

MANUAL OF VASCULAR PLANTS
OF THE LOWER YANGTZE VALLEY
CHINA

By
ALBERT N. STEWARD

Curator of the Herbarium
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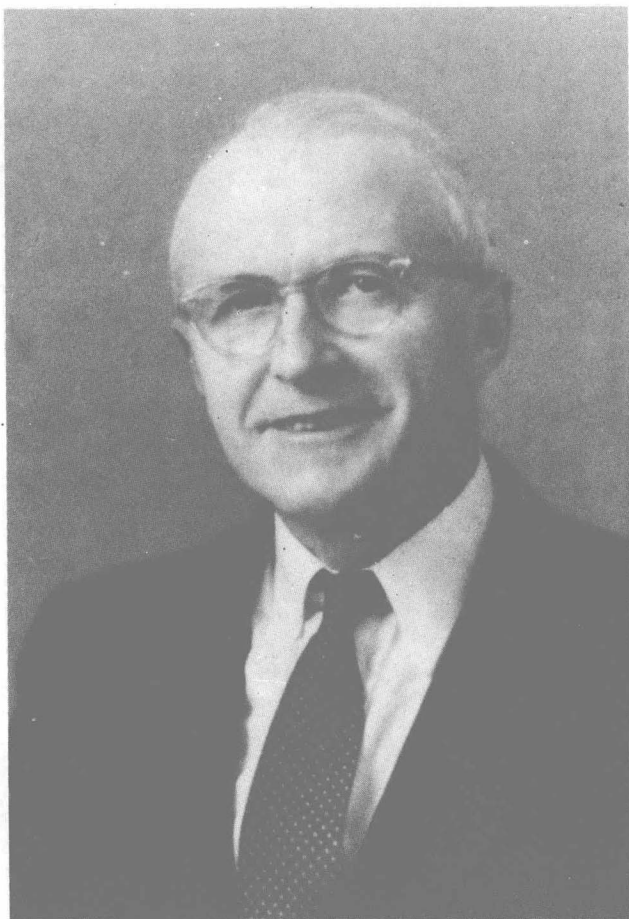
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Albert N. Steward



Celia B. Steward

PREFACE TO THE SECOND PRINTTING

In honor of our parents, we, the children of Albert N. Steward and Celia B. Steward, have republished the book authored by Albert N. Steward entitled **Manual of Vascular Plants of the Lower Yangtze Valley in China.**

Dr. Steward was a professor in Botany, Department of Botany, College of Agriculture and Forestry, University of Nanking, Nanking, China, between 1921 and 1950. This book reflects the love and devotion of our parents to the Chinese people. That relationship has enriched our lives immeasurably.

Copies of this book will be presented by us to the libraries or the universities and colleges in China, and to their staffs and students in plant sciences, as a gift to honor Albert N. Steward and Celia B. Steward.

The Arnold Arboretum of Harvard University kindly has agreed to sponsor this project, thereby acknowledging its continuing interest in the flora of China. It was to Elmer Drew Merrill, former director of the Arnold Arboretum, that the book was dedicated initially.

We are grateful to Mrs. Y. H. Li (Wu Lien-chin), and her daughter, Li Xiang-jie, for their valuable and loving assistance in making arrangements with the Jiangsu Xin Hua Printing House, Nanjing, for this second printing. The book is being reprinted with permission of the Oregon State University Press.

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R.L.

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By
ALBERT N. STEWARD

CURATOR OF THE HERBARIUM
OREGON STATE COLLEGE

OREGON STATE COLLEGE
CORVALLIS

To
ELMER DREW MERRILL

Correspondent, administrator, bibliographer, explorer, teacher, author, adviser, botanist extraordinary and friend to scores of workers in the systematic botany of the Far East, without whose correspondence and tutelage this work would not have been undertaken, and whose assistance and wise counsel have greatly extended and increased its prospective usefulness, this book is respectfully dedicated.

Appreciation

In an unusual degree, this work is the fruition of a cooperative effort on the part of many persons, including the staff members of several libraries and herbaria. Generous and friendly assistance has been given by staff members of the Botany Department, the Forestry Department and the Herbarium, University of Nanking, Nanking; the Musee Heude, Aurora University, Shanghai; the Herbarium and the Biological Library, University of California, Berkeley; the Arnold Arboretum and the Gray Herbarium, Harvard University, Jamaica Plain and Cambridge, Massachusetts; the United States National Herbarium, Smithsonian Institution, Washington, D. C.

The following persons are among the many in China and in America whose cooperation has made the completion of the project possible: E. D. Merrill, identifications, helpful criticism, inspiration; Alfred Rehder, identification of woody plants; C. S. Fan, drawings, descriptions and keys for woody plants, Chinese names; Charles DeVol, Pteridophyta; Y. L. Keng (Keng, Yi-li) and Agnes Chase, Gramineae; Charles Schweinfurth, Orchidaceae; G. L. Stebbins, Cichorieae; Y. H. Li (Li, Yang-han), C. C. Hu (Hu, Ch'ang-chih), and S. Y. Hsu (Hsu, Shiu-ying), Chinese names; I. M. Johnston, helpful criticism; C. E. Kobuski, editorial advice; S. F. Blake, Compositae; Lincoln Constance and Mildred Mathias, Umbelliferae; H. K. Svenson, Cyperaceae; Duane Isely and P. L. Ricker, Leguminosae; H. L. Li, Araliaceae and Scrophulariaceae.

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President A. L. Strand, of Oregon State College, arranged leave of absence and a grant to carry on the herbarium work at Corvallis during the summer of 1952, while the author and his wife were engaged in necessary work on the manuscript at the Arnold Arboretum.

Dean H. P. Hansen, of the Graduate School at Oregon State College, has been a wise and sympathetic counselor on matters relating to arrangements for publication of the manuscript.

Albert N. Steward
Corvallis, Oregon

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INTRODUCTION

I. Geographical and Ecological Notes

Only limited studies have been made of the ecological and geographical distribution of plant life in China. One reason for this lies in our very incomplete knowledge of the systematic botany of this great area. The most active interest of botanists working in China has been to collect, identify and describe the plants of her varied flora.

Before the 1840's western plant collectors were able to secure material only from south China. Then came the explorations of that great introducer of Chinese plants to the West, Robert Fortune, 1843-1861. His early journeys to the regions about Shanghai, Hangchow and Ningpo were described as in the "northern provinces of China." On his latest trip, in 1861, he was able to visit Tokyo and Peking.

About 1900 there opened in China an era of expeditions by professional collectors of seeds and botanical specimens which covered large and varied areas in western China where the flora was much less disturbed by the activities of man than in central and eastern China. Some of these men made brief visits to Lu Shan, near Kiukiang, in northern Kiangsi, but their chief concern was for rich finds hidden in the mountainous regions farther west, in western Hupeh, Szechuan, Yunnan and Tibet.

In consequence there had been, until recent years, little intensive study of the plants of east-central China which includes the area we have designated "The Lower Yangtze Valley." (See accompanying map.) This is an area of large agricultural populations, resulting in the predominance of semi-natural rather than natural vegetation cover.

There remain in the extensive patchwork of semi-natural vegetation and cultivated or urban areas, which constitute the region, a few localities where considerable relics of more nearly natural vegetation remain. These are found mainly in the vicinity of several large Buddhist temples and in the very few mountain-top areas. Among the better known of these favorable collecting areas are: 1) Pau Hua Shan (elevation about 1,500 ft.), in Kiangsu, toward Shanghai from Nanking; 2) Chiu Hua Shan (elevation about 2,000 ft.), and Huang Shan (elevation about 7,000 ft.), in Anhwei, south of the Yangtze River above Wuhu; 3) Lu Shan (elevation about 4,500 ft.), in Kiangsi, between Kiukiang and Poyang Lake; 4) Vicinity of West Lake, in Chekiang, not far from Hangchow.

The references listed below include geographical and ecological comment which applies to our region:

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1924. Jacot, Arthur P. Biological survey by provinces. In *China Journ. Sci. and Arts* 2:337-341.
1925. Steward, Albert N. A trip to Hwang Shan. In *China Journ. Sci. and Arts* 3: 77-83. Illustr.
1926. Hu, H. H. (Hu, Hsien-hsu). A preliminary survey of the forest flora of southeastern China. In *Contrib. Biol. Lab. Sci. Soc. China* 1(5):1-20.
1929. —. The nature of the forest flora of southeastern China. In *Peking Soc. Nat. Hist. Bul.* 4(1):47-56.
1931. Handel-Mazzetti, H. The phytogeographic structure and affinities of China. In *Fifth Int. Bot. Congress, Cambridge, Rept. of Proc.* pp. 513-517.