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Descriptions and digests of about 150 of the more important species are given, based broadly on those published by Blakely. Details of bark, juvenile and adult leaves, inflorescences, buds, fruits, and timber are supplied. However the species described represent less than one-third of the total number of species (450 to 600). Although much has been published on the genus, the limitation of species and their correct relationship is still a matter of conjecture. The authors have given helpful descriptions of many species, although they recognize the need for more research. A list of synonyms and misapplied names is also given. The 49 plates contain well-drawn illustrations of many species and will be most helpful. A list of literature cited gives references useful for the student of the genus.

In general the book is a welcome addition to the literature. Its main value lies in presenting in one volume some of the existing information previously available only in scattered publications. It should be useful for all interested in the many aspects of *Eucalyptus*.

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Plants: An Introduction to Modern Botany.

Victor A. Greulach and J. Edison Adams.
557 pp. illus. John Wiley & Sons, Inc.,
New York, 1962. \$7.50.

Text books in elementary general botany are appearing, it seems, with ever increasing frequency, but not often do we find one with such a "human" approach as Greulach and Adams' new contribution. Greulach, Chairman of the Botany Department at the University of North Carolina, has been active in botanical teaching and research for 30 years; he is a plant physiologist. Adams, a systematist and morphologist, is Professor of Botany at the same institution. Together these two authors bring, in their own wide interests, a vast coverage of what usually goes into an introductory botanical text. Rarely, however, do we find a book which introduces the student to the plant kingdom by way of economic botany, logical approach though this be. Much of the warmth of Greulach and Adams' text is due to the stress laid on plants as they relate to man. The first chapter of Section I deals with "Plant

Resources." Comprising 27 pages, it covers a range of interesting and fundamental topics such as foods, raw materials for industry, textiles, medicines, insecticides, fuels, harmful weeds, plants and soil, forest products, grassland resources and others. Every chapter has a list of books for reference and for reading. Chapter 1 ends with three titles for reference and 18 for reading. Even though this is a general and elementary text, one might have wished for a longer list and the inclusion of some of the important and classic works in economic botany. Similarly, one is unable to understand why the most widely used American textbook in economic botany, that of A. F. Hill, is omitted. Chapter 2 of Section I is a panorama of the plant kingdom.

The rest of the book follows in a more orthodox way the usual organization of elementary texts and consists of Section II, "Levels of Plant Organization," Section III, "Plants in Action," and Section IV, "From Generation to Generation." Chapter 3, "Molecules," is readable and has a quality that will easily reach out and claim the students' interest; it treats of the chemical constituents of plants and initiates the student into the latest advances in enzyme and virus research and such concepts as the DNA molecule. The cell occupies Chapter 4, while Chapter 5 elaborates the cells into "Tissues and Organs." From here, the story progresses logically into "Organisms" and "Communities."

"Plants in Action" is broken down into "Molecular Traffic," "Plants and Water," "Plants and Food," "Plants and Minerals," "Plant Growth and Development," "The Physical Environment," and "The Biological Environment." This is one of the most fascinating parts of the book insofar as the excellence of presentation is concerned; it stands in striking contrast to so many elementary texts where this rather complex aspect of botany is so often presented in a deadly style. The fourth and final section deals broadly with genetics and allied topics and is subdivided into five chapters: "Asexual Reproduction," "Sexual Reproduction," "Heredity," "History of the Plant Kingdom," and "Origin of Life." There is a most useful appendix: "Some Basic Chemistry for Botany Students."

The book is printed in a clear type on semi-dull, easy-to-use paper and is very adequately illustrated with line drawings and photographs. An attempt has been made throughout the book for originality in the illustrations as well as what they illustrate.

In the preface, the authors "believe that it [the book] will be suitable both for students who will specialize in botany or related sciences and for the larger number of students who take botany as a required or elective part of a program of liberal education and will probably take no other courses in botany." I would agree that the student who seriously followed this text would indeed be well founded in elementary botany and that many who had no strong intention of pursuing botany might be attracted to the science. The important and interesting characteristic of the book to an economic botanist, however, is the position of primacy accorded the study of plants and men and the constant emphasis throughout the book on the relationship between the plant kingdom and the human race.

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Eigenschaften und Wirkungen der Gibberelline. Edited by Rüdiger Knapp. 275 pp. illus. Springer-Verlag, Berlin, 1962. DM 48.

This volume, edited by Dr. Rüdiger Knapp of the Botanical Institute at Giessen, Germany, embodies the results of a symposium on gibberellins held in Germany from December 1 to December 3, 1960. In it are summarized articles by more than 40 authors from many countries in Europe and Asia as well as from the United States. The topics considered are: introduction to the gibberellins, chemical investigations on gibberellins of higher plants, gibberellins and flower initiation, gibberellins and stem growth, gibberellins and growth factors, other application of the gibberellins, and the history of investigations on gibberellins. Investigations on gibberellins published from 1926 to 1960 are listed in the bibliography compiled by Dr. Knapp.

Articles appear in three languages, German, English and French, in this order of

frequency. The entire effort is very impressive, the organization is certainly well conceived, and the individual articles, almost without fail, are scholarly. The typography is clear, the illustrations are faultless, and the index is succinct and complete. This volume, therefore, despite its rather frail paper binding, is a worthwhile investment for anyone interested in the growth hormones of plants, especially those referred to as gibberellins.

Perhaps the best way to summarize the contributions of this volume would be to review a few of the major facts it presents. The gibberellins were originally discovered in Japan and Formosa through observations of abnormally tall rice plants which failed to complete their life cycle. These plants were later shown to be infected by a fungus, now called *Gibberella fujikuroi*. Artificial inoculation of a receptor rice plant with spores of the fungus led to appearance of the disease. Later it was found that the fungus, grown on an artificial medium, could produce a substance, subsequently named gibberellin, capable of eliciting the symptoms of hyperelongation. In Japan, prior to World War II, a team of workers investigated this phenomenon. Despite great difficulties and several false leads, they succeeded in isolating and in characterizing (slightly incorrectly) a substance, which they named gibberellin. Due to the advent of World War II, when communications between Japan and the Western World were severed, this work was essentially unappreciated. In the early 1950's, work began in the United States and in England on the general problem first described by the Japanese. This resulted, in 1954, in the isolation by British workers of a substance called gibberellic acid, which was slightly different in its chemistry from the gibberellin first isolated by the Japanese.

It is now known that gibberellins occur not only as fungal products, but also as naturally occurring substances in higher green plants. Some 11 gibberellins are now recognized. Different plants respond differently to the various gibberellins. When gibberellins are applied to plants, they produce a variety of symptoms, stem elongation being the most characteristic. The induction of flowering is