

WITH THANKS TO ALL WHO AID RESEARCH

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NUMEROUS accounts are to be found in museum bulletins of expeditions undertaken by staff members in the prosecution of their scientific researches. Interesting and instructive, these rightly receive prominent notice. Less numerous are citations of those persons or institutions to whom an author's thanks are due for important aid—aid so vital to the author's studies that without it many undertakings could never have been successfully completed. In looking back over several decades of research at Chicago Natural History Museum (or Field Museum of Natural History, as it was called when this research started), I was reminded of a number of such instances that seem worthy of mention, although doubtless they are but typical of the wonderful spirit of co-operation commonly found among scientific workers throughout the world.

In 1915 I was engaged in monographing the large genus *Bidens*, a genus of Compositae related to the well-known genera *Coreopsis* and *Dahlia*. First-hand information was needed about certain West Indies species that were distinguished by a climbing habit, and it was impossible to launch an expedition to the West Indies at that time. We therefore wrote to William Harris, superintendent of public gardens for the Department of Agriculture in Jamaica, telling him of our urgent need. He promised his whole-hearted assistance and embarked upon a small expedition of his own that required several days of arduous travel in the mountains and involved the use of several pack mules and much camp equipment.

VINE LOCATED

Finally, at Cedar Valley, St. Thomas (in western Jamaica), he located the very kind of vine that had been most desired and was able to send us pressed specimens and ripe seeds. Subsequently a seed was planted in Chicago and a large vine obtained that soon was multiplied by cuttings into many vines. Thereupon the authorities at the University of Chicago kindly allowed us to transfer the vines to the university's greenhouses and to keep them there under observation until all matters of leaf-outline, leaf-division, etc., could be settled. Mr. Harris died long ago, but his generous and unstinting co-operation made possible the settling of several moot points in a revisional treatment of *Bidens*, which the Museum published in 1937.

In this revisional treatment of *Bidens* it was proposed originally to illustrate all or most of the species with full-page plates. These were being prepared from borrowed herbarium specimens sent to Chicago from

various institutions throughout the world. Around 1915, when World War I made ocean transport hazardous, most foreign institutions were compelled to discontinue shipping specimens across the ocean. And then what has always seemed to us a most unusual gesture of friendly co-operation came to us from Sir David Prain, Director of the Royal Botanic Gardens, Kew, England, and Dr. Otto Stapf, the famous botanist at the head of Kew Herbarium. These men directed that the sheets on which were mounted invaluable type specimens desired for our plates be carefully divided into two parts each, one part to be sent to the United States on loan for sketching and then kept on this side of the ocean until the end of the war. Meanwhile, of course, the other part would not leave the Kew Herbarium but would remain there to represent for all time the species of which it was the type.

And so, with the aid of these fractional sheets, supplemented by my own collection of large photographs taken at Kew before the outbreak of the war, it was possible to illustrate sixteen more species of the genus *Bidens*. Both Sir David and Dr. Stapf died many years ago, but some of the most important of the full-page plates that finally were published in 1937 are a testimonial to their exceptionally kind aid.

PECULIAR CASE

A strange case of a different sort of co-operation pertained to a new species of kukui, or candlenut, tree, a more detailed



AID TO RESEARCH

Leaves from the type sheet of *Aleurites Remyi*, known by the common name Remy's kukui or candlenut tree. The type specimen is preserved in the Museum of Natural History in Paris.

account of which may be found in the Botanical Series of this Museum (vol. 17, p. 558, 1939), under the title *Aleurites Remyi*. A French collector, Jules Remy, had collected somewhere in the Hawaiian Islands

from 1851 to 1855 some flowering branchlets of kukui trees. These found their way into the huge herbarium of the Museum of Natural History at Paris and about 1938 were included in that museum's shipment of material sent by Dr. H. Humbert, the museum's director, to Chicago for study.

Most of the specimens were found to represent the very common kukui tree of the Hawaiian Islands and other tropical areas of the earth, known to science as *Aleurites moluccana* (a relative of the species extensively cultivated in Florida and elsewhere as a source of the tung oil of commerce). Several detached leaves, however, were definitely of a different species, as could be seen from their very slender, acute lobes (see illustration). Failing to find any such species described in botanical literature, we appealed in a letter to Dr. Otto Degener of Honolulu, a botanist who is widely regarded as the foremost living authority on



Dr. Otto Degener



Mrs. Thomas Jaggar

Hawaiian plants, for any information that he might have. He replied that he had a dim recollection of a woman mentioning long ago a similar, apparently new kukui. Some months later, however, he succeeded in extricating the lady's identity from his memory. She was Mrs. Thomas Jaggar, wife of the famous volcanologist (since deceased) on the island of Hawaii. Dr. Degener promptly wrote her for more information.

Mrs. Jaggar, however, had to wait until she could recall certainly where she had seen an anomalous kukui tree growing. In September, 1940, she made two trips to places where she believed she had seen one. On each trip she was rewarded by finding a tree. Elsewhere I have presented fuller details touching this peculiar case (*American Journal of Botany*, vol. 31, p. 157, 1944), but it may suffice here to say that Mrs. Jaggar collected herbarium specimens and ripe fruits from one tree. These she sent to Dr. Degener, who sent them to Chicago. The fruits were planted and a vigorous seedling tree obtained in 1941. The tree has been well protected at the University of Chicago greenhouses and now is some 23 feet high. Unfortunately it has failed to flower or fruit.

Meanwhile other collectors were spurred on to search for this species, named *Aleurites Remyi* for its original collector, to assist in rounding out our knowledge of it. Miss Amy Greenwell, in March, 1949, discovered

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at Puuanahulu, western Hawaii, several more trees of it, all of them young, and obtained herbarium specimens for distribution to various scientific institutions. Chicago Natural History Museum received two of these specimens through the kindness of Dr. Degener.

CLOSER TO HOME

In seeking to solve problems closer to home, we often have been agreeably surprised at the alacrity and extreme courtesy with which persons in some remote locality hasten to be of service to us or, through us, to science in general. An instance in mind concerns the rediscovery in 1912 of the now locally famous Kankakee mallow. An extended account of this rediscovery was presented in the magazine *Rhodora* for May, 1946 (vol. 48, p. 89). As stated there, it was desired in 1912 by the Department of Botany of this Museum to make fresh collections for botanical studies and descriptions of the Kankakee mallow, a plant known at that time only from an island in the Kankakee River. The elderly Rev. E. J. Hill, who had collected the species forty years before, consented, despite his age, 79, to accompany two of us from the Museum on a trip to the type locality, thus enabling us to collect a large supply of material.

Some four years afterward, the late Judge Arthur W. De Selm of the circuit court in Kankakee, learning that once again two representatives from the Museum were in Kankakee to collect specimens of the famous mallow, hastily adjourned his court for the day and placed himself at our service to aid us in every possible way. Judge De Selm's profession was, of course, law, but his interest in botany was such that he had gradually built up a considerable fund of plant lore. On his own initiative some years earlier he had gone to the island in the Kankakee River, obtained vigorous specimens of the Kankakee mallow, and planted them in his yard, where they were laden with delightfully fragrant rose-colored flowers when they were shown to us.

The rediscovery of the Kankakee mallow had an interesting aftermath in the discovery, by some botanists from the University of West Virginia a score of years later, of a related species of mallow on Peters Mountain at the Narrows, in southwestern Virginia. But shortly afterward, the forests on Peters Mountain were cut to the ground. This so altered the type-habitat of the new mallow that, in August, 1945, when we journeyed there to make an investigation, we were unable to locate the plants. We appealed for aid to the principal of the Narrows high school, Henry H. L. Smith, who enlisted a senior student, James Hubert Browning, to assist us. After a week of difficult mountain climbing, Browning finally located two of the rare plants and saved corroborative specimens for our

Museum's herbarium. His assistance was especially fruitful in that it stimulated the interest of other local enthusiasts in the quest for what had seemed till then a possibly extinct species.

FRIENDLY AIDS

Thus our warm personal friend, Dr. P. D. Strausbaugh, professor of botany at the University of West Virginia, enlisted the friendly aid of Dr. E. Meade McNeill of Concord College, Athens, West Virginia. Professor McNeill and two companions very graciously undertook, even at the expenditure of much time and great physical effort, to rediscover the Peters Mountain mallow. By climbing to the topmost ridge and then walking along the ridge as a scouting team, one in the center at the very crest of the ridge and each companion spaced about twenty or thirty feet lower down and on opposite slopes, they resolved not to overlook a single mallow plant. Their thoroughness was repaid with finding numerous plants, some of them growing in clumps or even in small colonies.

As a result of the knowledge obtained or opened up to us by these generous collaborators, we were able, on a return visit to the Narrows in October, 1945, to climb directly to where living plants were growing and to make various critical and important observations. As an outgrowth of these observations, the Narrows or Peters Mountain mallow was christened with a new botanical name, *Iliamna Corei*, which distinguished it from the very different Kankakee mallow, known to science as *Iliamna remota*. *Iliamna Corei* was incorporated in the large new eighth edition of *Gray's Manual*.

The name *Corei* alluded to Dr. Earl L. Core, of the University of West Virginia, who was the original discoverer of the Peters Mountain plant. It seems unfortunate that, with the restrictions and limitations under which our systems of nomenclature operate, a commemorative collective name cannot be devised to honor the oft-times numerous pioneers in the study of plant life who have played an important role, though perhaps merely as laymen, in introducing a plant to science.

In the foregoing remarks I have sought to show by a few random examples how deeply conscious the staff members of Chicago Natural History Museum have been down through the years of the invaluable assistance given them by a host of friends and correspondents and how much they have depended upon this assistance. It is upon such co-operative effort that much of the Museum's claim to a high place in the

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recommends removing the entrails, packing the body with salt, and hanging it up by the legs to dry.

About two centuries later, in 1748, Reaumur, the celebrated French naturalist, published instructions on "Divers means for preserving from corruption dead birds . . ." outlining four methods: (a) skinning and stuffing, (b) putting in spirits of wine or very strong brandy, (c) embalming with powder, and (d) drying in an oven. There was still the problem of destruction of dried specimens by insects, but with the introduction about 1740 of the use of arsenic to keep bugs from eating the specimens, the way was opened for modern collections.

The late start that bird collections got is well illustrated by the British Museum, long one of the most important museums in the world, not only because of size and completeness of its bird collections but also because of its specimens of priceless historical value. Its bird collections started only about 200 years ago, in 1753, with the acquisition of Sir Hans Sloane's cabinet of 1,100 bird specimens.

MODERN METHOD

In the scientific world the standards of preparation of bird specimens have improved greatly. Now a museum bird specimen is prepared by skinning completely, turning the skin inside out like drawing off a glove, leaving the cleaned skull and wing and leg bones in the skin. The skin is coated with a preservative, preferably white arsenic to prevent insect damage, and turned right side out. It is filled with a spindle-shaped "body" of cotton or tow, with a slender stick or wire running from bill to tail. The bird is arranged with bill pointing ahead, wings folded, legs crossed, tail straight, and slightly spread. For all the world it looks like a dead bird, lying on its back, feathers smooth and clean. A last, and an all important point too often ignored by early collectors, is a label. The label is a must, and on it must be (a) locality and (b) date, at least. A specimen without a label loses much of its value.

These specimens, study skins they're called, can be completely prepared in the field on safari. They are compact and can be packed in boxes for shipment. Upon arrival at the Museum they're unpacked, sorted, and filed in our dust-proof cases readily available for study and comparison.

scientific world is securely founded. We can well afford to cultivate this co-operative effort most assiduously, knowing that upon it will depend, to a vast extent, the degree of success which our Museum attains as a great institution for the development of science and the advancement of knowledge of the world in which we live.

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