

tributors are British or European but Australia, New Zealand, and Canada are also represented. The editors are professors of agricultural botany and agriculture, respectively, at the University of Nottingham. The contents are arranged in six general categories: vegetative development, reproductive development, the environment, responses to the environment, biochemical aspects of quality, and agronomic aspects. Most of the 22 papers are of an agronomic nature or have an agronomic orientation toward morphological or physiological aspects of plant growth. Considered from a botanical standpoint, the primary emphases of the papers are as follows: 6 are morphological, 11 physiological, 3 agroecological, and 2 agronomic.

The morphology papers are primarily developmental in approach. Such a paper is "Development of the inflorescence in Gramineae" by R. F. Williams. D. M. Calder discusses "Inflorescence induction and initiation in the Gramineae." A subject of general interest is covered by P. S. Wellington in his article "Germination and seedling emergence." One of the papers on physiology is "Mineral nutrition of grasses and cereals" by R. H. M. Langer.

Although it seems unnecessarily expensive, the book is attractively bound and printed. It should prove helpful as a reference work for agricultural scientists and others interested in grasses.

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Faunas of Tennessee

Upper Cambrian Trilobite Faunas of Northeastern Tennessee (Smithsonian Institution, Washington, D.C., 1965. 150 pp., \$3) by Franco Rasetti, constitutes a significant contribution to the knowledge of Upper Cambrian trilobite taxonomy and biostratigraphy of the *Cedaria*, *Crepicephalus*, and *Aphelaspis* faunas.

To accomplish his intent "both to describe the fossils and to present them in their proper setting," Rasetti collected trilobite faunules, almost literally bed-by-bed, from 21 stratigraphic sections in eight Tennessee counties and from one bordering county in Virginia. No map of any sort is provided, but the geographic position of each collection

is identified by coordinates in millimeters, measured from the southeast corners of 14 recent U.S. Geological Survey 7½-minute quadrangles. This makes it possible for future workers to return precisely to Rasetti's localities, a spectacular advance in providing critical information, but to fully appreciate the geographic relationships of the collections, the reader would need a ballroom or a basketball court as a map table.

The elaborate coding system invented by Rasetti for identifying each collection presages trouble in the future. Not only is the system an invitation to copying and typographical errors (cnn/4, cnq/4, cnq'/4, cnq''/4, cnr/4, cnr'/4), it conveys subjective conclusions. In Rasetti's words, "it was attempted to designate by the same letters correlative beds in the different sections," and "collections designated by cna to cne belong to the *Cedaria* zone, cnk to cnn to the *Crepicephalus* zone, and cno to cnx to the *Aphelaspis* zone." Furthermore, "the letters cn (for Cambrian, Nolichucky)" are applied also to collections declared by Rasetti to be from the Maryville formation (cnc/2 to cnc/5). Both formational and zonal assignments are individual judgments, almost universally under debate and inherently ephemeral. Identification of basic data should be as objective as possible.

Rasetti has described and illustrated 82 named species, 32 of them new, assigned to 39 genera, 4 of them new; a residuum of 11 undetermined species that are assigned to genera, 2 undetermined cranidia, and 2 undetermined pygidia complete the systematics. The plates are esthetically pleasing, and the photographs meet Rasetti's high standards, but his sharp lighting—which results in excellent modeling—preserves detail only in the middle tones. Although Rasetti has intimated elsewhere that he has taken stereophotographs, there are none in this publication. Many specimens are illustrated by three views; in my opinion a stereo pair gives a far better impression of the relationships of the parts to the whole.

Unhappily Rasetti follows A. R. Palmer, who stubbornly refuses to cite properly his paper on the faunas of the Riley formation in central Texas. The verso of the title page of volume 28 of the *Journal of Paleontology* records the fact that No. 6 (November 1954) was mailed 15 January 1955, and that date, according to the International Code of Zoological Nomenclature, is the date

of origin of Palmer's new taxa. Research on these Croixan faunas is active, and already Palmer's taxa have been cited as either 1954 or 1955 in several papers.

Rasetti makes considerable use of physical association of specimens, and their stratigraphic distribution, to assess morphologic variability characteristic of a taxon. With this practice I heartily agree.

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Marine Isopods

Handbook on the Common Marine Isopod Crustacea of Georgia (University of Georgia Press, Athens, 1966. 101 pp. Paper, \$2.50) by Robert J. Menzies and Dirk Frankenberg is an attractive small volume intended for the use of senior students and investigators. It is the first such work to be based on the invertebrate collection made by the great collector, Milton B. Gray, for the Sapelo Island Foundation.

The authors have abridged their volume by leaning heavily on clear line drawings. In a six-page artificial key, many references are made to a plate of figures illustrating key characteristics. Also, 27 pages of figures are used to supplement the diagnoses of 30 species of isopods, including ten new species. A map and a six-page station list show collection stations off the coast of Georgia. There is a brief discussion of the distribution of the 30 species; Forbes's concept of twin Atlantic and Pacific species formerly used for decapod Crustacea is applied to the Isopoda and demonstrates that there are closely related species in both oceans. There is a good working bibliography.

In their systematic treatment, the authors admit that they have compensated for their "extraordinarily short" species diagnoses by using a considerable number of descriptive illustrations. I feel that their diagnoses definitely need more textual explanation, because, as the authors themselves indicate for such stalwarts of crustacean taxonomy as Stimpson, Harger, Richardson, and Barnard, differences of interpretation may result from illustrations not accompanied by adequate textual descriptions. Also, although maps and extensive sta-