



THE NEW YORK BOTANICAL GARDEN



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not included in the chapters that considered the individual fibres. A list of 42 up-to-date literature entries finalizes the book.

This work—easy to use and authoritative—will be of value not only to forensic specialists but equally to commercial interests and educational organizations. Its price is modest. It can, from all points of view, be highly recommended.

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Plant Biology and Its Relation to Human Affairs. Jean H. Langenheim and Kenneth V. Thimann. 624 pp. illus. John Wiley and Sons, New York, 1982. \$27.95.

There have recently been published several text books in economic botany, a response to the growing number of courses in colleges and secondary schools in this interdisciplinary field. None has had, however, the thrust of this contribution, which tends to stress the physiological and biochemical viewpoints in presenting material pertinent to the study of plants useful to man.

It is to be expected that a book by these two botanists would concentrate on these phases of economic botany. Langenheim and Thimann, both professors at the University of California at Santa Cruz, are widely known for their several contributions: the former for her research on resin-producing plants, the latter for his many years of studies in plant physiology. They write that “the teaching of botany has far too long been separated from its human aspects,” and they expect their book to be “a step toward reestablishing this relationship” and to offer “a balanced perspective toward what have euphemistically been called ‘pure’ and ‘applied’ approaches.” They have eminently succeeded.

The general organization of the book comprises five major sections: (1) general and historical background, (2) the individual plant, (3) plant populations and ecosystems, (4) uses of plants, and (5) some worldwide perspectives. The book begins with a chapter on the plant kingdom and its development through the ages. Then attention is turned to man and the origin and growth of agriculture and technology. Next an analysis of plants from the cell to the flower and the life cycle of the angiosperm are presented. Full discussions of photosynthesis and the elaboration of plant products follow, leading to consideration of water and minerals in the life of plants. The nitrogen cycle and nitrogen metabolism and their role in protein formation are detailed. Growth and development and the genetics of the diploid plant add interesting and often neglected aspects of the plant sciences of basic nature to economic botany. The genetics of diversification in plant populations presents many challenging thoughts, including aspects directly related to the origin of domesticated plants. There is a good section on classification, tracing the growth of various systems of classification from Linnaeus to the recently proposed systems that divide what have traditionally been considered plants into several different “kingdoms.” Plant communities and ecosystems are discussed, and the structure and types of soil are briefly set forth. All this material, which we might properly term introductory or biological, occupies 280 pages or 47% of the book.

The remainder of the volume comprises what most textbooks present as basic economic botany material: cereals, sugars, legumes, fruits, roots and tubers, fermentation products, fibres, wood, bark and other products of forest trees, medicines, caffeine-rich plants, terpenes and essential oils, fats and waxes, rubbers, and resins. An interesting and novel addition to a text on economic botany is Part 5, “Some Worldwide Perspectives”—the place of gardens in world cultural history. There is also a most appropriate chapter on the global impact of plant diseases and pests. A summary type consideration of the world’s food supply is most valuable as a kind of résumé of food plants, even though it is located near the end of the book. The final chapter discusses optimal land usage.

A list of suggested readings, chapter by chapter, will be valuable in those colleges and schools with adequate bibliographic facilities. There is a page devoted to "metric equivalents," needed, I assume, because of governmental pressure in the United States to abandon our own system and adopt the metric. A most useful (especially for students) glossary is appended.

There are numerous suggestions that I might make for a second edition. Ethnobotany, a most vital and promising part of "economic botany," should be more fully stressed; it is hardly mentioned. A separate chapter should be devoted to narcotics in the broad sense (including hallucinogens); there is no mention (or only brief mention) of some of the most important hallucinogens employed in primitive societies. The active principle of *Amanita muscaria* is said in the book to be muscarine; this information is outdated by more than 20 years, for it is now known that the intoxicating principles are derivatives of ibotenic acid. Another error is found in the statement that Sir Henry Wickham, who sent the first viable seeds of the rubber tree to England from the Amazon, collected "high-yielding plants"; he collected seed from about 30 trees at random in the forest. There seems to be no clear cut distinction made between "herbs" and "spices." Another disturbing statement is that *Cannabis* is thought to be native to China. It is disconcerting that the (today) most important use of *Cannabis*—its narcotic employment—is accorded only six lines on page 434, whereas its importance as a fibre plant (p. 386) is given 47 lines.

These and other minor disappointments notwithstanding, this new textbook is to be welcomed. As a teacher of economic botany I welcome a text stressing the biological and chemical bases of economic botany, but I feel that this aspect (in number of pages) has been overemphasized to the detriment of a broader discussion of the plants themselves and their utility. Too many economic plants have been omitted. It is a textbook designed for students with a good background in biochemistry and chemistry. It is a needed textbook. But we need also a text to introduce economic botany to the many students in general education, and this excellent work, I fear, falls short of satisfying that need.

I have felt constrained to mention some of the points that have appeared to me as a teacher to be shortcomings. But in no way do I want to magnify these shortcomings to indicate dissatisfaction with the book. It is a monumental production by two extraordinary teachers and will be used as a text and as a reference book for many years to come.

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Botanical Exploration of Southern Africa. Mary Gunn and L. E. Codd. 400 pp. illus. A. A. Balkema Publishers, Rotterdam, 1981. \$56.00.

I recently attended the AETFAT (Association pour l'Étude Taxonomique de la Flore d'Afrique) meetings in Pretoria, South Africa. One of the books in greatest demand from the Transvaal Museum bookstore was the introductory volume of the "Flora of Southern Africa" entitled *Botanical Exploration of Southern Africa*. This unusually attractive volume, published for the Botanical Research Institute, will be widely sought by reference librarians and historians as well as botanists. Attention to every detail is evidenced from the beginning to the end of the volume. The tone of the book is set in the foreword, by B. de Winter, the present director of the Botanical Research Institute, and in the introduction, by authors Gunn, the former librarian, and Codd, the former director of the same institution.

The volume is divided into two sections: Part I, an historical outline up to about 1750; and Part II, a dictionary of plant collectors. The first part makes especially interesting reading and provides a great deal of detail on botany during the formative period in southern Africa. The chapters include "Voyages of Discovery," documenting the travels of Dias, da