth forms of public schools and grammar schools. The present work collects into one volume his previous books on separate branches of physics; but since two of these, on light and on electricity, were not easily adaptable, those sections have been completely re-written. The other sections have been somewhat modified so as to keep them within the comprehension of that increasing number of students who cannot be regarded as possible entrants for university scholarships, but who may nevertheless be valuable contributors, at a lower level, to the scientific man-power of the nation.

In his new section on light, the author uses both the real-is-positive and the new Cartesian conventions; this seems to augur the final—and very proper—victory of the latter. It would, indeed, be interesting to know whether any English university department of physics now uses the real-is-positive convention. The section has most of its discussions in terms of wave theory, which makes for greater interest than the rather bare bones of geometrical optics. The somewhat short treatment of the diffraction grating might have been expanded to answer explicitly the usual schoolboy question as to why more than two lines on the grating are necessary.