

Special features of the book include lists of genera and species in which certain diagnostic characters occur (40 pages), an extensive bibliography (20 pages), and 29 plates of fine drawings which illustrate the anatomical characters.

There is little said of phylogeny for "We . . . recognize that the grasses appear to represent an advanced group of monocotyledons, but . . . we can say little or nothing about lines of phylogenetic advance within the family." "It seems as if it will be more profitable, at this stage, to concentrate on discovering natural taxonomic groups rather than to speculate concerning the phylogeny of the grass genera as we know them today."

The book is indispensable to agrostologists whose research interests are in taxonomy or related fields.

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Humid Tropics Research. Problems of Humid Tropical Regions. 102 pp. Illus. \$3. *Study of Tropical Vegetation.* Proceedings of the Kandy Symposium, jointly organized by the Government of Ceylon and UNESCO. 266 pp. \$6. UNESCO, Paris, 1958.

These bilingual volumes, published by UNESCO on the occasion of the preparatory meeting of the International Advisory Commission on Humid Tropics Research, are the first publications of the Humid Tropics Research Program. F. R. Fosberg (U.S. Geological Survey) attended this meeting and is now the member for the United States.

Problems of Humid Tropical Regions is a collection of six reports commissioned at the eighth session of UNESCO as the first part of a program "to promote the co-ordination of research on scientific problems relating *inter alia* to the humid tropical zone and to promote international or regional measures to expand such research."

There are three general reports. One by Felisberto C. Camargo (Servico Nacional de Pesquisas Agronomicas, Rio de Janeiro) deals especially with his siltation techniques that increase the amount of flood-plain lands. These flood plains are of high agricultural value, in contrast to the relatively

sterile "high ground." A second paper is by Enrique Beltran (Instituto Mexicano de Recursos Naturales Renovables, Mexico) and is concerned with the Caribbean region. Beltran's report surveys the natural resources of the lands about the Caribbean Sea and includes a 297-title bibliography. In the third paper, E. K. Janaki Ammal (Central Botanical Laboratory, Botanical Survey of India) reports on Burma, Ceylon, India, and Pakistan.

There are three special reports. One, by G. Marlier (then of the Institut pour la recherche scientifique en Afrique centrale in the former Belgian Congo) is on biological problems of tropical humid Africa. A second, by A. P. Kapur (Zoological Survey of India, Calcutta), is on entomological problems in South Asia, with separate discussions on major crop plants, forests, stored products, and human health, and with a 376-title bibliography. The third is on the Philippines and the state of its water resources development, with considerable discussion of the interlocking problems of agriculture, fisheries, soil erosion, and forestry.

Both the general and the special reports in this volume are valuable contributions to regional geography, with varied emphasis on special problems.

For those interested in world vegetation, *Study of Tropical Vegetation* takes its place on the same shelf with Rübel's *Pflanzenengesellschaften der Erde* and Richard's *Tropical Rain Forest*. *Study of Tropical Vegetation* is based on the Kandy Symposium, which was sponsored jointly by Ceylon and UNESCO, and is comprised of 26 papers; each paper is a summary and evaluation of existing vegetation knowledge, includes a valuable bibliography, and points to the needs for further research. The following areas are covered: India and Burma (Puri); Indonesia (Dilmy and Kostermans); Ceylon (de Rosayro); Malaya (Wyatt-Smith); British Guiana and Nigeria (Richards); the Philippines (Bedard); the islands of Oceania (Fosberg); eastern India (Chatterjee); Malaysia (van Steenis); Madhya Pradesh and the Gangetic Valley of India (Misra); Singapore (Purseglove); India (Bharucha); Ceylon (MacFadden, who emphasizes aerial techniques); Ceylon (Holmes, who stresses the role of the old civilization in determining the present dry evergreen forest); Ivory Coast (Mangenot); Papua and Northwest New Guinea (Taylor and Stewart, who apply the excellent techniques developed by the

commonwealth Scientific and Industrial Research Organization of Australia for regional resources surveys); India (Janaki Ammal); Pakistan (Hedayetullah); Borneo (Kostermans); Sarawak (Browne); British North Borneo (Wood); Australia (Webb); Ceylon grasslands (Senaratna); Viêt-Nam (Schmid); and Sarawak and Brunei (Anderson). Basic principles of rain forest sociology are discussed by van Steenis.

There follows a series of five special papers and discussions—ecological factors (Mangenot); vegetation types (Bharucha); the climax (Richards); reproduction in forest openings (van Steenis); and mapping (Fosberg). The volume includes generalized vegetation maps for Ceylon, the Ivory Coast, Pakistan, India, and Burma. It closes with 14 recommendations concerning national and international activities in this field.

Study of Tropical Vegetation is a milestone towards the coordination of vegetation thought and research on an international plane, even though it shows the urgent need for further co-ordination and for the eventual development of a mature international science. The nonpartisan reader will be impressed with the very considerable attention given in the papers and recorded discussions to the relative merits of "Clementsianism" (probably derived from the Weaver and Clements text, now rarely used in America) and the SIGMA (Station Internationale de Géobotanique Méditerranéenne et Alpine) school (which originated in southern France), with the former developing into hearty subarguments on the pros and cons of monoclimate and polyclimate theory. One senses that these workers are groping for a school, a philosophy, a methodology, and that all they have to choose from are the American and West European traditions, both of which have their limitations in the tropics. (But no less so than in temperate regions!) I sometimes wonder—I strongly suspect—that the odd theories and philosophies of these two schools are actually unconsidered by these workers. What appeals in the SIGMA school is the small-scale quadrat method (which, after all, is not its unique feature) and what appeals in Clementsian thought are the large regional units (which, again, are not unique to that group). And the two approaches are by no means incompatible. Rather, on these grounds, they are complementary. While read-

ing this volume, I often wished there was less reverence and veneration for what the West has contributed in the way of rigid schools of thought, and greater respect, by these workers, for their own individual abilities. These abilities might well be directed towards an international non-school-astic science, revolving around empirical descriptions, relative change, relative stability, and the influences of past civilizations and primitive man. In turn, Western thought in this field could not help but benefit.

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Oceanography. Invited lectures presented at the International Oceanographic Congress. AAAS Publication No. 67. Mary Sears, Ed. American Association for the Advancement of Science, Washington, D.C., 1961. xi + 654 pp. Illus. Cash price to members, \$12.50; others, \$14.75.

Nearly 1200 marine scientists from two thirds of the nations of the world met for 2 weeks (31 August to 12 September 1959) in the United Nations Building in New York. A selected few of these scientists presented the essence of their life's work to this learned audience in invited lectures. For each topic, part of the audience was competent and critical and the remainder was academically interested but not familiar with the detail or the background. The committee is to be congratulated on their selection of speakers. To a man, they proved themselves scholars, masters of their subjects, and excellent raconteurs. All this is reflected in the book.

Oceanography includes sections on the history of the oceans, populations of the sea, the deep sea, boundaries of the sea, and cycles of organic and inorganic substances in the oceans. Each section contains four to seven articles, each dealing with some aspect of physics, chemistry, or biology or their interrelations in the sea, the sea bottom, or the sea surface.

I am struck by the similarity of organization achieved between this volume and the *Discourses* of Machiavelli. In both, the authors explore factual situations, separate the local and fortuitous from the rules of general behavior, and point out successful and unsuccessful techniques. From

this background they define their goals and the possible approaches.

The book is a "sampler." It gives examples of successful marine research involving all academic disciplines. I doubt if even an avowed oceanographer will find every article to be of personal interest. On the other hand, any scientist, marine or otherwise, and in any field, will find one or more of the papers absorbing.

It is an outstanding reference book, at both the research and student levels. Each article includes the background, observation, reasoning, and conclusions to date on the topic. For the researcher the articles provide a most useful summary and a ready entry into the supporting scientific literature. Also, the discussions are mercifully condensed, clear, logical and readable. Much of the material can and should be used by university undergraduates, and even by high school students, as bases for term theses. In any case, the book should be required reading in science courses at the senior undergraduate level. Familiarity with living science, and with the research methods of the masters, is a part of education.

It is a book for the young scientist. I know of no other volume that so well defines oceanography, its purpose, opportunities, and requirements. Revelle, in his introduction, makes the point that oceanography is a field of research in which all disciplines of learning are combined. The volume demonstrates this by examples. It is evident that there is ample challenge in marine research for any good scientist.

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New Books

Biological and Medical Sciences

Advances in Carbohydrate Chemistry. vol. 15. Melville L. Wolfrom, Ed. Academic Press, New York, 1960. 457 pp. Illus. \$14.

Anatomy and Physiology. Diana Clifford Kimber, Carolyn E. Gray, and Caroline E. Stackpole. Lutie C. Leavell, Ed. Macmillan, New York, ed. 14, 1961. 789 pp. Illus.

Anthropology and Nutrition. vol. 2, *Records of the American-Australian Scientific Expedition to Arnhem Land.* Charles P. Mountford, Ed. Melbourne Univ. Press, Melbourne, Australia; Cambridge Univ. Press, New York, 1960. 527 pp. Illus. \$19.50.

A Bibliography of Eastern Asiatic Botany. Supplement 1, Egbert H. Walker. American Inst. of Biological Sciences, Washington 6, 1960. 612 pp. Individuals and industrial libraries, \$18.50; AIBS members, \$16.50. Covers the years 1937 to 1958. Subjects and area covered remain essentially the same as in the original work; Chinese botanical literature is least well covered. Indexes include subject (general and regional) and systematic.

The Biochemistry of Insects. Darcy Gilmour. Academic Press, New York, 1961. 355 pp. Illus. \$8.

Concepts of Medicine. A collection of essays on aspects of medicine. Brandon Lush, Ed. Pergamon, New York, 1961. 296 pp. \$8.50. Essays (26) reprinted from various sources.

Encyclopaedia Zoologica, Illustrated in Colours. pt. 3. Y. K. Okada *et al.* Hoku-ryukan Co., Tokyo, Japan, 1960. 266 pp. Illus. \$16.

The Evolution of Man. A brief introduction to physical anthropology. Gabriel Ward Lasker. Holt, Rinehart and Winston, New York, 1961. 255 pp. Illus. \$3.50.

Existential Psychology. Rollo May, Ed. Random House, New York, 1961. 126 pp. Paper, \$0.95. The papers, with the exception of certain parts added to the first chapter, were presented in a symposium at the annual convention of the American Psychological Association, 1959. Papers by Rollo May, G. Allport, H. Feifel, A. Maslow, and C. Rogers.

Experimental Ecology of the Feeding of Fishes. V. S. Ivlev. Translated from the Russian by Douglas Scott. Yale Univ. Press, New Haven, Conn., 1961. 310 pp. Illus.

Fundamentals of Radiobiology. Z. M. Bacq and Peter Alexander. Pergamon, New York, ed. 2, 1961. 567 pp. Illus. \$12.

Germ Plasm Resources. Publ. 66. Ralph E. Hodgson, Ed. AAAS, Washington, D.C., 1961. 393 pp. \$9.75; members' cash price, \$8.50. A symposium presented at the AAAS Chicago meeting, December 1959.

Grundriss der Allgemeinen Zoologie. Alfred Kuhn. Thieme, Stuttgart, Germany, 1961. 308 pp. Illus. DM. 18.80.

Indian Tobacco. Indian Central Tobacco Committee, Madras, 1960. 439 pp. \$10.

Indian Woods. Their identification, properties, and uses. vol. 1, *Dilleniaceae to Elaeocarpaceae.* K. A. Chowdhury and S. S. Ghosh. Forest Research Inst., Dehra Dun, India, 1958. 304 pp. + 30 plates. Illus. Rs. 25.50. The first of a planned six-volume series which aims to give all up-to-date information on species represented in the collection of the institute. Each volume will cover 250 to 300 species.

The Manipulation of Human Behavior. Albert D. Biderman and Herbert Zimmer, Eds. Wiley, New York, 1961. 335 pp. Illus. \$7.95. Seven original papers prepared for this study by R. R. Blake, R. C. Davis, L. A. Gottschalk, L. E. Hinkle, Jr., P. E. Kubzansky, M. L. Meltzer, J. S. Mouton, and M. T. Orne.

Morphology of the Angiosperms. Arthur J. Eames. McGraw-Hill, New York, 1961. 531 pp. Illus. \$13.50.

One Patient at a Time. A medical cen-