

## GUATEMALA'S BOUNTY OF PLANTS FOR SCIENCE AND COMMERCE

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The fourth botanical expedition sent by Field Museum to Guatemala was led by the writer, who was accompanied by Mr. Albert Vatter, Jr. of Glenview, Illinois, in the capacity of volunteer assistant and photographer. The party left New Orleans on December 3, 1941, and arrived by steamer at Puerto Barrios, Guatemala, December 7. It returned by overland route through Mexico, arriving at Laredo, Texas, on November 9, 1942, thus completing nearly a year of field work, which resulted in the amassing of about 30,000 herbarium specimens of 11,000 numbered collections. In addition, there were brought back several hundred wood specimens and about a thousand photographs.

Mr. Vatter also collected several hundred specimens of animals, including skins of mammals and birds, insects, and preserved material of reptiles, amphibians, fishes, and mollusks. The expedition was highly successful in penetrating regions hitherto not botanized and brought back scores of species not hitherto recorded from Guatemala, or from Central America, among them various species new to science.

### THOUSANDS OF MILES AFOOT

Busses or trains carried the expedition's equipment from one large town to another. From this point on the problem was to send the equipment to localities in the mountains where another base station had to be made. This was accomplished either by pack mules (five to ten usually being needed) or by Indian carriers (ten to eighteen men generally being necessary). All collecting was done on foot, and about 4,000 miles of trails were thus covered. In traveling from one place to another in the course of a day, 15 to 25 miles were usually covered. In many places the trails were too rough and slippery for mule-travel, or were too crowded with overhanging branches. This necessitated walking over many rough, rocky, slippery, and muddy trails, which were especially hazardous and disagreeable in the rainy season.

The first weeks were spent in collecting the flora of Cerro San Gil, the highest mountain adjacent to the Atlantic Coast of Guatemala. It was especially important to visit because it had never been explored botanically. Completely uninhabited, this vast mountain covers over two hundred square miles, all in dense virgin rain-forest except for a patch of cloud forest on the craggy summit which was found to be 4,000 feet in altitude.

### PALM LEAVES FOR BLANKETS

In the ascent up Cerro San Gil, which required two nights of camping out, I and my one guide carried only a meager amount of food to last during the three days out. In order to lessen weight no blankets were

taken along. To substitute for these, about a hundred leaves of a *Geonoma* palm were cut to use as cover, but even these did not suffice, and, although the sleeping-site was not higher than 2,000 feet, we were uncomfortably cold throughout successive nights. However, the discomforts of the trip were more than made up by the many rare species of plants collected there. In addition to the plants, the rare tayra, tropical relative of the skunk, was found, the first from Central America to reach Field Museum.

A month and a half was spent exploring the uppermost portions of the Sierra de Las Minas, a rugged range in the Oriente badly in need of botanical investigation. The moist summits attain 9,000 to 10,000 feet, and are covered by beautiful cloud forests abounding with plants.

From February to the end of March the little-known portion of the northern half of the Department of Alta Verapaz was explored. Some of this territory had been botanized about forty years ago by Tuerckheim, whose collections had formed historically important types which served as the basis for the descriptions of new species. The present expedition collected again most of Tuerckheim's species, chiefly from the vicinity of Cubilguitz. Dense tropical rain-forest covers this area in a rugged limestone topography, and begonias, orchids, palms, ferns, and a great variety of trees and shrubs were found especially prolific here.

The latter part of March and early April were spent in the region of southern Petén north of Cerro Chinajá. This mountain harbors a very rich flora, and is noteworthy in being the last northern bit of elevated land (up to 2,000 feet altitude) before one drops down into the relatively level and low-lying forested plains of Petén. This Cerro Chinajá area also encloses a large virgin savanna to the south (in the Department of Alta Verapaz) harboring many unusual species of savanna plants not known south of central Petén.

### BOTANIZING IN A NEW FIELD

No botanical collections had previously been made in the southern part of the Department of Petén which constitutes about one-third the area of Guatemala. It was deemed especially important to procure as large a collection as possible from this region. About a month was spent traveling by *cayuco* (native dug-out canoe) down the Ríos Cancuen and Pasión, and their tributaries. The expedition penetrated as far north on this trip as the village of Sayaxché in central Petén. Many difficult rapids had to be overcome, and thrills were often experienced when the two native paddlers invariably hesitated on the brink of some swift rapid or argued in their native Kekchi Indian dialect, as to whether they should follow to the left, right, or down the center of the stream. Camp was made along shore each night, and a small clearing was cut out for swinging the hammocks and pabellons

(mosquito-netting tents). For hundreds of thousands of square miles this southern Petén country is covered completely by virgin or practically virgin forests of tall trees, including mahogany, Spanish cedar, chicle, fig, inga, and ceiba. However, the number of species of plants found in these massive forests is especially small and disappointing to the botanist. Whereas orchids, bromeliads, ferns, and other epiphytic plants are plentiful in mountain forests of the rain-forest or cloud-forest type, here they are remarkably few.

### VOLCANIC "STEAM HEAT" FAILS

The expedition left Petén just at the end of the dry season, and moved to the Pacific coast of Guatemala as the rains commenced, the rainy season lasting in this section usually from May to October. Extensive collections were taken from Volcán de Atitlán, Volcán Tolimán, Volcán Santa Clara, and Volcán San Pedro. The actual summits of each of these volcanoes were explored. A memorable night was passed atop Volcán de Atitlán. Reaching the summit at dusk, the party of six (Mr. Vatter, myself, and four Indian carriers) prepared to brave the cold and stormy night on the very rocky and treeless cone. We selected a place where hot steam was coming through vents of the crater. Here a tarpaulin was fastened to large boulders. The wind and rain continued to blow. With visions of comfort from steam-heat the party tried to settle here for the night, but the hot steam made the blankets not only uncomfortably warm but also very moist.

The last two months of the expedition were devoted to an intensive collection of the flora of the Department of Huehuetenango. About 1,000 miles here were covered on foot over rough mountainous trails. In the western part of this department many notable additions to the Guatemalan flora were obtained, as well as additional stations for desert plants in Guatemala, hitherto known only in the Oriente from the deserts of the Departments of Zacapa, Chiquimula, and Jutiapa. One especially important plant found in the desert of western Huehuetenango was *Haplophyton cimidum* (locally known as *Yerba de cucaracha*), source of a widely-used insecticide in the United States. The vast high plateau of the Sierra de los Cuchumatanes, much of it rising between 10,000 and 11,300 feet in altitude, was also covered on foot. The northern, western, and northeastern slopes of this range also were explored as far as the lower extensions of this range along the Mexican border.

### THOUSANDS OF ORCHIDS

In the lower elevations on the western slopes of the Cuchumatanes were found many other similarly unexpected additions to the Central American flora. Two of these are of special note: 1) Virginia creeper or woodbine of the Chicago region (*Parthenocissus quinquefolia*), and 2) *Ceratozamia*



*mexicana*, the latter belonging to the group of plants known as cycads. Cycads are particularly noteworthy as survivors of a primitive group of plants which reached their climax in Mesozoic times. Previously cycads were represented in Guatemala by the single genus, *Zamia*. One of the greatest botanical thrills I experienced on the expedition was due to finding in a canyon on one of the western slopes of the Cuchumatanes thousands of plants of a rare and beautiful yellow lady-slipper orchid (*Cypripedium irapeanum*) in full flower. This very showy orchid has a flower about twice the size of our own yellow lady slipper (*Cypripedium parviflorum* var. *pubescens*) of the United States. Many other rare orchids were collected on this trip.

Much of the success of the expedition may be attributed to the splendid generosity and co-operation of the local authorities of the Guatemalan government, especially the Director General of Agriculture, Don Mariano Pacheco Herrarte, who at all times lent the expedition valuable assistance.

#### COFFEE AVAILABLE TO U. S. BY RAIL

Guatemala is rich in opportunities to supply to the United States many plant products needed in the present war. It has a surplus of coffee which could be rapidly shipped to the United States by rail through Mexico, now that the new international bridge over the Rio Suchiate has been opened for commercial traffic. There are plantations of Cinchona bark (which yields quinine), sugar cane, drug plants of many kinds, wild and Brazilian rubber, also spices such as vanilla, cardamom, cinnamon, allspice, nutmeg, black pepper, besides an important supply of timber-, gum-, and fiber-producing plants.

#### PROGRAMS OF LECTURE TOURS FOR WEEKDAYS IN JANUARY

Conducted tours of exhibits, under the guidance of staff lecturers, are made every afternoon at 2 o'clock except Sundays, and certain holidays. There will be no tour on Friday, January 1, when the Museum will be closed for the New Year's holiday, and none on Saturday, January 2, although the Museum will be open as usual to visitors on that day.

On Mondays, Tuesdays, Thursdays, and Saturdays, general tours are given, covering outstanding features of all four departments—Anthropology, Botany, Geology, and Zoology. Special subjects are offered on Wednesdays and Fridays; the schedule of these follows:

Wednesday, Jan. 6—Forest Products of the World (Miss Marie Pabst).

Friday, Jan. 8—Animals in Winter (Miss Elizabeth Best).

Wednesday, Jan. 13—Unique Uses of Shells (Miss Loraine Lloyd).

Friday, Jan. 15—Plants of Pacific Lands (Miss Marie Pabst).

Wednesday, Jan. 20—High and Low in the Animal Kingdom (Miss Elizabeth Best).

Friday, Jan. 22—South America, Its Products and People (Miss Miriam Wood).

Wednesday, Jan. 27—Plants and Animals Through the Ages (Miss Marie Pabst).

Friday, Jan. 29—Tobacco and Pipes (Miss Loraine Lloyd).

Persons wishing to participate should apply at North Entrance. Tours are free. By pre-arrangement at least a week in advance, special tours are available to groups of ten or more persons.

#### No Sunday Lectures in January; Resumption in February

Attention is called to the fact that Mr. Paul G. Dallwig, the Layman Lecturer of Field Museum, will not present his Sunday afternoon lectures during January, because of engagements to speak before audiences in other cities. He will resume his appearances at the Museum on the four Sundays in the following month (February 7, 14, 21 and 28), at 2 P.M., when his subject will be "Digging Up the Caveman's Past." In March he will speak on "Who's Who in the Mounted Zoo," and in April, the last month of his current season, on "The Romance of Diamonds from Mine to Man." Advance reservations must be made for all Sunday lectures, and may be currently made for any date through the present season, by mail or telephone (WABash 9410). Audiences are limited to adults because of the necessary restrictions on size of groups.

#### A BOOK FOR ARMCHAIR MOUNTAIN CLIMBERS

"If you spend your vacations among hills or mountains, or are interested in rugged scenery, you will find your pleasure in these surroundings enhanced after a perusal of *Mountains*, by Carroll and Mildred Fenton," says Henry W. Nichols, Chief Curator of Geology.

"The book, written in plain English devoid of technicalities, explains in a simple, easily understood manner how the hills and mountains grew, and how the peaks, valleys, cliffs, and other aspects of the scenery were shaped. It calls attention to many interesting features you may have overlooked.

"Not the least interesting part of the book is the description of the plants and animals that live in the mountains. The style is such that the book provides 'easy reading,' and the information it contains will stay with you."

On sale at THE BOOK SHOP of FIELD MUSEUM—\$1.50. Mail orders accepted.

#### GIFTS TO THE MUSEUM

Following is a list of some of the principal gifts received during the last month:

##### Department of Botany:

From Donald Richards, Chicago—42 herbarium specimens and 69 cryptogams; from Hermann C. Benke, Chicago—134 herbarium specimens; from Dr. M. A. Brannon, Gainesville, Fla.—17 specimens of algae, Florida; from Dr. Walter Kiener, Lincoln, Nebr.—21 specimens of algae, Nebraska and Colorado; from J. E. Nielsen, Chicago—18 specimens of algae, China and British Columbia; from Dr. Theodor Just, Notre Dame, Ind.—171 specimens of algae, Michigan and Indiana; from Otto Degener, Waialua, Oahu, Hawaii—498 herbarium specimens, chiefly Hawaii.

##### Department of Geology:

From Dr. Frederick W. Burcky, Evanston, Ill.—4 carnelian cabochons, a polished slice of red dinosaur bone, and a slice of carnelian, New Mexico, Colorado, and Utah.

##### Department of Zoology:

From Dr. Charles E. Burt, Winfield, Kans.—46 snakes, Kansas; from Walter F. Webb, Rochester, N. Y.—24 specimens of land shells, Philippine Islands; from Henry Dybas, Chicago—195 specimens of land shells, Mexico, and 126 insects and allies, Illinois; from Dr. C. H. Seevers, Chicago—335 insects and allies, Mexico; from Edward S. Cieslak, Chicago—69 garter snake skins, Illinois; from Chicago Zoological Society, Brookfield, Ill.—a roan antelope, a naked-tailed armadillo, and an Asiatic monkey.

##### The Library:

Valuable books from Carnegie Corporation, New York City; from Baker-Hunt Foundation, Covington, Ky.; from North Dakota Agricultural Experiment Station, Fargo, N. D.; from Dr. Henry Field, Washington, D. C.; and from Stanley Field, Henry W. Nichols, W. J. Gerhard, Dr. Earl E. Sherff, Miss Lillian Ross, and Dr. Fritz Haas, all of Chicago.

#### NEW MEMBERS

The following persons became Members of Field Museum during the period from November 16 to December 15:

##### Associate Members

Harold O. Barnes, Mrs. Ellis R. Lewis, Mrs. Donald MacMurray, John E. Thompson, S. J. Walpole.

##### Annual Members

Jens Agger, Herbert E. Bell, Charles A. Bellows, Milton D. Block, C. A. Borland, John H. Boss, Cornelius C. Cole, W. C. Dillon, Earl J. Jones, Harold J. Kamm, Leonard H. Kasbohm, Martin King, Philip Lome, Mrs. Grace Edwards Miller, M. Glen Miller, Ronald Miller, Albert Mohr, Jr., Edmund Daniel O'Connell, Frank Olsen, Thomas Erskine Pick, John McC. Price, Mrs. Robert M. Reichert, J. E. Rudney, Harry Sohn, Arthur T. Spencer, Morris E. Wolf.

Streamlining, so important in modern airplane and ship construction, is familiar in nature among birds and fishes.





Steyermark, Julian A. 1943. "Guatemala's Bounty of Plants for Science and Commerce." *Field Museum news* 14(1), 7-8.

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