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About the Institute
The Hunt Institute for Botanical Documentation, a research division of Carnegie Mellon University, specializes in the history of botany and all aspects of plant science and serves the international scientific community through research and documentation. To this end, the Institute acquires and maintains authoritative collections of books, plant images, manuscripts, portraits and data files, and provides publications and other modes of information service. The Institute meets the reference needs of botanists, biologists, historians, conservationists, librarians, bibliographers and the public at large, especially those concerned with any aspect of the North American flora.

Hunt Institute was dedicated in 1961 as the Rachel McMasters Miller Hunt Botanical Library, an international center for bibliographical research and service in the interests of botany and horticulture, as well as a center for the study of all aspects of the history of the plant sciences. By 1971 the Library's activities had so diversified that the name was changed to Hunt Institute for Botanical Documentation. Growth in collections and research projects led to the establishment of four programmatic departments: Archives, Art, Bibliography and the Library.

WASHINGTON UNIVERSITY

The Graduate School of Arts and Sciences

FINAL EXAMINATION

of

RICHARD WILLIAM HOLM

A.B., Washington University, 1946
M.A., Washington University, 1948

for the degree of

DOCTOR OF PHILOSOPHY

Monday, April 24, 1950, 9:30 A. M.
Room 308, Rebstock Hall
Washington University

COMMITTEE OF EXAMINERS

Professor Henry N. Andrews, Jr., Chairman
Professor Edgar Anderson
Professor Carroll W. Dodge
Professor Walter Leighton
Professor Robert E. Woodson, Jr.
Associate Professor Harrison D. Stalker
Associate Professor Rolla M. Tryon
Assistant Professor Robert W. Schery

FIELDS OF STUDY

Major Subject: Botany (Taxonomy)
Minor Subject: " (Morphology)

Thesis:

THE GENUS SARCOSTEMMA

Summary

This monograph is a morphological and taxonomic study of the genus *Sarcostemma* R. Br. (Asclepiadaceae). The floral morphology of the species of this and related genera has been studied in detail. The development of the stamens and the associated corona is described. The structure and origin of the pollinia and the adaptations of the flowers for insect pollination are discussed. The geographic distribution and presumed evolutionary relationships also are considered. It is pointed out that, in this family, species are well-marked, but genera are difficult to delimit. Species constancy is thought to be a consequence of mechanical isolation resulting from the lock-and-key relationship of the pollinia and the alar chamber (in which the receptive surface of the stigma is located). Closely related species differ in such characters as length of the staminal tube, size of the orifice of the alar chamber, and length of the stigma-appendages, as well as in the size and shape of the pollinia. These variables determine to which part of an insect's body a pollinium will be attached, and also whether or not it will be inserted into the alar chamber so that fertilization can take place. Specialization of floral organs may or may not be accompanied by differentiation of vegetative structures. Parallelism in floral evolution, conservatism in vegetative structures, and rapidity of evolutionary development in general perhaps are responsible for the difficulty in delimiting genera. The species recognized are based upon study of herbarium specimens from the major United States and European herbaria, and upon field and greenhouse studies of living plants. Five genera formerly considered distinct are combined to form an inclusive *Sarcostemma* which includes about 30 species and subspecies of both hemispheres. Line drawings and distribution maps are provided for each species, and an Index to Exsiccatae is appended.

BIOGRAPHICAL ITEMS

Date of Birth: June 2, 1925.

Place of Birth: Dallas, Texas.

Undergraduate Study: Washington University, 1943-1946.

Graduate Study: Washington University, 1946-1948, 1949-1950; University of California, 1948-1949.

Fellowships: Washington University Fellowship, 1949-1950.

Scholastic Experience: Graduate Assistant in Botany, Washington University, 1946-1948; Instructor in Botany, Washington University, 1948; Herbarium Botanist, University of California, 1948-1949; Instructor in Biological Sciences, Stanford University, 1949-.

Membership in Scholastic and Learned Societies: Sigma Xi, Phi Beta Kappa, Gamma Alpha, American Society of Plant Taxonomists, Society for the Study of Evolution.

WASHINGTON UNIVERSITY

The Graduate School of Arts and Sciences

FINAL EXAMINATION

of

KO KO LAY

B.S., University of Rangoon, 1941
M.A., Washington University, 1948

for the degree of

DOCTOR OF PHILOSOPHY

Monday, May 8, 1950, 9:30 A. M.
Room 308, Rebstock Hall
Washington University

COMMITTEE OF EXAMINERS

Professor Henry N. Andrews, Jr., Chairman
Professor Edgar Anderson
Professor Robert E. Woodson, Jr.
Associate Professor Paul J. Campisi
Associate Professor Hampton L. Carson
Associate Professor Herbert A. Potratz
Associate Professor Rolla M. Tryon
Assistant Professor Robert W. Schery

FIELDS OF STUDY

Major Subject: Botany (Taxonomy)
Minor Subject: " (Morphology)

Thesis:

AMERICAN SPECIES OF *TRIUMFETTA* L.

Summary

An intensive study of herbarium specimens has demonstrated that the most important single character for the recognition of species in the genus *Triumfetta* is its bur-like fruit. Due to the usually incomplete nature of the specimens in the herbarium, the key has been so prepared that it should be usable for both the flowering and the fruiting specimens. Phylogeny and interspecific relationships have been treated along with subgeneric entities. Species have been redefined based on the fruit characters and have been correlated with the flower characters. In order to present a more integrated treatment no infra-specific entities have been recognized.

This monograph is based on the material contained in the Herbarium of the Missouri Botanical Garden, augmented by specimens obtained on loan from 15 other major herbaria, both from abroad and in this country. Most of the types of the published species have been carefully examined. It deals with the history, morphology and geographical distributions. Forty-four species are maintained as valid, each is described and specimens cited. Line drawings of many species and characters of taxonomic importance along with dot maps for specific distribution have been included. An index to exisiccatae is appended.

BIOGRAPHICAL ITEMS

Date of Birth: November 13, 1920.

Place of Birth: Bhamo, Burma.

Undergraduate Study: University of Rangoon, Burma, 1937-1941.

Graduate Study: Washington University, 1947-1950.

Fellowships and Graduate Scholarships: Government of Burma State Scholarship.

Scholastic Experience: Research Assistant and Senior Demonstrator in Botany at University of Rangoon, 1941-1947.

Membership in Scholastic and Learned Societies: Sigma Xi.

PUBLICATIONS

"A Revision of the Genus *Heliocarpus* L." in Ann. Mo. Bot. Gard. 36: 507-541. 1949.

WASHINGTON UNIVERSITY

The Graduate School of Arts and Sciences

FINAL EXAMINATION

of

JONATHAN DEININGER SAUER

A.B., University of California, 1939
M.A., Washington University, 1948

for the degree of

DOCTOR OF PHILOSOPHY

Monday, May 22, 1950, 9:30 A. M.
Room 308, Rebstock Hall
Washington University

COMMITTEE OF EXAMINERS

Professor Henry N. Andrews, Jr., Chairman
Professor Edgar Anderson
Professor Gustav A. L. Mehlquist
Professor Robert E. Woodson, Jr.
Associate Professor Barry Commoner
Associate Professor Jules Henry
Associate Professor Rolla M. Tryon
Dean Edward K. Graham

Field of Study:
Botany (Ethnobotany)

Thesis:

THE GRAIN AMARANTHS: A SURVEY OF THEIR HISTORY AND CLASSIFICATION

Summary

This study is a preliminary investigation of the species of *Amaranthus* cultivated as grain crops in widely-scattered areas of America and Asia. The first section is a review of the history of cultivation and use of the plants among different native peoples; records were drawn from early chronicles, botanical and ethnological literature, and original field observations. The second section is a comparative morphological study of the crop species and related weed and wild entities; specimens examined include collections of four major herbaria, original field collections, and greenhouse plants grown from seed obtained from many sources.

Finally, some tentative conclusions are presented. Cultivation of grain amaranths is certainly pre-Colombian and probably extremely ancient in the New World. The crop was of great importance over much of Mexico before the Conquest, both in ritual and as a food staple. Elsewhere in America, the crop was of lesser and more local importance, as in Guatemala and the Andes. The cultivated grain amaranths of the New World include four closely-related but reasonably distinct species. These were apparently separately domesticated from local wild or weed species native to different regions of America. Three of these same species constitute the grain amaranths of the Old World, where they have no close relatives among the wild amaranths. The crop is locally important in many remote regions of Asia, particularly along the fringes of the Himalaya. If the crop is as ancient in this area as most investigators have believed, it must have been introduced from America in pre-Colombian times.

BIOGRAPHICAL ITEMS

Date of Birth: July 5, 1918.

Place of Birth: Ann Arbor, Michigan.

Undergraduate Study: University of California, 1935-1939.

Graduate Study: University of California, 1939-1940; University of Wisconsin, 1940-1941; Washington University, 1946-1948; University of California, 1948-1949; Washington University, 1949-1950.

Fellowships and Graduate Scholarships: Henrietta Heermans Fellow, Washington University, 1949-1950.

Scholastic Experience: Graduate Assistant in Geography, University of Wisconsin, 1940-1941.

Membership in Scholastic and Learned Societies: Sigma Xi.