

CUBA PALM RESEARCH

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Early in March Dr. B. E. Dahlgren, Curator Emeritus of Botany, and I returned from two months of field work in pursuance of research on the palms of Cuba, a project aided by a grant from S. C. Johnson and Sons, Inc., of Racine, Wisconsin. On previous trips the areas covered by the more important kinds of palms had been visited and specimens from these collected for the Museum. Seeds from selected plants had been obtained and planted at the Atkins Garden and Research Laboratory of Harvard University, near Cienfuegos, where the living plants will be studied as they grow.

Palm specimens generally are large and present special problems of collection and preservation, and plants grow very slowly in a greenhouse. Consequently, only the most commonly cultivated ones, such as the coconut, the date, and some of the ornamental ones, have had much attention beyond technical descriptions. On this latest trip we wanted to find some of the less known palms of Cuba and to determine the extent of variability in some of those studied on the 1947-48 expeditions. We were especially interested in finding natural palm hybrids, descendants of palms that had been pollinated by different species. Some of these we had discovered in 1948 and still others had been described earlier by the Cuban botanist, Hermano León.

It is only one hour and five minutes by airplane from Miami to Havana. But we were carrying boxes of cameras, films, a microscope, and an assortment of chemicals, bottles, plant presses, and the not inconsiderable kit of tools necessary to collect palm specimens and preserve cytological material. So we chose the ten-hour overnight boat.

LAW PROTECTS ROYAL PALMS

From Havana we drove eastward on the excellent Carretera Central, a good paved road that runs through the center of the island from Pinar del Rio in the west to Santiago de Cuba in the easternmost province, Oriente. This road is about 720 miles long, or about the distance from Chicago to Philadelphia. For long stretches the road is bordered by planted shade trees, especially an Indian fig with masses of dark green and glossy leaves, and a selection of a few of the native Cuban trees. Many of the fields and minor roads are bordered by rows of the tall, smooth-trunked royal palm, *Roystonea regia*, the most prominent palm in the Cuban landscape. The leaves of this palm are often used to thatch the poorer type of country house and the large sheaths to cover the sides like huge shingles. Royal palm fruits are not eaten by human beings but are fed to pigs. It is now against the law to cut down a royal palm.

Besides the central highway there are very few paved roads, but during the dry season, from October to May, it is usually possible to drive on some of the dirt roads. This year was exceptionally dry; so we were able to visit places that normally could be reached only after days on horseback or on foot. Even so, it was necessary to find a yoke of oxen to pull our car across one muddy ford. Traveling by car enabled us to carry all the equipment needed for studying and collecting palms, and in a long flat box on the roof we could bring back entire leaves without damaging them.

Occasionally a palm had to be cut down to obtain specimens, but usually the wanted parts had to be carefully removed without injury to the growing point at the base of the leaves of the tree. To obtain one complete leaf of a large palm is always a considerable task. The leaf stalks and leaf bases are woody, the former often spiny. The bases are overlapping, so closely packed and their sheaths so tightly wrapped about the stem that the removal of one of them is no slight matter, even when the trees are small. For taller palms the saw and clipper have to be mounted on a pole of suitable length. We used a sectional pole made of aluminum tubing jointed like a fishing rod, but of course much more rigid. With five



BOTANISTS WORK HARD

Here Dr. Hugh C. Cutler, Curator of Economic Botany, is using a curved saw at the end of a 25-foot pole to cut branches from palm, *Copernicia gigas*, in eastern Cuba on an expedition for the Museum.

four-foot lengths one can reach more than twenty-five feet, but this is not always enough. Occasionally we had to climb the tree or find a native professional tree climber to do this.

CARRIED BARRELS OF WATER

The specimens of the leaves and flowers were photographed to scale for a record of their original shape or measured and packed

GIFTS TO THE MUSEUM

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

Department of Botany:

Forest Department, Georgetown, British Guiana—12 specimens of lumber, British Guiana; Botanical Museum, Harvard University, Cambridge, Mass.—135 herbarium specimens, Colombia; Museo de Historia Natural, Universidad Nacional de San Agustín, Arequipa, Peru—26 herbarium specimens, Peru.

Department of Geology:

H. O. Stockwell, Hutchinson, Kan.—a fragment of the Brenham meteorite (pallasite), Kansas.

Department of Zoology:

Douglas Tibbetts, Palatine, Ill.—16 mites and 7 sucking-lice, Illinois; Dr. Otto Schubert, Biologista de Estação Experimental Pirassununga, São Paulo, Brazil—40 specimens of freshwater shells, Brazil; Harold Trapido, Gorgas Memorial Laboratory, Panama—95 frogs, lizards, and snakes, Panama and Puerto Rico; Chicago Zoological Society, Brookfield, Ill.—a newborn black cub bear; Museo de Historia Natural "Javier Prado," Lima, Peru—3 mammals (*Oryzomys*), Peru; Department of Wildlife Management, Agricultural and Mechanical College of Texas, College Station, Tex.—38 mammal specimens, Colorado.

carefully. If the flowers were in the proper stage for examination and were growing vigorously, the microscope was used to study the formation of the pollen grains and to discover the number and kind of chromosomes present. Much of our work was done in the sandy savannas north of Camaguey, and during the abnormally rainless season the soil was so dry that flowers, long overdue, were not developing. To force some of the palms into activity we carried barrels of water and were able to stimulate the development of young flowers.

It was in this savanna area near Camaguey that we had found a hybrid palm growing in the same area as its parent species. This time we found many and could collect a complete series from one parent, with practically no leaf stalks, to the other parent, with leaf stalks nearly three feet long. For the shape of the leaf and many other characters we could find similar series from one parent through intermediates of all grades to the second parent species. Natural hybrids are occasionally found in many different groups of plants, but it is seldom that the hybrids form so large a part of the population. A similar phenomenon was later observed in a different mixed population of palms near the south coast of the island. Although we were able to study the palms of some areas in central and eastern Cuba and find species that we had not seen before, the discovery and study of the palm hybrids was the most interesting and botanically significant part of our trip.



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