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Joseph F. Rock (1884–1962)

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A young man of 23 arrived in Honolulu, Hawaii, from Austria in 1907 after wandering for five years in Europe and North America, partly searching for a respite from his health problems, but also hoping to see the world. Up to this point in his life he had shown but one intellectual accomplishment, the mastery of a number of languages. However, lacking both money and educational degrees, he took a position as teacher of Latin and natural history at Mills School, later to become the Mid-Pacific Institute. In the next twelve years he accomplished more in botany than most botanists do in a lifetime. He became *the* authority on the flora of Hawaii, just as later he would become *the* authority on the tribes, geography, and natural history of Western China. In fact, Joseph Rock is commonly called the Father of Hawaiian botany.[1]

Rock plunged into botany, after arriving in Hawaii, with no formal training in this discipline. He taught himself by both reading classical botanical works and by spending as much time as he could with the living plants in the field. He tramped over all the inhabited islands of Hawaii, photographing and botanizing with great energy and determination. Hawaii offered an unparalleled opportunity for anyone interested in plants and in Rock were combined all those qualities necessary to produce unsurpassed works. And none too soon, since in the interim the depredations both of man and the plants he has either intentionally or unwittingly introduced to the fragile and defenseless island landscape have swept away much of what Rock found. The results of this effort were several classical works on Hawaiian botany, including the definitive work on the only indigenous Hawaiian palm—*Pritchardia*—which Rock and Beccari jointly produced. Odoardo Beccari of Italy, a world authority on palms, along with many other specialists from several countries, collaborated with Rock in the identification of Hawaiian plants.

Earliest Years

Joseph Rock remembered his boyhood with bitterness. His mother died of an illness at 45, when he was only six years old. He turned to his grandmother for comfort, but she died two weeks later. He was born in 1884 in Vienna as Josef Franz Karl Rock. His father was a stern figure, who decided early that Josef should enter the priesthood and who was supported in this desire by Rock's only sister Lina. But the boy had other interests, and dreamed instead of far off lands. Formal schooling bored him and he did only mediocre work. His interest in foreign languages was awakened at the age of 10 when his father took him on

[1] Dr. William Hillebrand (1821–1886), a physician, is known as the Grandfather. He came from Germany to Hawaii in 1851, like Rock to recover from tuberculosis, served as a government official under King Kamehameha V, and remained in Hawaii until 1871. His policies greatly influenced the future of Hawaii.

a trip to Egypt, resulting in a quick mastery of Arabic, which he later taught. By the age of 13 he was teaching himself Chinese, studying secretly by candlelight in his room after the rest of the family went to bed. This was the beginning of a life-long love for China, because Rock turned out to be a sinophile for the rest of his life.

His father was a steward at an Austrian count's *Winterpalais* in Vienna, where the boy learned by proximity the urbane niceties of continental manners and form, even though he and his father were at the bottom of the social scale. The boy came to resent more and more where fate had placed him.

Promptly upon graduation from secondary school in 1902, young Rock set out wandering in Europe and North Africa, starting a life style that would continue the rest of his days. He paid for his leisurely way by taking on odd jobs and so he learned to improvise. He was in Ostend in 1904 when his father died, but he returned to Austria for the funeral and to see his sister. He then left for England, but the damp climate caused his tuberculosis to get worse, so he headed for Italy, then Tunis, and finally recuperated in Malta where he rented a house with a rooftop garden where he could lie in the sun. When he had recovered sufficiently, he took a job as a crewman on a ship going to Hamburg, where he fell ill again and stayed in charity wards there and later in Belgium. One day, heading for France, he missed the train, so on a hunch instead sailed for New York, working his way as a steward. Landing in New York penniless, he had to take a job as a dishwasher. He frequented graveyards on his free days and soon falling ill again decided to follow the advice of doctors to go to the sunny Southwest, after some more menial jobs in upstate New York.

Leaving New York exactly after one year of his arrival, he took a ship to Vera Cruz, via Havana, and stayed two months in Mexico, since his habit was never to be in much of a hurry on these travels. He passed the winter of 1906–07 in San Antonio, Texas and the summer in Waco, Texas, where he took university courses to further polish his English. But his health turned bad and against his doctor's advice he decided to go to Hawaii. He left via Los Angeles and San Francisco, which was still suffering from the great earthquake.

The Hawaii Years

Rock came to Honolulu on the steamer Manchuria, a young man 5′8″ in height, wearing glasses, with continental charm and manners, and a taste for the things money can buy, but with no money of his own and no educational degrees to help him along the way. Instead he came, as stated, armed only with a knowledge of foreign languages, Hungarian from his mother, added to German from his place of birth, then Latin and Greek from his schooling, to which he added a reading knowledge of Sanskrit, and along the way French and Italian to the Arabic, Chinese, and English already mentioned. But Hawaii, at this time a United States territory of only seven years, unfortunately needed merchants' talents, not linguists. He improvised a class he taught in natural history and to do so spent a lot of time in the field learning about the Hawaiian flora, which was completely different from any he had seen before.

In 1908 he resigned his teaching position with Mills School and took a job with the Division of Forestry. His job of collecting seeds and specimens of rare trees and shrubs for a herbarium (which he decided the Division needed) and exchange purposes suited both

his need to be outdoors and to work off his restless energy. Spending extended periods on all the islands for collecting purposes, he soon became thoroughly familiar with all of the native plants. And thus he became a botanist, much to Hawaii's gain and the world's. Delighted by his wit and continental charm, the local ranchers' wives would invite him to their homes when he was in their area. And since the Division could not provide him with the necessary funds to hire horses and provide assistants, Rock, made quite resourceful by several years of knocking around the world penniless, would make the local ranchers feel honored by wanting to study the plants on their land and they would volunteer ranch hands as assistants and also provide the horses. However, Rock was really a loner at heart and he held all friends and acquaintances at arm's length. All friends were addressed by their surnames; in letters, for example, even later after he had known them for 30 or 40 years. Formality of one degree or another was always maintained.

Rock stayed in his position as collector for the Division of Forestry for almost three years, during which time he established a first-rate herbarium. Upon his leaving, it was transferred on indefinite loan to the College of Hawaii, which had been established in 1907 and where Rock now took a position as botanist on the faculty of about twelve men. He had only a few students so he did his teaching in the herbarium or in the field, lecturing in either Latin or English. He was placed in charge of the 20-acre botanical garden area on campus and eventually planted some 500 different species on the grounds. In 1913 he became a naturalized American citizen, using the Americanized version of his name, and stayed on at the College of Hawaii until 1920, having been promoted to the rank of Professor of Systematic Botany. This period was the high point in his career for the production of works on botany and forestry, since, as has been mentioned, his long subsequent sojourn in China, which he eventually came to regard as his home more than anywhere else, concentrated exclusively on the tribes of Western China and the geography of that general area.

Rock, however, always thinking of excuses to travel, took a leave of absence in 1913–14 to make a trip around the world, but not entirely for selfish reasons, since he also collected seeds and plants for reforestation purposes in Hawaii; collected bamboos for the Panama Canal Zone; and visited herbaria in Europe and the United States for the College. It was during this trip that he first saw China and it simply captured him. His earliest extant diary shows long entries for his stops there, but only passing remarks about Singapore, India, Ceylon. Rock's boyhood enthusiasm for China was real and his interest—call it fascination—remained all his life.

But whenever funds permitted, he was off on other journeys: the Philippines and Singapore again, Java in 1916, revisiting California in 1917, and revisiting Siam, Malaya, and Java in 1919.

He was miffed that an agreement had been reached over his objections to transfer the herbarium of some 28,000 specimens to the Bishop Museum from the College, which was now in the process of taking on University status. Although not his private property, he harbored very strong feelings about it. As a result, he resigned in 1920 and in May of that same year packed his bags and left for the continental United States to seek employment there.

Beginnings of a Far East Explorer

Rock took a job as Agricultural Explorer for the Office of Foreign Seed and Plant Introduction of the U.S. Department of Agriculture, after experiencing some negative results at Harvard University and the New York Botanical Garden, and left in the Fall of 1920 for the Orient. No better assignment could have been found for him, since it fitted his needs and talents exactly, in addition to satisfying his deep desire to experience the Orient. He was to locate a tree (*Hydnocarpus kurzii*), which produces an oil useful in the treatment of leprosy, and ship the seeds back to the United States. He of course found the tree and did a meticulous job of sending back batches of seed from different localities where the tree grew. With the money from this successful trip and an article he wrote for the *National Geographic Magazine*, he returned for a recuperative trip to Vienna, back there for the first time in almost twenty years. However, he soon returned to the Far East, this time searching for ornamental species of plants, especially a blight-resistant chestnut, this trip also under the sponsorship of the USDA.

Thus began three decades of active exploration and research in Asia, which resulted in the introduction of thousands of Asiatic plants to the United States; the collection of some 60,000 botanical, ornithological and zoological specimens; the mapping and photographing of practically unknown regions; the translation of volumes of native literature; and the most exacting research into the linguistics, culture, folklore, and religion of Western China and Eastern Tibet. Whereas at 35 Rock had become *the* authority on Hawaiian flora, at the age of 55 he had become *the* authority on the Nakhi tribe of Western Yunnan and *an* authority on that part of China bordering Tibet.

The China Years

The ensuing years in Rock's life were of such an adventurous nature that his exploits were the subject of newspaper articles, with reports several times that his party was lost somewhere in the wilds. The National Geographic Society took over the sponsorship of several of his expeditions and Rock sent back a whole series of articles which the *National Geographic Magazine* published (although greatly irritating him by editing his precise language into "National Geographese"). And recently a most interesting book[2] about his life has been published. It is highly entertaining reading for armchair adventurers and, although covering Rock's entire life, it dwells on his turbulent years in China.

Rock liked to travel in style in the Orient. He taught a tribesman the elements of continental cuisine, so his entourage always included a cook, porters for items like his folding bath tub, which he used daily, linen napkins and tablecloth, since a table was set up in the wilds for the evening meal except in the most extreme circumstances, porters for all the food necessary for the journey and for the plants collected along the way. And very often at the front and rear of the party, soldiers to guard against brigands or robbers, soldiers at one time numbering as high as 150 to provide safe passage through the local magistrate's territory, which official would be responsible for the party's safe con-

[2] *In China's Border Provinces; The Turbulent Career of Joseph Rock, Botanist-Explorer*, S. B. Sutton, 1974, 344 pp., Hastings House, N.Y.

duct on its way. Another consideration was that Rock felt he had to present the right image as a man of some importance so that he could control the situation. This required a certain aloofness and formality, which suited Rock's style, but which also made his life extremely lonely. And to combat this he turned to his diary (where he had left off in 1913) to express his feelings. The only other white persons, even in the towns, might be a missionary or two, who were often too narrowly religious to suit Rock, and occasionally some government official. In a desperate attempt to alleviate this loneliness and obtain a surrogate son, Rock had his nephew come as far as Hong Kong, with the idea that the youth could serve as his assistant, but sent him back. During his whole lifetime, Rock is not known to have been intimately involved with anyone. He complained bitterly in his diary of his loneliness and lack of roots. Although he carried medicines, he stayed on in China even though in indifferent health and days from a doctor or a hospital. Very often he was in pain from one ailment or another, from a malfunctioning digestive system, including a blocked intestine, to facial neuralgia, dental problems, and amoebic dysentery. Nevertheless, he continued to eat rich foods and only rarely would he let any ailment keep him in bed.

Rock was not the first plant collector ever to visit these Western provinces of China, although he was surely the very first white man to set foot in some out-of-the-way regions. There had been notably Ernest Wilson at the turn of the century and later George Forrest, Reginald Farrar, and Frank Ward. In fact, Rock would eventually run into both Forrest and Ward, only to have professional conflicts arise, so he kept his distance.

China, at the time of Rock's entry, was still not a completely unified country. Central government control over certain provinces, particularly those in which Rock worked, was only under the nominal control of the Chinese. A degree of local automony was politically expedient. Local chiefs and kings ruled but were beholden to some extent to the Chinese capital, especially in the payment of taxes, that being their paramount obligation. And very often the amount of tax to be paid, along with the graft involved, obliged the peasants to raise poppies to make opium, as the best paying cash crop, rather than rice. The perniciousness of opium on man touched greatly on Rock's life in China. He forbade all those around him to use it. In addition to the addiction of many people there to opium, other factors which greatly distressed Rock was the "filth," as he called it, since his own habit was to bathe daily, even when out on a journey. Generally, the political situation was unstable, with brigands infecting large areas along major trading routes, feuding chiefs fighting one another with private armies, unpaid, or underpaid, soldiers foraging off the land at the expense of the peasants, and, much to Rock's surprise, since he never expected the indifferent masses to revolt, the eventual takeover of the Communists, which ultimately drove him out of China forever.

As he grew older, Rock gradually gave up the rigorous type of botanizing and would just collect plants along the roadside, but he continued to send his helpers inland for specimens. He sent over 60,000 plants to various institutions in the West and introduced over 493 species of rhododendrons, more than had been known heretofore.

Although Rock was in the distant Orient, he still made numerous trips to Europe and/or the United States between 1920 and 1944: to seek spon-

1. The Prince of Choni and Rock. Courtesy *National Geographic Society.*

sors, to see about getting his works published, to visit old acquaintances, to seek medical attention, and for a change of scene. He would be invited to speak before various groups, which he relished, to meet with influential people, and was accepted in intellectual circles. Questions were put to him as if he were the authority on all things Chinese.

But when he returned to China from one trip abroad in 1935 he returned to find the Nationalists and Communists fighting. They later reached a truce long enough to fight the invading Japanese. By 1937 real warfare broke out, but Rock decided to stay on since he felt comparatively safe deep in the interior. However, eventually the war reached Western China and some bombs were even dropped on Junnanfu, the town where Rock was staying. He had considered many times living in Peking, where he could be near libraries and book stores and participate in the intellectual life, and even went house hunting there, but always returned to some provincial town in Western China, eschewing what he considered to be the many unpleasant things encountered in any large city.

He evacuated to Indochina, made a trip to Hawaii, and then returned to China to the remote town, Likiang, in the western provinces where he had stayed for so many years before. He feared more for his health than about the war.

At this time Americans were losing many planes flying materials over the "Hump" air route. Since Rock knew more about the Chinese side of the Hump, as it was called, than anyone else, he was sent for by special plane, brought out, and put to work by the Army Map Service for a year to draw maps of the area. Since the war in the Pacific ended in 1945, Rock was back in the Orient by 1946, where he wanted to replace the loss of 12 years of scholarly productivity. A Japanese torpedo had sunk the ship carrying his research manuscripts to the United States for safekeeping during the war. Rock returned to Likiang, but the civil strife was making it unbearable for him, the Communists let him know he was unwelcome there, and in 1949 he left China for the last time.

The Final Years

After a trip to Europe, he waited in the Himalayas of India for two years poised to return to China, but finally gave up and spent the final eleven years of his life, first in Europe, next the State of Washington, and finally Hawaii. He returned to Hawaii for health reasons once more and an increased interest in establishing a bo-

tanical garden there. In Hawaii he divided his time between finishing a dictionary of the language of a Western China tribe (the Nakhi) and Hawaiian botany. He again worked on the lobelioids, called one of the most complicated tribes of plants.

Unfortunately, money was a problem even during his later years. He sold his library to the University of Washington (the Far East and Russian Institute) for $25,000 and lived as a guest in the home of friends in Honolulu for the last five years of his life. This left him free for his travels and scholarly pursuits, for which he still had the old energy and enthusiasm. However, he died of a heart attack on December 5, 1962, at the age of 78, and was buried on the island of Oahu.

The Monograph of Pritchardia

A Monographic Study of the Genus Pritchardia, by Beccari and Rock, first appeared in 1921 in the *Memoirs of the Bernice Pauahi Bishop Museum* as article Number 1, in Volume VIII, published in Honolulu. The article is encompassed in 77 pages, followed by 24 pages of plates (photographs).

The title page, giving credit to Beccari and Rock, as coauthors, is followed by a table of contents listing 33 treated species and five varieties of *Pritchardia*.

Next follows Rock's one-page introduction, which elaborates on the circumstances surrounding the publication of the work and who wrote what. Since it gives some interesting details, it is reproduced in part as follows:

> The present study of the genus *Pritchardia* is mainly the work of Dr. O. Beccari of Florence, Italy, and forms part of a monograph on the tribe *Coripheae* [sic] to which the genus *Pritchardia* belongs. The manuscript was prepared in Latin for publication in the *Annals of the Calcutta Botanical Garden*, but Dr. Beccari has consented to have that part of his monograph dealing with the genus *Pritchardia* published in English in Honolulu. Of the thirty-three species described in this paper twenty-one including five varieties were discovered by me, and several old species were rediscovered and their status cleared. My recent explorations on the islands of Kauai, Molokai, and Hawaii resulted in the discovery of several new species and one new variety. Specimens of these and of other new species were forwarded to Dr. Beccari, but I am responsible for the description of the following: *Pr. kaalae*, *Pr. Forbesiana*, *Pr. Hardyi*, *Pr. Munroi*, *Pr. montis-kea*, *Pr. viscosa*, *Pr. Lowreyana*, var. *turbinata*, *Pr. Martiodes*, and *Pr. Kahanae*. Plates illustrating this monograph are from photographs taken by me; the drawing of the flowers was made by Dr. Beccari. It is hoped that the present paper will be a stimulus to further exploration by future botanical workers, for it is probable that the Hawaiian Islands harbor a number of other new species of *Pritchardia*. Special attention should be given to the western part of Oahu, the windward side of Molokai, especially the valleys of Waikolu, Pelekunu, and Wailau, and to the windward slope of Haleokala on Maui. On the island of Hawaii, Waipio, Waimanu, and other valleys of Kohala have not been searched for palms, and the island of Kauai may reward the assiduous explorer with additional new species.

He closes the introduction with the names of those to whom thanks were due for financial support and a footnote citing the great loss to the scientific world in the death of Dr. Beccari, which occurred at Florence, Italy, October 25, 1920.

The main body of the work is divided into two parts: Part I, entitled Distribution and Characteristics, and Part II, Systematic Treatment.

Part I is introduced with a General Discussion section written by Beccari, in which he elaborates on three subjects: distribution, fertilization, and finally structural peculiarities, which stresses the appearance of the leaves of the various species, since as Beccari states ". . . the diagnostic characteristics of the species of *Pritchardia* are found chiefly in the fruit, and in the indumentum which covers the

leaves and the spadices. Characters which might serve to distinguish one species from another are hard to find in the flowers, as these conform to one type, with slight differences in size and in the venation of the calyx and of the corolla." In fact, the section includes a prospectus on the appearance of the lower surface of the leaves.

In the section under distribution he mentions that the first *Pritchardia* species described were *P. martii* and *P. gaudichaudii*, both from Hawaii and thought to belong to the genus *Livistona*. Besides Hawaii, two species were indigenous to Fiji and an additional two species were found in the distant Dangerous Archipelago. He further states that the one species (*P. wrightii*) found in the New World (in Cuba), is "one of the most extraordinary facts known of geographical distribution of palms . . . ." Its general acceptance today as a species of the distinct genus *Colpothrinax* makes its distribution less dramatic. He also comments on the great precinctiveness of the species of *Pritchardia* in Hawaii in that no species is found on more than one island.

Next follow two sections authored by Rock: Distribution of *Pritchardia* in the Hawaiian Islands, introduced by a table showing on which island each species is found, giving credit for nine to Hawaii, six each to Molokai and Oahu, four to Kauai, three to Maui, but none to either Nihoa or Lanai. This is followed by an island-by-island detailed description of the locales where each species is found. Part I is closed by Rock's second section on the uses of *Pritchardia*, in which he briefly discusses the possible uses of the leaves and the use of seeds for food.

Part II, authored by both men, after referencing prior botanical literature on the genus, first describes the genus *Pritchardia*, then includes a five-page conspectus of the species, followed by a listing of synonyms, doubtful and excluded species, and concludes with a 48-page detailed description of all the species, one by one. The description of each species again, of course, cites prior botanical literature, which is then followed by a description, covering general appearance of stem and crown, then leaves, spadices, flowers, fruit, seed, and fruiting perianth, in that order. This is in turn followed by two closing sections on habitat and observations.

As already noted, the work concludes with 24 pages of photographs, including five pages on the fruits in life size.

Another Pritchardia

At the end of his life, Rock returned to Hawaii and on Kauai found another *Pritchardia*. The paper[3] was published in 1962 and the Introduction reads as follows:

> On a recent trip to Kauai to collect young plants and seeds of *Pritchardia hardyii* and *P. viscosa*, Mr. Paul Weissich and I discovered a distinct new species, immediately discernable as such from a distance. It has the longest spadix of any *Pritchardia* known.
>
> It seems that all species of plants, including *Pritchardia*, found on Kauai are less prone to variation than those found on the other Hawaiian Islands, but are more fixed or stabilized. Kauai is the oldest of the islands. The pritchardias found in the central Koolau Range of Oahu display the greatest variation. In fact, they are so variable that one could describe and name each individual plant. The most distinct species, *P. kahukuensis* Caum, grows on the extreme northwestern end of the Koolau Range, whereas on the central part from Hauula to Waiahole (all on the windward side) is found polymorphic species with fruits of all sizes and shapes, ranging from obovate to ovate elliptical, and globose; but all seem to have

[3] A New Hawaiian *Pritchardia*, Occasional Papers of Bernice P. Bishop Museum 38: 61–63.

the staminal cup included in the hypanthium. In order to designate these plants by a common name, I suggest the specific name polymorpha which has been used before to designate a highly variable species (*Metrosideros polymorpha*).

Pritchardias found in the wettest areas of the islands, Kauai excluded, have the largest fruits. When these are transplanted to the drier areas near sea level on Oahu, their fruits greatly diminish in size and shape, so that it becomes impossible to rediagnose them. A case in point is *Pritchardia lowreyana* Rock, from the windward side of Molokai, which I grew from the type tree. I planted a specimen at the eastern corner of Hawaii Hall at the University of Hawaii at Honolulu, and after 44 years it had produced fruits not, or only slightly, larger than those of *P. affinis*, though in other respects it is quite different from that species. It would be interesting to plant specimens grown from the seeds of the Honolulu *P. lowreyana* in a wet area and see whether it will produce as large fruits as the type. At any rate, the size and shape of the fruits of *Pritchardia* do not appear to be good specific characters. *P. weissichiana* is one of the most distinct of the genus.

After the botanical description, Rock states further "This new *Pritchardia* increases the number found on the island of Kauai to five, four of which are small fruited. *P. viscosa* has the largest fruits of any *Pritchardia* known from Kauai."

Rock named this new *Pritchardia* for Paul R. Weissich, Director of the Foster Botanical Garden of Honolulu, who was interested in procuring all the Hawaiian pritchardias for planting in the Foster Botanical Garden.

Other Botanical Works

More than 45 other works on botany and forestry were produced by Rock, of which three are full-scale books: *The Indigenous Trees of the Hawaiian Islands* (1913), which established his credentials in the world scientific community; *The Ornamental Trees of Hawaii* (1917); and *A Monographic Study of the Hawaiian Species of the Tribe Lobelioideae, Family Campanulaceae* (1919). Rock's works are almost always profusely illustrated with his own excellent photographs.

It is interesting to note that although Rock spent 30 years in the Far East after leaving Hawaii, and although he collected tens of thousands of botanical and ornithological specimens there and sent them back to the West, this long period of his life produced no botanical works. It seems he became so interested in the cultures of the aboriginal tribes of Western China that he decided to capture what he could for posterity before it was too late, since an overwhelming Chinese influence was quickly wiping away the last vestiges of these cultures. We assume that in his mind he decided that the botanical collections could wait for other men in later years who would have time to work on the thousands of specimen plants he collected there and other places in the Far East.

Even if Rock had made no other contribution except his plant collection efforts, he would have his niche in the world of botany. However, this legendary scholar, first recognized as a botanist, plant collector, naturalist, and explorer, went on to become an orientalist, philologist, geographer, anthropologist and cartographer. And he was an unexcelled photographer, which talent added so much to his works. Rock was a member of many organizations, was listed in *Who's Who* for thirty years, and was honored with awards, medals, and honorary degrees by many scholarly and scientific organizations.