contrast the relative simplicity of the solid and gaseous state with the "great complications" which arise in the physical properties of associated liquids. From the biologist's point of view it is unfortunate that vital phenomena appear to be manifested by liquids and not by gases or crystals.

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SCIENTIFIC BOOKS

A NEW DICTIONARY

Webster's New International Dictionary. Second Edition. pp. i–xcvi, 1–3210. G. and C. Merriam Company, 1934. $20.00.

ONE scarcely thinks of an unabridged dictionary as a botanical reference book, yet it is the one work generally accessible to all readers to which they may turn for the spelling, meaning, pronunciation and derivation of hundreds of botanical terms or for brief information about thousands of different plants. In the definition of non-botanical words, botanical users of the dictionary can certainly rely with confidence on its accuracy and inclusiveness. They will naturally have a greater interest in its treatment of the huge botanical vocabulary of plant names and technical terms.

The English language is remarkable for its world-wide use and for the readiness with which it assimilates foreign nouns. Plants of economic value always have local names, and an extraordinary number of such names have found English use. Opening the book at random, I find these plants included and defined by reference to the species or to the genus when the name so applies: lace bark (4 kinds), lace fern (2 kinds), lace flower (3 kinds), lace grass, lace leaf, lace plant (2 kinds), lace tree, lace vine, lace wood, Lachenalia, Lachnanthes. It is obviously not within the province of a dictionary to give a diagnosis of every plant, nevertheless, a surprising amount of information is presented. *Titi,* for example, is defined as a tree (*Cliftonia monophylla*) of the southern United States, having glossy leaves and racemes of fragrant white flowers succeeded by one-seeded drupes; the name is also used for the related genus *Cyrilla;* in South Carolina for the sorrel tree, and in Australia for *Cordyline terminalis.* Turning now to these genera, we find that the last is a small genus of Old World plants of the Liliaceae, with *Taetsia* as a synonym; *Cyrilla* is the typical genus of the Cyrillaceae, and *Cliftonia* a monotypic genus of the same family. The Cyrillaceae are referred to the order Sapindales, which is also briefly defined. Even the synonym *Taetsia* is entered. Of course the dictionary is not an *index generum,* and one easily notes numerous omitted generic names of unimportant plants, such as *Sclerolepis.* Apparently all family names are entered and referred to their order. Opinions are even expressed concerning the validity of some names; the Leguminosae, for example, are defined as a group and stated to contain three separate families. The Guttiferae, strange to say, are mentioned among the rare or obsolete words at the bottom of the page, notwithstanding their recognition by Engler and Prantl, although the segregates Hypericaceae and Clusiaceae are listed. In nomenclature, the rules of the revised International Code of 1930 have been followed as far as possible, but care has been used to avoid the publication of new names. Altogether, the list of vernacular names is remarkable for its length and completeness and surpasses any preceding list in any language, while the list of genera is second only to Willis' Handbook in its general utility.

Botanical terms must have offered a serious problem to the editor. Every botanist feels it his right to coin new terms of Greek or Latin derivation, and many of them are never used except by their author. Every one of these must be discovered in literature, a task of no mean proportions; on every one a decision must be made as to the appropriateness of listing it; for every one a definition must be formulated. Since earlier definitions do not exist, the original use of the word must be studied and its meaning derived *de novo.* Among the recent terms not included in the edition of 1928, but defined in the new edition, I note the following: amphisporangiate, association, consociation, consocies, crossover, cultigen, ecesis, euploid, heteroploid, hydrarch, layer, sciophyte, sere, succession, trisomic and xerarch, and the list could easily be extended greatly. As a botanical glossary, the dictionary is obviously the most complete work extant.

A special table of ferns occupies two columns and gives the common name, scientific name, geographical distribution and use of all species which have an English name. A similar table of grasses occupies no less than two columns. There are full-page plates, mostly in color, illustrating orchids, poisonous plants, state flowers, trees and wild flowers, while hundreds of text figures aid in the clear definition of an equal number of terms.

Mr. Norman Taylor was the general editor for botany and was assisted by a staff of specialists. One of these was my colleague, the late Arthur Hollick, and I had several opportunities to observe the meticulous care with which paleobotanical definitions were prepared. The editor, his assistants and the publish-

ers are all to be congratulated on a distinct botanical achievement.

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NEW YORK BOTANICAL GARDEN

THE MEMOIRS OF A BOTANIST

Erinnerungen und Welteindrücke eines Naturforschers. By HANS MOLISCH. Pp. 232. Emil Haim, Wien and Leipzig. 1934, Rm. 9.00.

WHAT makes the reading of botanical history so interesting are accounts of the personalities who participated in the advancement of this branch of science. Here belong the memoirs of outstanding botanists, especially of men whose leadership has contributed as much to botanical progress as their own research work. One of these men is Hans Molisch. His latest book is fascinating because of the many problems which occupied him during his life, the many botanists whom he met and the broad cultural background of his life and travels.

Molisch was born in 1856 at Brünn in the former Austro-Hungarian empire and as a nine-year-old boy he met Gregor Mendel, who was a neighbor and friend of the family. From his father, who was a horticulturist and commercial florist, Hans Molisch acquired in his youth a practical knowledge of gardening which in turn aroused his interest in theoretical botany and especially in plant physiology. This early training showed itself in a later book on "Plant Physiology as a Theoretical Basis for Horticulture" (1915). There, Molisch said, the plant physiologist should learn from the practical horticulturist and the latter in turn from the physiologist. It became his most popular book and has had six editions to date, besides being translated into several languages.

Molisch attended the University of Vienna, where he became Wiesner's assistant. Later he taught at the Technische Hochschule in Graz, where the author of this review was one of his students. From Graz he was called to the German university of Prague and finally, as Wiesner's successor, to Vienna.

A considerable portion of the book is devoted to observations of tropical plant life during a visit to Buitenzorg in Java in 1897–98. On his return trip Molisch visited the United States. From 1922 to 1925 he taught plant physiology in the University of Sendai in Japan where he had been called to organize the botanical division of the newly founded institute of biology. After his retirement from the University of Vienna, Molisch taught for one year (1928–29) at the institute for plant physiology of Sir Jagadi Chandra Bose in Calcutta and traveling home he again visited the United States. He always showed great interest in the botanical work done in this country and had accepted an exchange professorship at Columbia University when the great war broke out, which frustrated this plan.

The "Erinnerungen" gives a detailed account of the research work done by Molisch. Among his earlier studies he mentions a histologic chemistry of vegetable foods (1891), a treatise on iron in its relation to plants (1892), investigations about the nutrition of algae, the freezing of plants and the luminosity in plants. Fruits of his first visit to the tropics were researches about the forming of indigo, of palm-wine and about the secretion of water by liana-stems. He was always greatly interested in plant chemistry and in 1913 he published a "Microchemistry of Plants," of which three editions have appeared to date. His book on plant physiology and horticulture (1915) has been mentioned. The three years in Japan resulted in a volume entitled "Plant Physiology in Japan on the Basis of Personal Observations" (1926) and the more personal experiences of this trip found their expression in a book "In the Land of the Rising Sun" (1927). The observations gathered during his second trip to India are contained in a book entitled "A Naturalist in India" (1930). Even after retirement from teaching such contributions were made by Molisch, as "Duration of Plant Life" (1929) and "Plant Chemistry and Plant Relations" (1933). Naturally all Molisch's books are written in German and the titles as given in this review are translated into English.

Any student of botany who can read German fairly fluently will find the "Erinnerungen und Welteindrücke eines Naturforschers" easy and pleasant reading and will enjoy making the acquaintance, through this book, of an excellent botanist and a most delightful personality.

A. C. NOÉ

UNIVERSITY OF CHICAGO

REPORTS

APPROPRIATIONS FOR GRANTS-IN-AID BY THE NATIONAL RESEARCH COUNCIL

AS announced in SCIENCE for January 18, 1935, the National Research Council has been given funds for grants-in-aid for the year 1935. Applications for grants from this fund must be in the hands of the secretary of the Committee on Grants-in-Aid on or before April 1, 1935. Additional information and blank forms for filing application will be furnished upon request. Action on these applications will be taken about the middle of May.

At meetings in November and December, 1934, the